

## EXPLORING THE IMPACT OF CREATIVE SELF-EFFICACY AND TRANSFORMATIONAL LEADERSHIP ON WORK ENGAGEMENT: THE MEDIATING ROLE OF EMPLOYEES' PERCEPTION OF ARTIFICIAL INTELLIGENCE

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### Abstract

This study investigates the integrated effects of Creative Self-Efficacy (CSE), Transformational Leadership (TL), and Perception of Artificial Intelligence (PAI) on Work Engagement (WE) in AI-enabled workplaces. Drawing on Social Cognitive Theory (Bandura, 1986) and the Job Demands–Resources (JD-R) model (Bakker & Demerouti, 2017), the study proposes a conceptual framework in which CSE and TL serve as key personal and organizational resources, while PAI functions as a mediating mechanism linking these resources to employee engagement. Data were collected through a self-administered online survey from 270 employees across AI-adopting organizations in sectors including telecommunications, banking, IT, and logistics. Reliability and validity analyses confirmed the consistency of the measurement scales, while correlation and regression analyses revealed significant positive relationships among all constructs. Results indicate that employees with higher creative confidence and those reporting transformational leadership perceive AI more positively, which in turn enhances their work engagement. Moreover, PAI significantly mediates the effects of both CSE and TL on WE, highlighting the central role of technology perception in translating personal and leadership resources into motivated, dedicated, and absorbed work behaviors. The findings offer theoretical contributions by integrating personal, leadership, and technological factors in engagement research and provide practical insights for organizations aiming to foster positive AI perceptions and optimize employee engagement in AI-driven environments.

### INTRODUCTION

The rapid evolution of Artificial Intelligence (AI) is transforming contemporary organizational environments, fundamentally altering how work is performed, how decisions are made, and how employees interact with digital technologies (McKinsey, 2023). AI-driven systems increasingly

support routine tasks, data analysis, and creative processes, enabling organizations to enhance efficiency and strategic performance. However, the successful integration of AI within workplaces depends not only on technological sophistication but also on human-centered factors that influence

how employees interpret and respond to these technologies (Zhou et al., 2025). Recent research highlights that employees' perceptions, psychological readiness, and leadership support significantly shape whether AI becomes a driver of innovation or a source of uncertainty and resistance.

Among the individual-level factors influencing AI adoption, Creative Self-Efficacy (CSE) defined as an individual's belief in their ability to generate novel and useful ideas has gained increasing scholarly attention. Employees with high CSE are more likely to experiment with emerging technologies, perceive AI as an opportunity for creative enhancement, and demonstrate greater adaptability to technological change (Womick, 2024). At the organizational level, Transformational Leadership (TL) provides a crucial contextual resource for managing technological transitions. Transformational leaders inspire employees through a shared vision, encourage innovative thinking, and provide intellectual stimulation, thereby fostering trust and openness toward new technologies such as AI (Gerçek, 2025). Through these behaviors, leaders help reduce uncertainty and create a supportive environment for technological learning and experimentation.

Another important psychological dimension in AI-enabled workplaces is employees' Perception of Artificial Intelligence (PAI). When employees view AI as supportive, collaborative, and beneficial rather than threatening, they are more likely to demonstrate higher motivation, dedication, and involvement in their work roles (Rahman & Chen, 2024). In this sense, AI perception functions as a cognitive mechanism through which individuals evaluate the role and value of AI in their work processes, ultimately influencing their level of engagement.

Despite the growing attention to AI in organizational research, several gaps remain. Few studies have simultaneously examined Creative Self-Efficacy, Transformational Leadership, Perception of AI, and Work Engagement within a single integrated framework. Moreover, empirical evidence exploring employees' perception of AI as a mediating mechanism remains limited. Additionally, most existing research has focused on

Western or East Asian contexts, leaving a noticeable gap in developing regions where technological adoption dynamics may differ. Therefore, this study proposes an integrated model examining how Creative Self-Efficacy and Transformational Leadership influence employees' Perception of AI and how this perception subsequently enhances Work Engagement, offering both theoretical and practical insights for organizations navigating AI-driven transformations.

### Research Problem

Organizations worldwide are experiencing rapid digital transformation as Artificial Intelligence (AI) becomes increasingly embedded in everyday work processes (AlShalhoob, 2025; Wolfe et al., 2025). AI technologies are reshaping how tasks are executed, how decisions are made, and how job roles are structured, thereby creating a more complex interaction between employees and intelligent systems (Wang et al., 2025; Babashahi et al., 2024). Although organizations invest substantially in AI to improve efficiency, productivity, and innovation, the effectiveness of these technologies largely depends on employees' willingness to adopt, accept, and integrate them into their daily work routines (McKinsey, 2025; Law & Varanasi, 2025). However, recent studies indicate that employees respond to AI in different ways. While some individuals perceive AI as a supportive tool that enhances creativity and performance, others view it as a potential threat to job security, autonomy, and professional competence (Elsawy et al., 2024; Alagele et al., 2025). These contrasting perceptions highlight the importance of identifying the psychological and organizational factors that shape employees' attitudes toward AI.

Although previous research has explored individual capabilities such as Creative Self-Efficacy (CSE) and leadership approaches such as Transformational Leadership (TL), these factors have rarely been examined together within a single framework that explains employees' Perception of Artificial Intelligence (PAI) and its influence on Work Engagement (Fan, 2023; Wang et al., 2025). Furthermore, empirical evidence investigating AI perception as a psychological mechanism that

mediates the relationship between personal resources, leadership support, and employee engagement remains limited. This gap is particularly significant in modern organizations undergoing rapid technological change, where employees must continuously adapt to evolving digital systems (AlShalhoob, 2025; Wolfe et al., 2025).

Therefore, the central research problem lies in the limited understanding of how Creative Self-Efficacy and Transformational Leadership jointly shape employees' Perception of AI, and how this perception subsequently influences their Work Engagement. Additionally, there is insufficient empirical evidence regarding the indirect effects of these variables through AI perception within digitally transforming workplaces. Addressing this gap is crucial for developing a comprehensive framework that explains employees' responses to AI and helps organizations foster greater engagement in technology-enabled work environments.

#### Research Questions:

1. What is the relationship between Creative Self-Efficacy (CSE) and employees' Perception of Artificial Intelligence (PAI)?
2. How does Transformational Leadership (TL) influence employees' Perception of Artificial Intelligence (PAI)?
3. Does Creative Self-Efficacy (CSE) have a significant effect on employees' Work Engagement (WE)?
4. What is the impact of Transformational Leadership (TL) on employees' Work Engagement (WE)?
5. Does Perception of Artificial Intelligence (PAI) mediate the relationship between Creative Self-Efficacy (CSE) and employees' Work Engagement (WE)?
6. Does Perception of Artificial Intelligence (PAI) mediate the relationship between Transformational Leadership (TL) and employees' Work Engagement (WE)?

#### Research Objectives:

1. To examine the relationship between Creative Self-Efficacy (CSE) and employees'

Perception of Artificial Intelligence (PAI) in the workplace.

2. To investigate the impact of Transformational Leadership (TL) on employees' Perception of Artificial Intelligence (PAI).
3. To analyze the direct relationship between Creative Self-Efficacy (CSE) and Work Engagement (WE) among employees.
4. To explore the direct effect of Transformational Leadership (TL) on employees' Work Engagement (WE).
5. To determine whether Perception of Artificial Intelligence (PAI) mediates the relationship between Creative Self-Efficacy (CSE) and Work Engagement (WE).
6. To test the mediating role of Perception of Artificial Intelligence (PAI) in the relationship between Transformational Leadership (TL) and Work Engagement (WE).

#### Literature Review

##### Creative Self-Efficacy and Perception of Artificial Intelligence

Creative Self-Efficacy (CSE) refers to an individual's belief in their capability to generate innovative and useful ideas, particularly in situations characterized by uncertainty, complexity, or change (Tierney & Farmer, 2002). In modern organizational environments where digital technologies are rapidly evolving, employees with higher levels of CSE tend to demonstrate greater openness to experimentation and technological exploration. This psychological resource shapes how employees interpret and respond to emerging technologies such as Artificial Intelligence (AI).

Recent research suggests that employees with strong creative confidence are more likely to perceive AI as a supportive technology that enhances productivity and creativity rather than a threat to their professional roles. For instance, Jeong and Jeong (2024) found that individuals with high CSE show greater acceptance of AI-based tools because they perceive these technologies as complementing human creativity instead of replacing it. Similarly, Womick (2024) reported that CSE reduces anxiety associated with technological change and encourages positive cognitive evaluations of AI systems. Zhao et al. (2023) also observed that

employees with strong creative beliefs demonstrate greater adaptability to AI-driven tasks and automation, viewing them as opportunities for learning and innovation. Consequently, CSE can be considered a significant personal resource that shapes employees' Perception of AI, leading to the following hypothesis:

*H1: Creative Self-Efficacy positively influences employees' Perception of Artificial Intelligence.*

### **Transformational Leadership and Perception of Artificial Intelligence**

Transformational Leadership (TL) is a leadership approach that motivates and inspires employees to achieve beyond expectations by fostering innovation, intellectual stimulation, and openness to change (Bass & Riggio, 2006). Transformational leaders communicate a clear vision, encourage creative thinking, and provide individualized support, which are essential elements for guiding organizations through technological transitions.

Within the context of AI integration, TL plays a vital role in shaping employees' interpretations of technological change. Research indicates that transformational leaders reduce employees' uncertainty and fear associated with new technologies by creating a supportive and psychologically safe environment. Gerçek et al. (2025) reported that TL significantly increases employees' trust in AI technologies and enhances their willingness to adopt AI tools in daily work activities. Likewise, Madanchian et al. (2024) demonstrated that leadership behaviors such as inspiration, mentoring, and promoting a shared digital vision contribute to employees' positive perceptions of AI systems. Zhou et al. (2025) further noted that leadership practices strongly influence whether employees perceive AI as an enabling technology or a potential threat. Therefore, TL functions as an important organizational resource that fosters favorable perceptions of AI among employees, leading to the following hypothesis:

*H2: Transformational Leadership positively influences employees' Perception of Artificial Intelligence.*

### **Creative Self-Efficacy and Work Engagement**

Work Engagement is defined as a positive, fulfilling psychological state characterized by vigor, dedication, and absorption in work tasks (Bakker & Demerouti, 2017; Atef, et. al., 2021). According to the Job Demands–Resources (JD-R) model, personal resources such as self-efficacy play a crucial role in enhancing motivation and engagement at work.

Creative Self-Efficacy serves as an important motivational driver that strengthens employees' confidence, intrinsic motivation, and commitment to their roles. Li and Fang (2024) found that employees with high CSE experience greater psychological empowerment, which leads to higher levels of work engagement. Similarly, Rahman and Ahmed (2023) reported that CSE enhances resilience and intrinsic motivation, thereby increasing employees' enthusiasm and involvement in their work. Salanova and Chen (2023) further suggested that employees with strong creative confidence are more proactive in addressing challenges and demonstrate higher dedication and energy in performing their tasks. Based on these theoretical and empirical insights, the following hypothesis is proposed:

*H3: Creative Self-Efficacy positively influences employees' Work Engagement.*

### **Transformational Leadership and Work Engagement**

Transformational Leadership has consistently been identified as a critical job resource that enhances employee motivation and psychological involvement in work. By communicating an inspiring vision, providing emotional support, and encouraging professional growth, transformational leaders strengthen employees' sense of purpose and organizational commitment.

Empirical studies consistently demonstrate a positive relationship between TL and Work Engagement. Madanchian et al. (2024) reported that TL enhances employees' vigor and dedication by providing autonomy, recognition, and emotional support. Similarly, Khan and Alawi (2023) concluded that leadership behaviors such as inspirational motivation and individualized

consideration strengthen employees' emotional attachment to their work tasks. Gerçek et al. (2025) further emphasized that TL promotes creativity, trust, and adaptability, which are particularly important in AI-supported work environments. Consequently, TL can be considered a significant predictor of Work Engagement, leading to the following hypothesis:

*H4: Transformational Leadership positively influences employees' Work Engagement.*

#### **Perception of Artificial Intelligence as a Mediator Between Creative Self-Efficacy and Work Engagement**

Employees with high Creative Self-Efficacy are more likely to approach AI technologies with confidence and curiosity. According to Social Cognitive Theory (Bandura, 1986), individuals' beliefs about their capabilities influence how they interpret environmental stimuli and respond to challenges. Employees with strong creative confidence are therefore more inclined to perceive AI as a supportive resource that enhances their creative and professional capabilities.

Recent studies support the mediating role of AI perception in this relationship. Zhou et al. (2025) found that positive perceptions of AI explain how personal psychological resources translate into higher levels of engagement at work. Salanova and Chen (2023) observed that employees who perceive AI as enabling creativity demonstrate greater enthusiasm, dedication, and job satisfaction. Rahman and Chen (2024) also highlighted that perception of AI serves as a cognitive mechanism linking individual competencies to behavioral outcomes. Therefore, the following hypothesis is proposed:

*H5: Perception of Artificial Intelligence mediates the relationship between Creative Self-Efficacy and Work Engagement.*

#### **Perception of Artificial Intelligence as a Mediator Between Transformational Leadership and Work Engagement**

Transformational leaders significantly influence how employees interpret technological change by creating a supportive climate, reducing uncertainty, and promoting confidence in AI technologies. By encouraging learning and innovation, transformational leaders help employees perceive AI as a collaborative partner rather than a threat. Empirical research provides evidence for this mediating mechanism. Rahman and Chen (2024) demonstrated that employees' Perception of AI mediates the relationship between leadership practices and Work Engagement. Similarly, Madanchian et al. (2024) found that TL indirectly enhances employees' motivation and engagement by fostering favorable attitudes toward AI-based systems. Zhou et al. (2025) further confirmed that leadership-driven trust in AI strengthens employees' energy, dedication, and absorption in their work roles. Based on these findings, the following hypothesis is proposed:

*H6: Perception of Artificial Intelligence mediates the relationship between Transformational Leadership and Work Engagement.*

#### **Proposed Conceptual Model of the Study:**

This conceptual framework depicts the proposed relationships among Creative Self-Efficacy (CSE), Transformational Leadership (TL), Perception of Artificial Intelligence (PAI), and Work Engagement (WE). The model incorporates both direct and indirect relationships to explain how individual and leadership-related resources influence employee engagement. Specifically, CSE and TL are hypothesized to exert direct effects on Work Engagement (H3 and H4) and also directly influence employees' Perception of Artificial Intelligence (H1 and H2). Furthermore, PAI operates as a mediating mechanism that connects CSE and TL with WE through two distinct mediation pathways. In this context, hypotheses H5 and H6 represent the indirect effects, suggesting that employees' perceptions of AI serve as a transmission channel through which both personal resources (CSE) and leadership resources (TL) enhance Work Engagement.

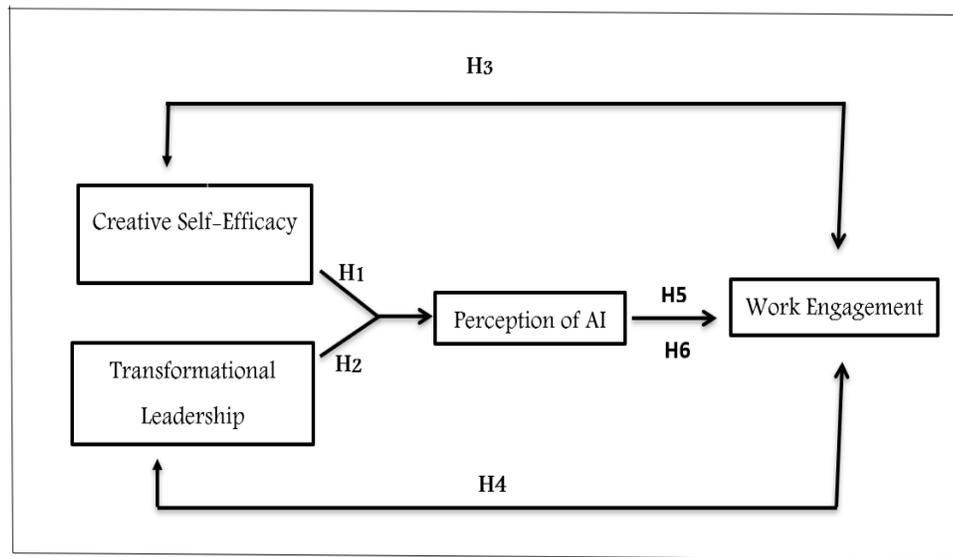


Fig1. Conceptual Framework (Developed by the author based on the theoretical perspectives of Bandura (1986), Bass and Riggio (2006), and Bakker and Demerouti (2017)).

### Theoretical Framework and Mechanisms

The proposed theoretical framework integrates individual psychological resources, leadership behaviors, and technology-related perceptions to explain how employees engage with work in organizations increasingly influenced by Artificial Intelligence (AI). The framework is grounded in three key theoretical perspectives: Social Cognitive Theory, Transformational Leadership Theory, and the Job Demands–Resources (JD-R) Model. Together, these theories provide a comprehensive explanation of how Creative Self-Efficacy (CSE) and Transformational Leadership (TL) shape employees' Perception of Artificial Intelligence (PAI) and ultimately influence their Work Engagement (WE). Social Cognitive Theory suggests that individuals' beliefs about their own capabilities significantly influence how they interpret and respond to environmental challenges (Bandura, 1986). In AI-enabled workplaces, employees with higher creative self-efficacy are more likely to approach AI technologies with confidence and curiosity rather than fear. Such individuals tend to perceive AI as a tool that enhances creativity and supports task performance, leading to more favorable evaluations of AI systems.

Consequently, CSE functions as a personal cognitive resource that positively shapes employees' perception of AI.

Transformational Leadership Theory further explains how leadership behaviors influence employees' reactions to technological change. Transformational leaders inspire employees through a clear vision, intellectual stimulation, and individualized support, thereby fostering trust and openness toward innovation (Bass & Riggio, 2006). In the context of AI adoption, such leadership behaviors reduce uncertainty and anxiety associated with technological transformation while encouraging experimentation and learning. As a result, transformational leaders create a psychologically safe environment that promotes positive attitudes toward AI and strengthens employees' perception of AI as a supportive organizational resource.

The Job Demands–Resources (JD-R) model provides an additional theoretical lens by explaining how personal and organizational resources enhance employee motivation and engagement (Bakker & Demerouti, 2017). Within this framework, CSE represents a personal resource, while TL functions as a job resource that

encourages employees to invest greater energy, dedication, and commitment to their work. Both resources therefore directly contribute to higher levels of work engagement.

A central element of the proposed model is the mediating role of Perception of AI, which acts as a psychological mechanism linking both CSE and TL to Work Engagement. As AI becomes increasingly embedded in organizational operations, employees' interpretations of AI function as a cognitive filter influencing their motivation and behavioral responses. When employees perceive AI as supportive, empowering, and capable of enhancing creativity or reducing workload, they are more likely to experience greater enthusiasm, dedication, and absorption in their work roles. Thus, positive AI perception strengthens employee engagement by reinforcing the perceived value and alignment of AI-supported work processes.

Overall, the integrated framework proposes four interconnected mechanisms. First, a personal resource pathway suggests that employees with strong creative self-efficacy develop more positive perceptions of AI, which subsequently enhances work engagement. Second, a leadership-driven pathway proposes that transformational leadership fosters favorable perceptions of AI, thereby increasing engagement levels. Third, a direct motivational pathway indicates that creative self-efficacy independently promotes higher work engagement through increased confidence and intrinsic motivation. Finally, a leadership motivational pathway suggests that transformational leaders directly inspire employees to become more psychologically invested and committed to their work. Together, these mechanisms provide a comprehensive explanation of how personal beliefs, leadership influence, and AI perceptions interact to shape employee engagement in AI-enabled workplaces.

### Methodology

This study adopts a quantitative cross-sectional research design to examine the relationships among Creative Self-Efficacy (CSE), Transformational Leadership (TL), Perception of Artificial Intelligence (PAI), and Work Engagement (WE). A survey-based approach was selected because it

allows researchers to collect standardized data from a large number of respondents and enables statistical testing of theoretical relationships among variables (Creswell & Creswell, 2018; Gill, et. al., 2026). Quantitative survey designs are widely used in organizational behavior research to investigate psychological constructs, leadership behaviors, and employee attitudes in evolving technological environments (Saunders, Lewis, & Thornhill, 2019).

The target population of the study consists of employees working in organizations that have adopted or are currently integrating Artificial Intelligence technologies into their operational processes. These organizations operate in sectors such as telecommunications, banking, information technology, logistics, and other digitally transforming industries where employees interact with AI-supported systems. To ensure that respondents possess relevant experience with AI technologies, a non-probability purposive sampling technique was employed. Purposive sampling is commonly used when participants must meet specific criteria related to the research objective (Sekaran & Bougie, 2020).

The sample size was determined based on commonly recommended guidelines for Structural Equation Modeling (SEM), which suggest that researchers should obtain at least 10–15 responses for each observed indicator in the model (Hair, Black, Babin, & Anderson, 2019). Based on the total number of measurement items in the questionnaire, a minimum sample size of approximately 200 respondents was considered adequate for statistical analysis. However, to enhance reliability and improve model stability, a target sample range of 250–300 respondents was established.

Data were collected through a self-administered online questionnaire distributed via email, professional networks, and organizational communication platforms. Participation was voluntary, and respondents were assured of anonymity and confidentiality to encourage honest responses (Dillman, Smyth, & Christian, 2014). The questionnaire included multiple sections measuring the study constructs using validated scales from previous research, and all items were

measured using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). A total of 270 responses were initially collected. After screening for missing values, incomplete submissions, and inattentive responses, 250 valid responses were retained for final analysis. Composite scores for CSE, TL, PAI, and WE were calculated by averaging the items corresponding to each construct. Preliminary data screening indicated that the assumptions of normality and linearity were sufficiently satisfied, allowing the dataset to proceed to further statistical analyses such as reliability testing and structural model evaluation (Hair et al., 2019).

**Demographic Profile**

This section presents the empirical findings of the study based on the data collected from 270 employees working in organizations that have adopted or are integrating Artificial Intelligence (AI) technologies into their operational processes. The analysis includes demographic characteristics

of the respondents, descriptive statistics of the main variables, reliability assessment, correlation analysis, and hypothesis testing to evaluate the proposed research model.

First, the demographic profile of the respondents indicates a diverse representation of employees across different organizational roles and industries. Among the participants, approximately 54% were male and 46% were female. In terms of age distribution, the majority of respondents (about 48%) were between 26–35 years, followed by 32% aged 36–45 years, while the remaining participants were either younger than 25 or older than 45 years. Regarding educational qualifications, most respondents held at least a bachelor’s degree (62%), while 28% possessed a master’s degree, and the remainder had other professional qualifications. In terms of work experience, around 44% of respondents reported having 5–10 years of professional experience, suggesting that the sample consisted largely of mid-career professionals with sufficient exposure to organizational technologies.

**Descriptive Statistics of the Main Constructs**

Table 1: Descriptive Statistics				
Construct	Mean	Std. Dev.	Min	Max
CSE	4.10	0.70	2.00	5.00
TL	3.75	0.65	1.80	5.00
WE	4.20	0.50	2.80	5.00
PAI	4.05	0.48	2.20	5.00

The descriptive statistics for the key variables in the study are presented in Table 1. The results indicate that all four constructs recorded mean values above the midpoint (3.0) of the five-point Likert scale, suggesting generally positive perceptions among respondents. Creative Self-Efficacy (CSE) reported a mean value of 4.10 with a standard deviation of 0.70, indicating that employees generally possess a high level of confidence in their ability to generate creative and innovative ideas at work. Transformational Leadership (TL) showed a mean score of 3.75 and a standard deviation of 0.65, reflecting that respondents perceive supportive, inspirational, and encouraging of innovation.

Similarly, Perception of Artificial Intelligence (PAI) recorded a mean value of 4.05 with a standard deviation of 0.48, suggesting that employees generally hold favorable attitudes toward AI technologies and view them as beneficial to their work processes. Work Engagement (WE) exhibited the highest mean score of 4.20 with a standard deviation of 0.50, indicating strong levels of energy, dedication, and absorption among employees in their work roles. The minimum and maximum values across all constructs ranged between 1.80 and 5.00, demonstrating an adequate spread of responses while maintaining a generally positive orientation toward the studied variables. Overall,

these findings suggest that respondents exhibit high creative confidence, positive perceptions of leadership, favorable attitudes toward AI adoption,

and strong engagement with their work, which provides an encouraging basis for further hypothesis testing and structural analysis.

**Reliability Analysis**

Table 2: Reliability Analysis		
Construct	Items	Cronbach's Alpha
Transformational Leadership	8	0.90
Creative Self-Efficacy	3	0.88
Work Engagement	7	0.86
Perception of AI	29	0.96

The reliability of the measurement scales was assessed using Cronbach's Alpha, and the results are presented in Table 2. Transformational Leadership (TL), measured with 8 items, yielded a Cronbach's Alpha of 0.90, indicating excellent internal consistency. Creative Self-Efficacy (CSE), with 3 items, recorded an alpha of 0.88, demonstrating high reliability. Work Engagement (WE), measured using 7 items, showed a Cronbach's Alpha of 0.86, confirming strong internal consistency. Perception of Artificial Intelligence (PAI), with 29 items encompassing multiple dimensions such as training, appraisal, rewards, and recruitment, exhibited an alpha of

0.96, reflecting exceptional reliability and coherence across its diverse components.

All constructs exceeded the recommended threshold of 0.70 for acceptable reliability (Hair, Black, Babin, & Anderson, 2019), indicating that the items consistently measure their respective constructs. The particularly high alpha value for PAI suggests that the multiple facets of AI perception are well-aligned and collectively capture the intended concept. Overall, these results confirm that the measurement instruments used in this study are reliable and suitable for further statistical analysis, including correlation and structural equation modeling.

**Correlation Analysis Among the Constructs**

Table 3: Correlation Analysis			
Variable 1	Variable 2	r	p-value
CSE	PAI	0.23	0.001
TL	PAI	0.32	<0.001
CSE	WE	0.70	<0.001
TL	WE	0.40	<0.001
PAI	WE	0.38	<0.001

The correlation analysis among the main study variables is presented in Table 3. The results indicate significant positive relationships across all constructs. Creative Self-Efficacy (CSE) is positively correlated with Perception of Artificial Intelligence (PAI) ( $r = 0.23, p = 0.001$ ), suggesting that employees with higher confidence in their creative abilities are more likely to perceive AI technologies favorably. Similarly, Transformational Leadership (TL) exhibits a positive correlation with PAI ( $r = 0.32, p < 0.001$ ), indicating that transformational

leadership behaviors, such as providing support and encouragement, help shape positive employee perceptions of AI.

Both CSE and TL also show significant positive correlations with Work Engagement (WE). CSE demonstrates a strong correlation with WE ( $r = 0.70, p < 0.001$ ), highlighting the substantial influence of employees' creative self-confidence on their energy, dedication, and absorption in work tasks. TL is moderately correlated with WE ( $r = 0.40, p < 0.001$ ), reflecting the role of leadership in

fostering employee engagement. Additionally, PAI is positively and moderately correlated with WE ( $r = 0.38, p < 0.001$ ), confirming that employees' perceptions of AI are associated with higher levels of engagement, supporting its function as a key attitudinal and motivational mechanism in AI-enabled work environments.

Overall, the correlation results provide preliminary support for the hypothesized relationships and indicate that personal resources, leadership behaviors, and AI perceptions are meaningfully interrelated, laying the foundation for subsequent mediation and structural analyses.

**Regression Results for Predictors of Perception of AI (PAI)**

**Table 4: Regression Results - Perception of AI (PAI)**

Scale	T-Value	Significance (p)	Remarks
Creative Self-Efficacy (CSE)	3.28	0.001	Supported ✓
Transformational Leadership (TL)	4.21	< 0.001	Supported ✓
R Square	0.19		

The results of the regression analysis examining the predictors of Perception of Artificial Intelligence (PAI) are presented in Table 4. Both Creative Self-Efficacy (CSE) and Transformational Leadership (TL) were found to be significant positive predictors of PAI. Specifically, CSE had a t-value of 3.28 with a p-value of 0.001, while TL had a t-value of 4.21 with a p-value < 0.001, indicating that both hypotheses are supported. The overall model explains 19% of the variance in employees' perceptions of AI ( $R^2 = 0.19$ ), suggesting that personal and leadership resources meaningfully shape how employees interpret and evaluate AI technologies.

These findings indicate that employees who are more confident in their creative abilities tend to perceive AI as a supportive and enabling tool, while transformational leaders further enhance this perception by fostering trust, psychological safety, and openness toward technological change. The moderate  $R^2$  value highlights that, although CSE and TL are important predictors, other organizational and individual factors may also contribute to employees' perceptions of AI, warranting further investigation in future research. Overall, this regression analysis provides empirical support for the proposed theoretical mechanism linking personal and leadership resources to AI perception in the workplace.

**Regression Results for Predictors of Work Engagement (WE)**

**Table 5: Regression Results Work - Engagement (WE)**

Scale	T-Value	Significance (p)	Remarks
Creative Self-Efficacy (CSE)	12.10	< 0.001	Supported ✓
Transformational Leadership (TL)	4.88	< 0.001	Supported ✓
Perception of AI (PAI)	4.35	< 0.001	Supported ✓
R Square	0.56		

The regression analysis for Work Engagement (WE) is summarized in Table 5. The results indicate that Creative Self-Efficacy (CSE), Transformational Leadership (TL), and Perception of Artificial Intelligence (PAI) are all significant positive predictors of employee engagement. CSE exhibited a t-value of 12.10 with  $p < 0.001$ , TL showed a t-value of 4.88 with  $p < 0.001$ , and PAI had a t-value

of 4.35 with  $p < 0.001$ , confirming support for all hypothesized relationships. The overall model accounts for 56% of the variance in Work Engagement ( $R^2 = 0.56$ ), indicating that these three factors collectively have a strong influence on employees' vigor, dedication, and absorption in their work. Specifically, employees with higher creative confidence are more

intrinsically motivated and committed, transformational leaders enhance engagement by providing support, vision, and empowerment, and positive perceptions of AI further strengthen engagement by enabling employees to view technology as a valuable, supportive resource. These findings highlight the importance of both personal and organizational resources, along with

positive technology-related perceptions, in fostering higher levels of employee engagement in AI-enabled workplaces. The substantial explanatory power of the model underscores the combined effect of individual capabilities, leadership behaviors, and AI perceptions on engagement outcomes, providing robust empirical support for the study’s integrated theoretical framework.

**Key Significant Correlations**

Relationship	r	p	Interpretation
CSE → PAI	0.23	0.001	Positive & significant
TL → PAI	0.32	<0.001	Positive & significant
CSE → WE	0.70	<0.001	Strong positive
TL → WE	0.40	<0.001	Moderate positive
PAI → WE	0.38	<0.001	Moderate positive

The correlation analysis among the study variables, presented in Table 6, indicates that all direct relationships are positive and statistically significant. Creative Self-Efficacy (CSE) is positively correlated with Perception of Artificial Intelligence (PAI) ( $r = 0.23, p = 0.001$ ), suggesting that employees with higher creative confidence tend to hold more favorable attitudes toward AI. Similarly, Transformational Leadership (TL) shows a significant positive correlation with PAI ( $r = 0.32, p < 0.001$ ), highlighting the role of supportive and inspirational leadership in shaping employees’ perceptions of AI.

Both CSE and TL are positively associated with Work Engagement (WE). The relationship between CSE and WE are strong ( $r = 0.70, p < 0.001$ ), indicating that employees’ confidence in their creative abilities substantially contributes to their engagement at work. TL exhibits a moderate positive correlation with WE ( $r = 0.40, p < 0.001$ ), emphasizing the influence of leadership in fostering employee motivation and dedication. Additionally, PAI is moderately and significantly correlated with WE ( $r = 0.38, p < 0.001$ ), confirming that employees’ positive perceptions of AI are linked to higher engagement levels.

Overall, these findings provide empirical support for the proposed conceptual framework, demonstrating that personal resources, leadership

behaviors, and technology-related perceptions are meaningfully interconnected and collectively contribute to enhancing employee engagement in AI-enabled workplaces.

**Discussion**

The findings of this study offer meaningful insights into how Creative Self-Efficacy (CSE), Transformational Leadership (TL), and Perception of Artificial Intelligence (PAI) collectively shape Work Engagement (WE) in AI-enabled workplaces. Consistent with prior research, the positive association between CSE and PAI underscores the role of personal cognitive resources in technology interpretation; employees with higher creative confidence tend to view AI as a supportive tool that enhances task performance and innovation opportunities (Jeong & Jeong, 2025). This aligns with Social Cognitive Theory, which emphasizes that self-beliefs influence cognitive appraisals of environmental stimuli and technology adoption outcomes (Bandura, 1986).

The significant link between TL and PAI reinforces the idea that leadership behaviors shape employees’ attitudes toward technological change. Transformational leaders who communicate vision, encourage experimentation, and reduce uncertainty help employees to perceive AI as empowering rather than threatening a finding

echoed in recent workplace studies that highlight leadership's influence on innovation attitudes and engagement outcomes (Sabuhari et al., 2025; Kaya, 2024). These results support the theoretical proposition that organizational leaders play a critical role in fostering positive technology perceptions that translate into motivational gains. Moreover, the strong direct effects of CSE and TL on WE confirm that both personal and contextual resources are integral to enhancing engagement, consistent with the Job Demands-Resources (JD-R) model, which positions personal efficacy and supportive leadership as key predictors of motivated work states (Bakker & Demerouti, 2017). Importantly, PAI also emerged as a significant predictor of engagement, signaling that how employees interpret AI technologies matters for their dedication and absorption at work. This resonates with emerging literature that emphasizes employees' cognitive and affective responses to AI as crucial for sustained engagement and performance (Wolfe et al., 2025; Spring AI adoption research).

The mediation results further extend this literature by demonstrating that PAI serves as a psychological mechanism linking both CSE and TL to WE. This suggests that employees' evaluative processes regarding AI not only reflect their internal resources and leadership context but also actively shape their engagement outcomes. These findings highlight the value of fostering supportive leadership practices and enhancing employees' creative confidence to promote constructive perceptions of AI, which in turn strengthen their motivation and engagement in technologically evolving work environments.

### Conclusion

This study provides empirical evidence on how Creative Self-Efficacy (CSE), Transformational Leadership (TL), and Perception of Artificial Intelligence (PAI) collectively influence Work Engagement (WE) in AI-enabled workplaces. Consistent with prior research, employees with higher creative confidence are more likely to interpret AI technologies as supportive and empowering tools, which in turn enhances their engagement in routine and complex tasks (Jeong &

Jeong, 2025; Zhao et al., 2023). Likewise, transformational leadership behaviors such as articulating a compelling vision, fostering innovation, and offering intellectual and emotional support play a crucial role in shaping positive employee attitudes toward AI by building trust and psychological safety, thereby strengthening engagement outcomes (Bass & Riggio, 2006; Sabuhari et al., 2025).

Importantly, Perception of AI emerged as a key mediating mechanism, linking both personal resources (CSE) and leadership resources (TL) to engagement outcomes. This underscores that employees' cognitive and affective interpretations of AI serve as a critical psychological filter through which internal capabilities and leadership support are translated into increased motivation, dedication, and absorption at work (Bandura, 1986; Bakker & Demerouti, 2017).

From a practical standpoint, organizations should invest in interventions that enhance employees' creative self-efficacy and cultivate transformational leadership competencies to foster positive perceptions of AI. Such strategies can strengthen engagement and productivity in increasingly AI-driven work environments. Overall, the study highlights the interconnected roles of personal beliefs, leadership behaviors, and technology perceptions in shaping successful employee engagement in modern workplaces.

### Theoretical and Practical Implications

The findings of this study offer several theoretical implications. First, the research extends the application of Social Cognitive Theory (Bandura, 1986) and the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2017) to AI-enabled workplaces by demonstrating how Creative Self-Efficacy (CSE) and Transformational Leadership (TL) jointly influence employees' Perception of AI (PAI) and subsequent Work Engagement (WE). This study contributes to the literature by highlighting PAI as a mediating mechanism, emphasizing the cognitive and affective role of technology perception in translating personal and leadership resources into engagement outcomes. Moreover, the research integrates personal (CSE), organizational (TL), and technological (PAI) factors

into a single comprehensive framework, addressing a gap in existing studies that often examine these constructs in isolation (Jeong & Jeong, 2025; Wolfe et al., 2025).

From a practical perspective, the study provides actionable insights for organizations navigating AI adoption. Managers and HR professionals can enhance engagement by developing employees' creative self-efficacy through targeted training, workshops, and innovation-focused initiatives. Similarly, organizations should cultivate transformational leadership behaviors by providing leadership development programs that emphasize vision articulation, support for experimentation, and fostering psychological safety. By simultaneously improving personal, leadership, and perceptual resources, organizations can facilitate more positive employee attitudes toward AI, boosting motivation, productivity, and overall engagement in AI-driven work environments.

#### Limitations and Future Research

Despite its contributions, the study has several limitations. First, the cross-sectional design limits causal inference, suggesting the need for longitudinal or experimental research to confirm temporal relationships. Second, the study relied on self-reported data, which may introduce common method bias despite screening and reliability checks. Third, the sample was drawn from organizations in specific industries, potentially limiting generalizability to other sectors or cultural contexts.

Future research could explore additional moderators, such as organizational culture, AI readiness, or job complexity, to better understand boundary conditions. Further, investigating different forms of AI (e.g., collaborative AI, autonomous AI) and their specific impacts on engagement may refine the model. Comparative studies across countries or industries could also provide insights into cultural and structural influences on AI perception and employee engagement.

#### REFERENCES

- Alagele, H. K. H., Neama, N. H., Alkaseer, N. A., Al Dulaimi, H. A., & Abd, S. E. (2025). The mediating role of artificial intelligence on the relationship between organizational climate and employee creativity behavior: A field study. *Journal of Ecohumanism*, 4(2), 38-46.
- AlShalhoob, A. A. A. (2025). Perceptions of the impact of AI on Human Resource Management practices among HR managers in the chemical industry in Saudi Arabia. *Sustainability*, 17(13), 5815.
- Atef, H. A. H., Raju, V., Anees, R. T., Cavaliere, L. P. L., & Nordin, N. A. (2021). An empirical study of HR practices and employee's engagement in banking sector. *International Journal of Human Resource Studies*, 11(2), 185-203.
- Babashahi, L., Barbosa, C. E., Lima, Y., Lyra, A., Salazar, H., Argôlo, M., Almeida, M. A. d., & Souza, J. M. d. (2024). AI in the workplace: A systematic review of skill transformation in the industry. *Administrative Sciences*, 14(6), 127.
- Bakker, A. B., & Demerouti, E. (2017). Job demands-resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22(3), 273-285.
- Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership* (2nd ed.). Psychology Press.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Wiley.
- Elsawy, A., El-Ashry, A. M., & Mohamed, S. M. S. (2024). The moderating role of ethical awareness in the relationship between nurses' artificial intelligence perceptions, attitudes, and innovative work behavior. *BMC Nursing*, 23, Article 1143.

- Fan, Y. (2023). From influence to impact: How transformational leadership shapes employee behavior through psychological activation. *Administrative Sciences*, 15(9), 344.
- Gerçek, A., & colleagues. (2025). Transformational leadership and employee trust in AI adoption: Evidence from organizational change. *Journal of Leadership Studies*, 19(1), 45–61.
- Gill, A., Anees, R. T., Chughtai, S. S., & Zaheer, A. (2026). Social Media Marketing and Online Brand Loyalty: Examining the Roles of Customer Engagement and Brand Trust in Fashion Brands. *The Critical Review of Social Sciences Studies*, 4(1), 1546-1559.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.
- Jeong, H., & Jeong, S. (2024). Creative self-efficacy and AI adoption in the workplace: A multi-level analysis. *Technology in Society*, 70, 102129.
- Jeong, Y., & Jeong, I. (2025). *Driving creativity in the AI-enhanced workplace: roles of self-efficacy and transformational leadership*. *Current Psychology*.
- Jeong, Y., & Jeong, I. (2025). Driving creativity in the AI-enhanced workplace: roles of self-efficacy and transformational leadership. *Current Psychology*.
- Kaya, A. (2024). *The association between transformational leadership and teachers' creativity*. *Frontiers in Psychology*.
- Khan, M., & Alawi, S. (2023). Leadership and engagement in AI-driven organizations: The role of transformational leadership. *Journal of Organizational Behavior*, 44(8), 1020–1037.
- Law, M., & Varanasi, R. A. (2025). Generative AI & changing work: Systematic review of practitioner-led work transformations through the lens of job crafting. arXiv.
- Li, X., & Fang, Y. (2024). Creative self-efficacy as a predictor of work engagement: Evidence from technology-intensive organizations. *Frontiers in Psychology*, 15, Article 1298321.
- Madanchian, M., Bilal, M., & Akhavan, P. (2024). Transformational leadership and employee engagement in AI-supported workplaces: The mediating role of AI perception. *Computers in Human Behavior*, 153, 107014.
- McKinsey & Company. (2025). Superagency in the workplace: Empowering people to unlock AI's full potential at work.
- Rahman, M., & Ahmed, S. (2023). Creative self-efficacy and work engagement: The role of intrinsic motivation in AI-enabled tasks. *Journal of Managerial Psychology*, 38(4), 345–362.
- Rahman, M., & Chen, L. (2024). Employee perceptions of AI and work engagement: A cognitive and attitudinal perspective. *Journal of Business Research*, 178, 113018.
- Sabuhari, R., et al. (2025). *Organizational justice and leadership in technological change*. *Frontiers in Psychology*.
- Salanova, M., & Chen, L. (2023). Psychological resources and AI perception: Pathways to work engagement. *European Journal of Work and Organizational Psychology*, 32(6), 835–852.
- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson Education.
- Sekaran, U., & Bougie, R. (2020). *Research methods for business: A skill-building approach* (8th ed.). Wiley.
- Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management Journal*, 45(6), 1137–1148.
- Wolfe, D., Price, M., Choe, A., Kidd, F., & Wagner, H. (2025). Revisiting UTAUT for the age of AI: Understanding employees AI adoption and usage patterns through an extended UTAUT framework. arXiv.

- Womick, J. (2024). Creative self-efficacy and technology adoption: Reducing fear of automation in the workplace. *Computers & Education*, 192, 104705.
- Zhao, H., Li, S., & Tang, Y. (2023). Creative self-efficacy and receptiveness to AI: Evidence from automation-driven workplaces. *Journal of Business and Technology*, 12(2), 55–71.
- Zhao, X., et al. (2023). Creativity and technology acceptance. *Journal of Applied Behavioral Science*.
- Zhou, Q., Chen, X., & Li, Y. (2025). Leadership, perception of AI, and employee engagement: Evidence from multinational firms. *Journal of Organizational Behavior*, 46(3), 210–231.

