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**THE INFLUENCE OF EMPOWERING LEADERSHIP AND ARTIFICIAL  
INTELLIGENCE ON INNOVATIVE BEHAVIOR MEDIATED BY  
EMPLOYEE ENGAGEMENT****Viktoria Mistika Animus<sup>1</sup>****Universitas Trisakti, Jakarta, Indonesia**[022002101223@std.trisakti.ac.id](mailto:022002101223@std.trisakti.ac.id)**Feivel Rick Cavanaugh Huang<sup>2</sup>****International Trade and Economic, SIAS University, Xinzheng, China**[feivelrick12345@gmail.com](mailto:feivelrick12345@gmail.com)**Netania Emilisa<sup>3</sup>****Universitas Trisakti, Jakarta, Indonesia**[netania@std.trisakti.ac.id](mailto:netania@std.trisakti.ac.id)

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**Abstract**

This study aims to analyze the influence of empowering leadership and artificial intelligence on innovative behavior with employee engagement as a mediating variable among state-owned banks employees in Central Jakarta. The research design refers to prior studies and employs a descriptive quantitative approach using hypothesis testing. Data were collected cross-sectionally from October to November 2025 through an online questionnaire, generating both primary and secondary data. Purposive sampling was applied with criteria targeting millennial employees working in the banking sector, resulting in a total sample of 150 respondents. The findings indicate that empowering leadership, artificial intelligence, employee engagement, and innovative behavior are all perceived at a moderately high level. The results further reveal that empowering leadership positively influences both innovative behavior and employee engagement, whereas artificial intelligence does not positively influence innovative behavior but does positively influence employee engagement. Additionally, employee engagement has a positive effect on innovative behavior and fully mediates the relationship between empowering leadership and artificial intelligence toward innovative behavior. These findings highlight the critical role of employee engagement in enhancing the impact of leadership and technological adoption on employees' innovative behavior.

**Keywords:** Empowering Leadership, Artificial Intelligence, Employee Engagement, Innovative Behavior



## INTRODUCTION

The rapid digital transformation demands organizations to adapt by enhancing human resource competencies, as human creativity, analytical ability, and innovation remain the main sources of competitive advantage despite technological advancements. Faidz & Kuswinarmo (2024) emphasize the importance of technology-based digital training to improve workforce adaptability. Wardoyo et al. (2025) state that digital transformation in human resource management requires work flexibility and digital literacy as the foundation of employee development. Similarly, Judijanto et al. (2025) find that the digital revolution shifts HR's role from administrative functions to strategic partnership, contributing significantly to organizational productivity. Therefore, human resource development remains a central focus for the success of digital transformation.

The financial industry is one of the sectors most affected by technological developments, with Indonesia's banking digitalization rapidly accelerating through the use of AI, automated services, and digital onboarding. OJK (2023) reports that more than 82% of banking transactions are now conducted digitally, requiring employees to be flexible, technologically literate, and capable of delivering innovative services. Annisa et al. (2024) emphasize that digital transformation affects employee performance, with self-efficacy being a crucial factor in successful adaptation. Anjani et al. (2025) add that technological innovation and digital-era job challenges have a major influence on banking employee performance. With intense competition among state-owned banks, digital banks, fintech, and private financial institutions, the quality of human resources becomes the most decisive factor in the success of digital transformation in the banking sector.

Employee engagement and the utilization of AI are essential factors influencing organizational effectiveness because both affect employees' ability to stay connected and continuously innovate. Low engagement can hinder the emergence of new ideas and the digital adaptation process. Zhang et al. (2025) find that AI can enhance innovative behaviour by increasing self-efficacy. Agaoglu et al. (2025) state that positive perceptions of AI use can increase job satisfaction and encourage innovative work behaviour. Sari et al. (2023) explain that AI awareness supports increased work engagement through improved task



management. Emilisa (2024) adds that dimensions of AI awareness contribute to sustainable employability, which strengthens engagement. Meanwhile, Hartomo & Yulianti (2024) show that empowering leadership boosts employee motivation and confidence, thereby promoting innovation.

Digital banking services in state-owned banks have grown rapidly, with more than 80% of transactions conducted digitally according to OJK (2023), a figure comparable to private banks and fintech. The Indonesian Digital Financial Report (2023) notes that more than 78% of customers now prefer digital services over direct interaction, while Bank Indonesia (2023) reports that digital banking transactions grew by more than 20% in the last year, with state-owned banks contributing the most. This increase in technology adoption requires banking staff to possess strong adaptability, understand AI-based systems, and demonstrate innovative behaviour in service delivery. Conversely, employees' inability to keep up with digital developments may undermine service quality, performance effectiveness, and the competitiveness of state-owned banks in the highly competitive financial industry.

Digital Service Usage Level - OJK 2023

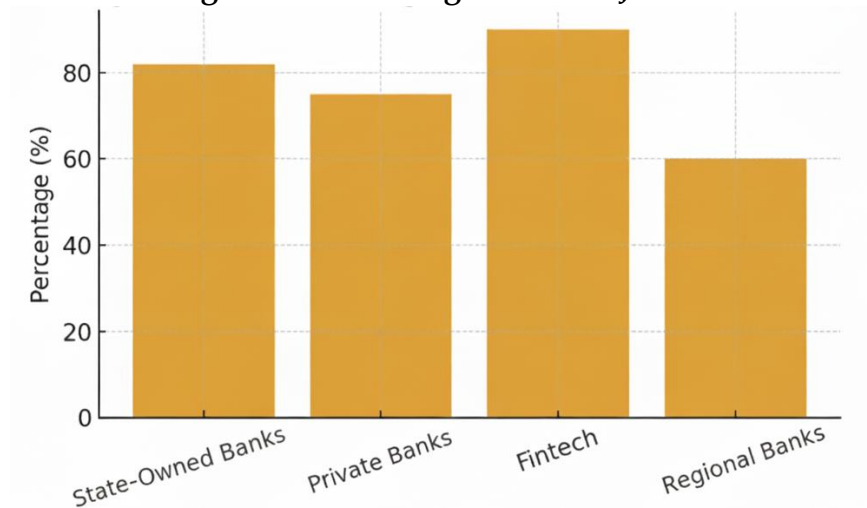


Figure 1.  
Digital Service Usage Level Diagram  
Source: (OJK, 2023)

Digital transformation is strongly felt by state-owned banks employees in Central Jakarta, who face high transaction volumes and demands for fast service.



However, Purwanto et al. (2025) found that some employees are still struggling to operate newly implemented digital systems. Cahyaning et al. (2025) highlighted a gap between digitalization and employees' mental readiness to innovate, while Utomo et al. (2024) emphasized the importance of organizational readiness and predictive analytics understanding as key factors for successful digital adaptation. This confirms that innovation does not automatically increase simply because technology changes.

Innovative behaviour has a major impact on organizational effectiveness, as explained by Handayani and Pendrian (2023), including work efficiency and the achievement of strategic goals. When supported by work motivation and organizational support, its influence becomes stronger in overcoming innovation barriers (Sitanaya & Rahardjo, 2024). Nathaniel and Dewi (2024) added that work autonomy, task structuring, and work engagement can enhance service quality through innovative behaviour.

Innovative behaviour is influenced by factors such as organizational support and leadership style, particularly empowering leadership, which encourages employees to express new ideas (Ghassani & Indriati, 2023). Erdavit et al. (2023) explained that empowering leadership increases motivation and self-efficacy, making employees more confident to innovate. Raditia and Amalia (2025) emphasized that innovative behaviour can grow through work engagement and a knowledge-sharing culture stimulated by this leadership style.

Empowering leadership is important in modern workforce management because it provides trust, support, and freedom in decision-making. This increases employee proactiveness and innovation (Ye et al., 2022; Zhou et al., 2024; Yadav et al., 2023) added that empowering leaders create an inclusive work environment that strengthens the sustainable development of innovative behaviour.

As a model that emphasizes employee empowerment, empowering leadership enhances employees' sense of ownership and self-confidence, making them more creative and productive (Sari et al., 2022; Mardiani et al., 2024). According to Hartomo and Yulianti (2024), this leadership style also fosters a collaborative and innovative work environment, which strengthens its connection to innovative behaviour.

Beyond leadership, the use of artificial intelligence (AI) also becomes an important factor driving innovation. Nugroho et al. (2024) argue that artificial intelligence (AI) is not merely a tool for automation but functions as a strategic decision-support system that assists organizations in generating more accurate,



data-driven, and innovative solutions. AI technology enables more flexible idea experimentation (Zhang et al., 2025) and creates an innovation-oriented work culture by improving analytical skills and automation (Murire, 2024).

Artificial intelligence (AI) not only improves efficiency but also enhances employee engagement by shifting the focus of human resource management from routine tasks to strategic initiatives, such as the use of predictive analytics and personalized employee experiences that strengthen the connection between AI use and innovative behavior (Sundari et al., 2024). Mishra (2024) asserted that highly engaged employees are more creative in utilizing technology. Emilisa et al. (2024) added that AI increases work engagement by reducing administrative burdens, allowing employees to focus on innovation and strategic ideas.

Employee engagement reflects employees' emotional, cognitive, and physical connection to their work. Recent studies indicate that high employee engagement encourages creativity and innovative work behavior through mechanisms such as knowledge sharing and active involvement in work processes (Elamin et al., 2024). Furthermore, employee engagement strengthens employees' willingness to share knowledge and actively contribute to organizational processes, reflecting a sense of collective responsibility and commitment that supports innovative work behavior (Anasya & Suhana, 2024). Engagement also directly contributes to the emergence of innovative behaviour by mediating the influence of motivation and organizational familiarity on employees' innovation capacity (Satrianny et al., 2025).

This study differs from previous research, such as Alzeiby et al. (2025), which examined 208 HR professionals with employee engagement and employee experience as dependent variables. Another study by Gil et al. (2025) involved employees from various public sectors in Spain. In contrast, this research focuses on state-owned banks employees in Central Jakarta, with employee engagement serving as a mediating variable between empowering leadership and AI on innovative behaviour.

State-owned banks in Central Jakarta were chosen because they play a strategic role in national financial stability and are located in the centre of economic and governmental activity. According to BPS DKI Jakarta (2024), this area has the highest number of financial institutions. With high pressure and demands for innovation, state-owned banks employees in Central Jakarta are the right subjects for examining how technology, leadership, and engagement influence innovative behaviour.



## LITERATURE REVIEW

### **Empowering Leadership**

Empowering leadership is an approach in which leaders grant authority to employees, encourage intrinsic motivation, and instil a sense of work meaningfulness and confidence in their performance (Kong et al., 2024). Empowering leadership is also defined as a process of sharing power in which autonomy and responsibility are delegated to employees through specific leader behaviours, enabling them to strengthen internal motivation and achieve optimal work outcomes (Rukun & Sugiarto, 2024). Furthermore, empowering leadership enhances intrinsic motivation by providing employees with freedom in task execution, demonstrating trust in their capabilities, and emphasizing the importance of their contributions, which ultimately supports innovative and proactive behaviour (Ramadhani & Thoha, 2025).

### **Artificial Intelligence (AI)**

Artificial Intelligence (AI) is a system or technology designed to perform tasks that require human intelligence, such as decision-making, information processing, and learning from experience, and can be utilized without requiring users to understand its technical complexity (Jung, 2025). AI is also defined as computational systems that replicate human cognitive processes, including learning, reasoning, adaptation, and problem-solving, to support human intellectual activities (Mariani & Dwivedi, 2024). Furthermore, in the context of generative Artificial Intelligence (AI), it refers to systems capable of generating new data such as text, sound, or images based on patterns derived from previous data, thereby mimicking human capabilities in understanding and creating information (Sugiono, 2024).

### **Innovative Behaviour**

Innovative behaviour refers to employees' intentional actions in introducing or applying new ideas, products, processes, and procedures within their job roles to generate benefits for the organization (Srirahayu et al., 2023). It encompasses work behaviours related to idea generation, idea promotion, and the implementation of new ideas aimed at improving organizational processes, products, or services (Wechtler & Suseno, 2025).

### **Employee Engagement**

Employee engagement is a positive psychological state experienced by employees in the work context, characterized by vigor (levels of energy and mental resilience at work), dedication (strong involvement and enthusiasm toward the job), and absorption (being fully immersed in work with feelings of



joy) (Lee et al., 2024). It is also understood as a psychological construct involving positive, meaningful work-related conditions in which employees demonstrate active involvement through vigor, dedication, and absorption (Zhixin et al., 2024).

**RESEARCH METHOD**

This study employs a quantitative descriptive approach to examine the relationships among artificial intelligence, empowering leadership, employee engagement, and innovative behavior among employees of state-owned banks in Central Jakarta. The research uses a cross-sectional design conducted in a natural work setting, with data collected once during October–November 2025. The population consisted of employees of state-owned banks in Central Jakarta, selected using purposive sampling based on criteria relevant to the research objectives. A total of 150 respondents participated in the study, meeting the minimum sample size requirements. Data were collected using a Likert-scale questionnaire comprising 24 indicators across four variables.

The general characteristics of the respondents are presented as follows:

**Table 1.**

**Characteristics of Respondents (n = 150)**

<b>Basis</b>	<b>Categories</b>	<b>Frequencies</b>	<b>Percentage (%)</b>
Institution	BNI	33	22.0
	BRI	50	33.3
	Mandiri	39	26.0
	BTN	28	18.7
Gender	Male	66	44.0
	Female	84	56.0
Age	21–30 years	60	40.0
	31–40 years	47	31.3
	41–50 years	28	18.7
	51–60 years	15	10.0
Length of Service	1–5 years	70	46.7
	6–10 years	38	25.3
	11–15 years	12	8.0
	16–20 years	22	14.7



Basis	Categories	Frequencies	Percentage (%)
	21–25 years	8	5.3
Educational Level	Diploma (D3)	38	25.3
	Applied Bachelor (D4)	19	12.7
	Bachelor’s Degree (S1)	80	53.3
	Master’s Degree (S2)	9	6.0
	Doctoral Degree (S3)	4	2.7

The validity and reliability of the research instruments were examined to ensure measurement accuracy and consistency. Validity was assessed using factor loading analysis, with values above 0.45 considered acceptable, while reliability was evaluated using Cronbach’s Alpha, where values exceeding 0.60 indicated adequate internal consistency. All indicators across the four variables met the validity and reliability criteria. Data were collected through online questionnaires and processed through data checking, coding, cleaning, and tabulation. Quantitative data analysis was conducted using SPSS for descriptive statistics and AMOS for Structural Equation Modeling (SEM), including evaluation of the measurement and structural models as well as overall model fit indices. Hypothesis testing assessed both direct and mediated effects of empowering leadership and artificial intelligence on innovative behavior through employee engagement.

Following the SEM analysis, the results were interpreted to examine the mediating role of employee engagement in the relationship between empowering leadership, artificial intelligence, and innovative behavior. The goodness-of-fit indices indicated that the proposed model was acceptable, allowing meaningful interpretation of the structural relationships. The findings were synthesized to explain how leadership support, AI reliability, and employee engagement jointly influence innovative behavior, thereby contributing empirical evidence to the literature on leadership, technology adoption, and employee behavior in state-owned banks.

## RESULTS AND DISCUSSION

### Hypothesis Testing Results

The results of the hypothesis testing aim to examine whether there is a positive effect of empowering leadership on innovative behaviour, a positive



effect of artificial intelligence on innovative behaviour, a positive effect of employee engagement on innovative behaviour, a positive effect of empowering leadership on employee engagement, a positive effect of artificial intelligence on employee engagement, a positive effect of empowering leadership on innovative behaviour mediated by employee engagement, and a positive effect of artificial intelligence on innovative behaviour mediated by employee engagement.

The results of this analysis provide an indication of whether there is a significant relationship between the independent variables and the dependent variables within the SEM framework used in this study. The discussion of each research hypothesis is presented as follows:

**Table 2.**  
**Hypothesis Test Results**

Hypothesis Description	Estimate (β)	p-value (≤0.05)	Decision
Empowering leadership has a positive effect on innovative behaviour	0,231	0,017	H1 supported
Artificial intelligence has a positive effect on innovative behaviour	0,154	0,091	H2 not supported
Employee engagement has a positive effect on innovative behaviour	0,287	0,003	H3 supported
Empowering leadership has a positive effect on employee engagement	0,403	0,000	H4 supported
Artificial intelligence has a positive effect on employee engagement	0,206	0,029	H5 supported
Direct Effect: Empowering Leadership → Innovative Behaviour	0,231	0,009	
Indirect Effect (mediated by Employee Engagement): Empowering Leadership → Innovative Behaviour	0,116	0,008	H6 supported
Direct Effect: Artificial Intelligence → Innovative Behaviour	0,154	0,046	H7 supported
Indirect Effect (mediated by Employee Engagement): Artificial Intelligence → Innovative Behavior	0,059	0,040	

Source: Processed Data Using AMOS



## Discussion

### **H1: Empowering leadership has a positive effect on innovative behaviour**

Based on the hypothesis testing for the first hypothesis, it was found that there is a significant positive effect of empowering leadership on innovative behavior among state-owned banks employees in Central Jakarta (Erdavit et al., 2023). In other words, employees feel that when empowering leadership is implemented effectively by their leaders, they become more encouraged to display innovative behaviour in their work (Raditia & Amalia, 2025). This finding indicates that empowering leadership can be an effective strategy for enhancing employees' innovative capabilities, as leaders who provide autonomy, trust, and support are able to stimulate employees' willingness to generate and implement new ideas (Hartomo & Yulianti, 2024). The implication is that organizations need to pay greater attention to developing leaders' competencies in applying empowering leadership in order to create a work environment that supports initiative-taking, knowledge sharing, and innovative behaviour among employees (Yulita et al., 2024).

### **H2: Artificial intelligence does not have a positive effect on innovative behaviour**

Based on the hypothesis testing for the second hypothesis, the results show that artificial intelligence does not have a significant positive effect on innovative behaviour among state-owned banks employees in Central Jakarta (Zhang et al., 2025). In other words, employees perceive that the use of artificial intelligence in work processes has not directly encouraged the improvement of innovative behaviour (Zhao et al., 2022). This indicates that artificial intelligence is not yet an effective strategy for increasing employees' innovation capabilities in this context, particularly when employees' attitudes toward AI and organizational culture do not fully support its implementation (Al, 2025; Sari et al., 2025). The implication is that state-owned banks in Central Jakarta need to consider how AI implementation can be better integrated with human-centered work systems, learning opportunities, and psychological readiness to support the development of innovative behaviour among employees (Qian et al., 2025).

### **H3: Employee engagement has a positive effect on innovative behaviour**

Based on the hypothesis testing for the third hypothesis, it was found that employee engagement has a significant positive effect on innovative behaviour (Edsel & Harjanti, 2024). This means that employees feel more encouraged to demonstrate innovative behaviour when they have high engagement in their work, as engaged employees tend to show greater enthusiasm, initiative, and



willingness to generate new ideas (Ghani et al., 2023). This finding suggests that employee engagement can be an effective strategy to enhance employees' innovation capabilities within state-owned banking organizations in Central Jakarta, particularly when engagement functions as a mediating factor that strengthens employees' autonomy and learning orientation (Dinillah, 2025).

#### **H4: Empowering leadership has a positive effect on employee engagement**

For the fourth hypothesis, the results show a significant positive effect of empowering leadership on employee engagement among employees, indicating that leaders who delegate authority and encourage participation are able to strengthen employees' attachment to their work (Li et al., 2024). In other words, employees perceive that when leaders provide trust, autonomy, and psychological support, their psychological, emotional, and cognitive involvement in work increases, as empowering leadership enhances intrinsic motivation and meaningfulness at work (Desta & Mulie, 2024). This indicates that empowering leadership can be an important strategy for building stronger employee engagement, as it fosters motivation and reduces psychological withdrawal in the workplace (Ishfaq & Ali, 2023). The implication is that organizations need to strengthen leaders' empowering leadership competencies to create a work environment that enhances employees' enthusiasm, energy, and commitment, particularly through supportive and autonomy-enhancing leadership practices (Hou & Cai, 2024).

#### **H5: Artificial intelligence has a positive effect on employee engagement**

Based on the hypothesis testing for the fifth hypothesis, it was found that artificial intelligence has a positive and significant effect on employee engagement, indicating that AI adoption can enhance employees' psychological, emotional, and cognitive involvement in their work (Emilisa et al., 2025). This finding is consistent with evidence that the application of AI in work processes improves efficiency and work quality, thereby strengthening employee engagement (Widhi & Nilasari, 2025). Previous studies also show that the use of AI in human resource practices positively influences employee engagement by reducing workload complexity and supporting employees' focus on higher-value tasks (Malik, 2024). In addition, AI-driven HR systems have been found to enhance employee engagement through sustainable and supportive HR practices (Jia & Hou, 2024). The implication is that state-owned banks in Central Jakarta should implement AI in a supportive and adaptive manner to reinforce employee engagement and overall productivity.

**H6: Empowering leadership has a positive effect on innovative behaviour through the mediation of employee engagement**

Based on the hypothesis testing for the sixth hypothesis, it was found that empowering leadership positively affects innovative behaviour through the mediation of employee engagement, as empowering leaders encourage employees to feel more involved and motivated to contribute creatively (Jabid et al., 2025). In other words, empowering leadership not only directly enhances innovative behaviour but also creates psychological conditions that strengthen employees' emotional and cognitive engagement, which supports proactive and innovative work actions (Yadav et al., 2023). This heightened engagement motivates employees to demonstrate greater initiative and innovative work behaviour, particularly when leaders foster knowledge sharing and autonomy at work (Ghassani & Indriati, 2024). The implication is that state-owned banks in Central Jakarta need to strengthen leaders' competencies in applying empowering leadership to build a work climate that supports engagement and sustains innovative behaviour, even in dynamic organizational contexts (Hanandra & Pratiwi, 2025).

**H7: Artificial intelligence has a positive effect on innovative behaviour through the mediation of employee engagement**

Based on the hypothesis testing for the seventh hypothesis, it was found that artificial intelligence has a significant positive effect on innovative behaviour when mediated by employee engagement, as the use of AI enhances employees' involvement and motivation to contribute creatively at work (Gusti et al., 2024). In other words, employees perceive that effective AI utilization increases their engagement, which subsequently encourages innovative behaviour, particularly by enabling them to focus on higher-value and problem-solving tasks (Prentice et al., 2023). This finding indicates that AI can be an important strategy for enhancing employees' innovation capabilities, as employee engagement functions as a key mechanism linking AI implementation with positive work behaviours (Syarifudin et al., 2024). The implication is that state-owned banks in Central Jakarta should further optimize AI adoption to create a work environment that supports engagement, creativity, and innovation, especially in digitally adaptive work systems (Sadiqin & Hwihanus, 2025).



## CONCLUSION

The results of this study indicate that empowering leadership is the most consistent and significant factor in enhancing innovative behaviour among state-owned banks employees in Central Jakarta, both directly and indirectly through employee engagement. Leaders who provide autonomy, trust, and psychological support are able to strengthen employees' emotional and cognitive involvement, which in turn encourages initiative-taking and innovation. Employee engagement itself has a positive and significant effect on innovative behaviour, confirming its role as a key psychological mechanism in driving employee innovation. Meanwhile, artificial intelligence does not have a direct effect on innovative behaviour. However, AI positively influences employee engagement, which fully mediates its effect on innovative behaviour. This finding suggests that AI contributes to innovation only when it is able to enhance employees' involvement and meaningful engagement in their work. Based on these findings, state-owned banks in Central Jakarta are encouraged to strengthen empowering leadership practices and implement AI in a more human-centered and adaptive manner to foster employee engagement and support sustainable innovative behaviour.

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