



Leading with heart in Southeast Asia: Indonesian emotional intelligence and innovative work behavior in the age of AI

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ABSTRACT

Article History

Received: 3 November 2025

Revised: 10 February 2026

Accepted: 17 March 2026

Published: 1 October 2026

Keywords

Artificial intelligence
Emotional intelligence
Human-centered leadership
Innovative work behavior
Social information processing theory.

In this study, the relationships among Indonesian Emotional Intelligence (IEI), Human-centered Leadership (HCL), and Innovative Work Behavior (IWB), and how artificial intelligence (AI) moderates these relationships are explored. The research is founded on Goleman's EI Framework and Social Information Processing Theory (SIPT). In these theories, the impact of emotional, socio-relational, and technological cues on innovative behaviors in AI-infused work environments is investigated. The research framework uses a quantitative, cross-sectional design. The collected quantitative data were analyzed with Partial Least Squares Structural Equation Modeling (PLS-SEM). The research sample consisted of 684 employees from the cities of Greater Jakarta, Medan, Makassar, and Balikpapan in Indonesia. The research instrument was a set of validated culture-specific measures for IEI, HCL, IWB, and AI. The results indicated a positive effect of IEI on HCL. In turn, HCL fosters IWB. Nevertheless, overuse of AI negatively moderates the effects from IEI to HCL, as well as from HCL to IWB. The research is limited to cross-sectional designs with self-reported data on the actors' attitudes toward the variables investigated. The research should adopt a mixed-methods, longitudinal research design in the future to strengthen its authority to establish causality. The research is theoretically novel in incorporating AI as a context moderator for the theoretical aspects of the EI framework research mentioned above.

Contribution/Originality: This research advances the literature by combining Indonesian EI, Human-Centered Leadership, and IWB within an AI framework. Employing PLS-SEM alongside cultural indicators, it conceptualizes AI as a contextual moderator. It is one of the few studies in collectivist contexts demonstrating that excessive AI undermines human-centered approaches and culturally rooted innovation.

1. INTRODUCTION

The digital transformation, mostly driven by the use of machine learning, big data, and the automation of things using Artificial Intelligence (AI), has impacted the way organizations and individuals perform their tasks (Rick et al., 2024; Saranya & Anbu, 2025). With the ever-growing complexity and uncertainty of the workplace, organizations must turn to technology and ensure their employees adapt creatively and sustainably to these changes (Rick et al., 2024; Saranya & Anbu, 2025). As a result of this pressing issue, the use of Innovative Work Behavior (IWB) skills has emerged as a key requirement for maintaining the organization's competitive edge (Rick et al., 2024). The use of

IWB is the creation, exchange, and use of ideas, thereby enabling organizations to respond to change and challenges actively (Liu, Zhang, Xi, Liu, & Meng, 2024).

When innovation occurs at all levels of an organization, its success depends on the technology used and how well employees can manage their emotions and work together (Drigas, Papoutsis, & Skianis, 2023) and handle change positively (Liu et al., 2024). Therefore, innovation can be described as a social process that involves employees' emotions, relationships between employees, and leadership style (Yin, Jiang, & Niu, 2024; Zitar, Ali, & Islam, 2023).

One human ability consistently associated with innovation is emotional intelligence (Binsaeed, Yousaf, Grigorescu, Condrea, & Nassani, 2023). Emotional Intelligence (EI) is the ability to recognize (Goleman & Boyatzis, 2017), understand (Goleman & Boyatzis, 2017), use one's own emotions and other people's emotions effectively (Binsaeed et al., 2023; Mrisho & Mseti, 2024). This ability helps people turn their emotional experiences into positive actions (Andrabi & Rainayee, 2020; Mrisho & Mseti, 2024) that support creativity (Kundi, Aboramadan, Elhamalawi, & Shahid, 2021), improve problem-solving (Kundi et al., 2021), and encourage innovative behavior at work (Soares, Da Silva, Biyanto, Miswanto, & Winarno, 2024). Empirical studies indicate that EI contributes to IWB. EI supports IWB by fostering trust (Lee, Yeh, Yu, & Lin, 2023).

EI also improves the quality of communication among employees (Yang & Wang, 2024). In addition, EI strengthens psychological safety in the workplace (Aboramadan & Kundi, 2023; Sulistiyorini, Zahra, Hakim, & Ahmad, 2024). Finally, EI enhances employees' innovative behavior (Bii & Chelangat, 2025). People who handle their emotions well are better at managing work stress (Drigas et al., 2023) and technological changes (Achmad, Febriyani, Nzefa, Ahkim, & Rania, 2024; Liu et al., 2024). They are also more motivated (Mrisho & Mseti, 2024) and more willing to keep trying when learning or exploring new ideas (Bii & Chelangat, 2025; Rick et al., 2024; Saranya & Anbu, 2025).

Goleman introduced the most widely known idea of EI. He described it as having four main dimensions: self-awareness, self-management, social awareness, and relationship management (Goleman & Boyatzis, 2017; Mrisho & Mseti, 2024). This framework highlights that success at work, especially for leaders, mainly depends on how well people manage emotions when interacting with others (Coronado-Maldonado & Benítez-Márquez, 2023; Mrisho & Mseti, 2024).

EI is viewed as the ability to maintain social harmony in a collectivist culture such as Indonesia (Achmad et al., 2024; Jufri, Tjahjono, Muafi, & Isfianadewi, 2026). Moreover, EI is connected with a feeling of joint responsibility among the members within the group (Hindiawati, 2022; Simarmata, Yuniarti, Riyono, & Patria, 2020).

As for this purpose, Indonesian Emotional Intelligence (IEI) manifests itself as a type of EI that is modified from social and cultural beliefs held by Indonesian people (Suryadimulya, Dienaputra, Machdalena, Nugraha, & Kartika, 2023) with characteristics that entail empathy (*tepa selira*) (Mayyora & Sumartik, 2024), humility (*kerendahan hati*) (Zulaikah, Maftukhin, & Khamami, 2024) communal cooperation (*gotong royong*) (Simarmata et al., 2020; Sumarmi, Untari, & Meiji, 2022) and deliberative consensus (*musyawarah*) (Farid & Hakimi, 2025; Sumarmi et al., 2022). These characteristics portray a type of collective-oriented EI (Mayyora & Sumartik, 2024) that prioritizes common interests (Simarmata et al., 2020), mutual respect (Amisha, 2024; Zulaikah et al., 2024), and collaborative problem solving (Sumarmi et al., 2022).

However, although EI on an individual level can stimulate innovation by itself, the right leadership type has to accompany it for that to happen (Evers-Gerdes & Matera, 2025; Safuan, 2025). Human-Centered Leadership (HCL) involves keeping the well-being of the workforce as the key driver for all decision-making activities and, at the same time, merging that with the objectives and needs of the organization as well (Evers-Gerdes & Matera, 2025; Paul, 2025; Safuan, 2025).

This type of leadership can be identified by means of empathy (Evers-Gerdes & Matera, 2025) EI level (Goleman & Cherniss, 2024) smooth networking and communications (Yang & Wang, 2024), inclusion (Safuan, 2025) teamwork principles (Paul, 2025) and technology properly and carefully leveraged to maintain and enhance human relationships rather than replace them (Komm, Mayol, Gandhi, Durth, & Kiefer, 2025).

Those leaders practicing HCL create a safe work environment (Tan, van Dun, & Wilderom, 2025), allow workers to participate fully (Safuan, 2025), and facilitate worker recovery from failure (Evers-Gerdes & Matera, 2025; Paul, 2025). Such environments are highly supportive of the development of IWB, since workers feel appreciated and have the liberty to express their creativity (Aquino et al., 2025). In the Indonesian national culture, HCL is seen as reflecting the principles of communal cooperation (*gotong royong*) and consensus after consultation (*musyawarah*), and thus is both relevant and appropriate for developing sustainable innovation (Mayyora & Sumartik, 2024; Simarmata et al., 2020; Zulaikah et al., 2024).

However, the use of Artificial Intelligence (AI) in organizations has played both positive and negative roles in IWB (Abdurrahim, 2025; Qosidah & Susilo, 2024). AI can boost productivity by doing some of the work (Agarwal et al., 2025). It can also improve decision quality by providing predictive insights (Xu et al., 2025). AI-based systems also enable fast access to knowledge, scenario simulation, and idea testing, which can strengthen IWB. By reducing administrative workload, employees have more time and cognitive resources to engage in creative thinking and activities (Zhang, Liao, Ran, & Wang, 2025).

On the other hand, using AI can also cause technostress (Ibrahim, Osman, Gusau, & Vi, 2021), fear of losing jobs (PricewaterhouseCoopers (PwC) International, 2023), and the feeling that technology is a threat to human roles (Jia, Ning, & Liu, 2025; Zirar, 2023). When AI is viewed as a replacement, employees are more likely to avoid taking risks and to hold back their innovative ideas (Zhao, Liao, Niu, Wang, & Zhang, 2023). Therefore, how AI affects IWB depends on employees' readiness (Xin Wang & Long, 2025; Zirar, 2023).

Also, how leaders explain the role of AI at work (Bankins, Ocampo, Marrone, Restubog, & Woo, 2024). Presenting AI as a tool that supports and enhances human abilities can change negative views into productive collaboration (Xin Wang & Long, 2025; Zhao et al., 2023).

Previous research and literature reviews have widely examined the effects of emotional intelligence (Bii & Chelangat, 2025; Kumar et al., 2025; Singh, Joshi, Dissanayake, Nainanayake, & Kumar, 2025; Wonda, 2024) leadership styles (Evers-Gerdes & Matera, 2025; Karimi, Ahmadi Malek, Yaghoubi Farani, & Liobikienė, 2023; Mphaluwa, Hui, Marere, & Banda, 2025) and AI adoption on IWB (Hauptman, Schelble, Duan, Flathmann, & McNeese, 2024; Jayalakshmi & Jayanthi, 2024; Khan & Sreenivasan, 2024). However, most studies still look at these variables separately. Research that integrates emotional intelligence (EI), human-centered leadership (HCL), and artificial intelligence (AI) within a single human–technology framework remains limited. This gap is particularly evident in collectivist cultures such as Indonesia. In addition, AI should be seen as a part of a social system (Kirk, Gabriel, Summerfield, Vidgen, & Hale, 2025) that affects employees' emotions (Murire, 2024; Naritasari, Surwanti, & Qamari, 2023), perceptions (Tan et al., 2025), and behavior (Tinguely, Lee, & He, 2023; Wilkens, Lupp, & Langholf, 2023).

According to Social Information Processing Theory (SIPT), the employees' behavior at the workplace is governed by social cues within the context of the organizational environment, including emotional and technological cues (Mack, Chen, Hsu, Lee, & George, 2025; Shi, Gao, Yu, & Song, 2024). In an AI-based organizational context, social cues provided by leaders regarding the interpretation of technology use influence (Miao, Chen, & Yao, 2024) employees' willingness to innovate (Mack et al., 2025; Shi et al., 2024). EI promotes emotional complexity (Goleman & Cherniss, 2024). Moreover, HCL serves as a theoretical foundation related (Evers-Gerdes & Matera, 2025; Jia et al., 2025; Paul, 2025; Rick et al., 2024).

This study will explore how EI and HCL interact with IWB and how the adoption of AI technology affects this relationship. It will contribute to the development of EI and SIPT and highlight how technological change in a collectivist culture can uphold human values.

To address gaps, an integrated framework connecting Indonesian EI, HCL, and IWB will be proposed, with an exploration of AI's role within this framework.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Indonesian EI, Human-Centered Leadership and Innovative Work Behavior

Emotional intelligence (EI) is defined as the capacity to understand one's own emotions (Mrisho & Mseti, 2024), manage them properly (Fessell & Goleman, 2020), and recognize and positively respond to other people's emotions (Goleman & Cherniss, 2024). Previous research shows that the foundation of HCL is rooted in EI (Hougaard & Carter, 2021). HCL is the way these emotional skills are translated into leadership behaviors (Hougaard & Carter, 2021) by addressing employees' needs (Paul, 2025), empowering employees (Komm et al., 2025), and fostering a psychologically safe working environment (Tan et al., 2025).

According to Social Information Processing Theory (SIPT), the leader's behavior is considered to be an indicator for members of the organization (Mack et al., 2025) and it affects the perception of the situation for the members themselves (Shi et al., 2024) the feeling they experience (Miao et al., 2024), and their behavior (Xi Wang, Liu, & Feng, 2022). HCL indicates that the organization appreciates ideas (Hougaard & Carter, 2021), learning (Bashir, Inusa, & Mahmud, 2025), and risk-taking behavior (Tan et al., 2025), it promotes IWB (Javed, Fatima, Khan, & Bashir, 2021). Thus, HCL plays an essential middle-ground role between the leaders' emotional skills (Evers-Gerdes & Matera, 2025) and the employees' IWB (Tan et al., 2025).

In the collectivist culture of Indonesian society, the concept of EI is deeply connected with cultural values (Suryadimulya et al., 2023) like maintaining humility (*rendah hati*), empathy (*tepa selira*), the spirit of community collaboration (*gotong royong*), and the idea of reaching a consensus through deliberation and discussion (*musyawarah*). These cultural values mold the way EI are practiced, following the local wisdom of the Indonesian nation (Goleman & Boyatzis, 2017; Goleman & Cherniss, 2024). In this study, this kind of EI will be termed Indonesian Emotional Intelligence (IEI). These culturally internalized expressions of EI conceptually and behaviorally represent the Indonesian nation's EI efforts.

The ability to recognize and understand one's own skills, strengths, and weaknesses is seen through the practice of the Indonesian culture of maintaining humility (Jufri et al., 2026) and collective orientation (Hindiawati, 2022; Lee et al., 2023). Self-management is expressed through emotional control (Krumrei-Mancuso, Haggard, LaBouff, & Rowatt, 2020) to maintain social harmony (Zhao et al., 2023). While a sense of togetherness strengthens social awareness (Hindiawati, 2022; Simarmata et al., 2020), relationship management is facilitated through participative dialogue (Hanani, Yustiloviani, Rahman, & Bustamar, 2021; Møller, 2021; Sprain & Black, 2018).

These characteristics align with the principles of human-centered leadership, which emphasize relationship-based leadership and collective well-being (Coronado-Maldonado & Benítez-Márquez, 2023; Evers-Gerdes & Matera, 2025; Hougaard & Carter, 2024; Paul, 2025). In practice, leaders with high IEI are better at turning empathy and teamwork into action (Hindiawati, 2022; Sahertian & Jawas, 2021; Sari, Suhoyo, Mulyana, & Claramita, 2023; Simarmata et al., 2020).

These qualities form the basis of inclusive and empowering leadership behaviors (Evers-Gerdes & Matera, 2025; Hougaard & Carter, 2024; Pansini, Buonomo, & Benevene, 2024; Paredes-Saavedra, Vallejos, Huancahuire-Vega, Morales-García, & Geraldo-Campos, 2024; Paul, 2025). Therefore, IEI functions as a relational capacity that strengthens the effectiveness of HCL in collectivist cultures such as Indonesia (Hindiawati, 2022; Jufri et al., 2026; Lee & Ande, 2023). Thus, the study developed two hypotheses to explain the phenomenon.

H₁: There is a significant relationship between Indonesian EI and Human-Centered Leadership.

H₂: There is a significant relationship between Human-Centered Leadership and Innovative Work Behavior.

2.2. The Mediating Effect of Human-Centered Leadership on the Relationship between Indonesian Emotional Intelligence and Innovative Work Behavior

This study explores the mediating role of HCL in turning EI into favorable working conditions that influence employees' innovative behavior (Bahagia, Daulay, Arianty, & Astuti, 2024; Kafetsios, Sulejmanov, Manuoğlu, Lagou,

& Seidl, 2025). From this point of view, EI has enormous potential in encouraging innovation (Mazzetti & Schaufeli, 2022); yet sometimes this influence takes place not directly but indirectly (Coronado-Maldonado & Benítez-Márquez, 2023; Penton et al., 2023).

Through practices such as active listening (Jufri et al., 2026; Krumrei-Mancuso et al., 2020; Zhao et al., 2023) providing support, and creating psychological safety (Evers-Gerdes & Matera, 2025; Hougaard & Carter, 2021; Javed et al., 2021; Rick et al., 2024) HCL reduces fear of failure and increases employees' willingness to share ideas (Liang & Yin, 2024) and implement new ones (Evers-Gerdes & Matera, 2025; Hougaard & Carter, 2021; Javed et al., 2021; Rick et al., 2024). This process is stronger because social norms emphasize harmony in Indonesia (Hindiawati, 2022; Sahertian & Jawas, 2021; Simarmata et al., 2020). Therefore, the study proposes the following hypothesis.

H₁: Human-Centered Leadership mediates the relationship between Indonesian EI and Innovative Work Behavior.

2.3. The Moderating Effect of AI Usage on the Relationship of Indonesian Emotional Intelligence and Human-Centered Leadership

The rapid growth of artificial intelligence (AI) introduces a new dimension to the relationship between emotional intelligence (Saxena, Sharma, & Jora, 2023), human-centered leadership (Hougaard & Carter, 2024), and innovative work behavior (Morandini et al., 2023). On the one hand, AI can strengthen human-centered leadership by providing data and analytics (Bashir et al., 2025; Deng, 2025) that help leaders offer more personalized support and free time for relational activities (Jia et al., 2025; Zhang, Liao, et al., 2025). AI functions as a tool that strengthens the transformation of EI into HCL (Hougaard & Carter, 2024). In this connection, HCL enhances the IWB (Hougaard & Carter, 2021; Rick et al., 2024).

On the other hand, excessive use of AI or use that is not aligned with human values may weaken emotional connections (Jia & Hou, 2024), reduce trust (Geddiam, Nethravathi, & Hussian, 2024), and increase employee anxiety (Kim, Kim, & Lee, 2025; Klingbeil, Grützner, & Schreck, 2024). AI, therefore, can be considered to be a double-edged sword that can either enhance or impede the success factors for human-centered leadership and innovation (Hougaard & Carter, 2024). The impact of AI in the workplace is dependent upon the perceptions of employees, and digital readiness (Aly, 2024), and how the intentions to apply the technology at the workplace are communicated to the employees (Coronado-Maldonado & Benítez-Márquez, 2023; Jia et al., 2025; Zhai, Wibowo, & Li, 2024; Zhang, Liao, et al., 2025). The hypotheses for the study have been proposed based on the above discussion.

H₂: AI Usage moderates the relationship between Indonesian EI and Human-Centered Leadership.

H₃: AI Usage moderates the relationship between Human-Centered Leadership and Innovative Work Behavior.

3. METHODOLOGY

3.1. Research Design and Approaches

The study will use a cross-sectional survey and a quantitative approach. The approach will utilize partial least squares structural equation modeling. In this study, the approach will examine the influence of AI on IWB among Indonesian employees. The study will assess the direct relationship between Indonesian EI and HCL and their influence on employees' IWB. The study will also examine the moderating effect of AI on Indonesian EI, HCL, and IWB.

Analysis will be conducted on the four large cities: Greater Jakarta, the capital city of Indonesia. Makassar is the economic center of western Indonesia; Medan, the principal seaport gateway; and Balikpapan, the area that represents the move of the country's capital to its region. The four cities were chosen because they offer a good starting point for observing the factors that influence the role of technology, leadership, and emotional intelligence in encouraging innovative behavior at work (see Figure 1).

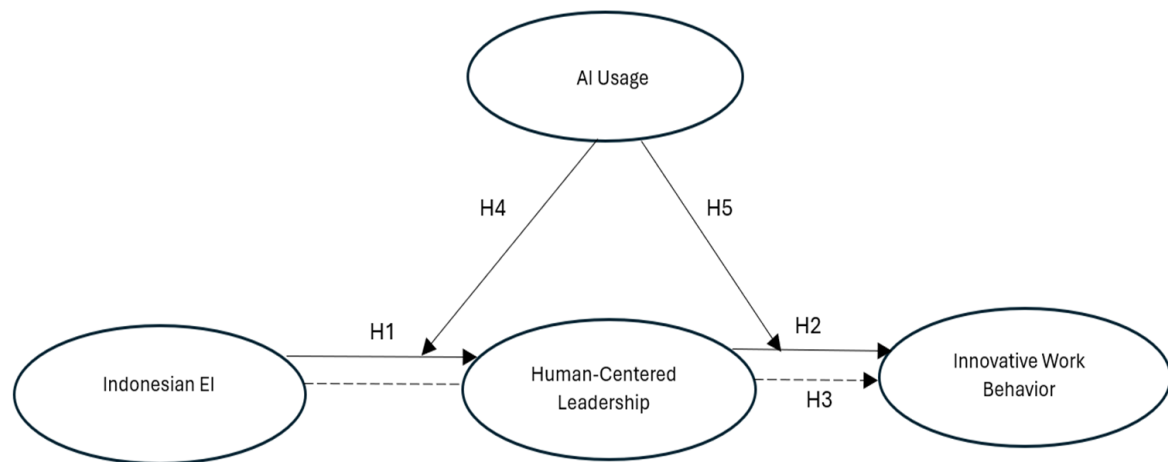


Figure 1. Research framework.

3.2. Data Collection

The research data were collected using an online questionnaire. The survey was sent to Indonesian employees in four major cities. They were chosen to show a range of urban workplaces. In total, 684 responses were collected to improve the reliability of the primary data. According to the rule, the sample size should be five to ten times the number of indicators (Hair, Black, Babin, & Anderson, 2014; Sarstedt, Ringle, & Hair, 2021). Since the measurement model included 39 indicators, the minimum required sample size was between 195 and 390 people.

In this study, a non-probability sampling approach, quota sampling, was employed to ensure representation of various subsections of the population. Quota sampling has been noted to provide various benefits in matters of workforce diversity, as well as an evolving population, as discussed in previous studies (Hair et al., 2014; Sarstedt et al., 2021). The data was collected in a manner that ensured all quotas were met and data integrity was maintained.

3.3. Research Instrument

This study employed a structured questionnaire to measure Indonesian Emotional Intelligence (IEI), Human-Centered Leadership (HCL), Innovative Work Behavior (IWB), and AI Usage. Each variable was measured using a five-point scale, with respondents indicating their responses from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire was initially developed in English, then translated into Indonesian, and subsequently back-translated into English (Klotz, Swider, & Kwon, 2023). Through this process, it was ensured that the questionnaire developed for the Indonesian context fully interpreted the true meaning of the items, while it was culturally compatible (Klotz et al., 2023; Ozolins, Hale, Cheng, Hyatt, & Schofield, 2020; Takriti et al., 2024). The pilot test conducted with Indonesian employees ensured greater clarity of the items, leading to improved internal consistency and construct validity of the measurement (Table 1).

Table 1. Research items.

Indonesian emotional intelligence			
References: (Eriksen, 2018; Goleman & Boyatzis, 2017; Hall & Schwartz, 2019; Hindiwati, 2022; Krumrei-Mancuso et al., 2020; Møller, 2021; Penton et al., 2023; Porter et al., 2022; Simarmata et al., 2020; Sprain & Black, 2018)			
KH1. I recognize my strengths and weaknesses.	EM1. I understand different perspectives.	GR1. I'm ready to help when needed.	MS1. I respect group decisions.
KH2. I welcome feedback and criticism.	EM2. I help others objectively.	GR2. I actively volunteer.	MS2. I share my views logically.
KH3. I learn from others' successes.	EM3. I grasp others' feelings wisely.	GR3. I work with diverse cultures and religions.	MS3. I stay positive during disagreements.

KH4. I admit mistakes confidently.	EM4. I understand others' emotions without losing control.	GR4. I try to understand others' emotions.	MS4. I consider all views when deciding.
KH5. I avoid dominating discussions	EM5. I distinguish my feelings from others'.	GR5. I do community service selflessly.	MS5. I respect differing opinions in decisions.
Human-centered leadership	Innovative work behavior		AI usage
References: (Hougaard & Carter, 2021, 2024; Jiang, Ye, Liu, Shah, & Shafait, 2023; Pansini et al., 2024)	References: (Almufarreh, 2024; Atalla, El-Ashry, & Mohamed Sobhi Mohamed, 2024; Lukes & Stephan, 2017; PricewaterhouseCoopers (PwC) International, 2023; Saif, Amelia, Goh, Rubin, Shaheen, & Murtaza, 2024; Zhang, Liao, et al., 2025)		References: (Almufarreh, 2024; PricewaterhouseCoopers (PwC) International, 2023)
HCL1. I take time to listen to teammates.	IWB1. I seek breakthroughs to boost performance.	AI1. AI boosts my productivity and efficiency.	
HCL2. I help struggling teammates.	IWB2. I share useful new ideas with the team.	AI2. AI creates new opportunities.	
HCL3. I use empathy and logic in tough decisions.	IWB3. I persuade colleagues and superiors to support innovation.	AI3. I learn with AI's help.	
HCL4. I value every team member's contribution.	IWB4. I take the initiative to solve work problems.	AI4. AI cannot replace my job.	
HCL5. I respect everyone, regardless of position.	IWB5. I try different methods to apply new ideas.	AI5. AI offers chances to learn new skills.	
HCL6. My decisions are shaped by emotions.	IWB6. I make improvements to enhance team performance.	AI6. AI enables new ways of working.	
HCL7. I control emotions in challenges.			

3.4. Data Analysis

The method employed in this study to analyze these data is Structural Equation Modeling (SEM). This method is ideal for testing models that use hierarchical structures (Hair, Risher, Sarstedt, & Ringle, 2019). Hierarchical structures show varying levels of construct architecture. This technique enables these researchers to comprehend how observed variables relate to latent constructs by estimating these relations (Ghozali, 2021; Sarstedt et al., 2021). This research uses WarpPLS version 8.0 to examine these data. The purpose of this study is to improve comprehension of relationships involving observed and latent variables while bringing forward a complete perspective on this research model.

3.5. Common Method Variance Estimation

To analyze CMB, this research employs Rasch model analysis. This method is used to eliminate bias in self-report data. In this case, Person Measure Analysis evaluates the consistency of individual responses based on mean square fit statistics (MNSQ), which may range from 0.5 to 1.5 (Boone, Yale, & Staver, 2014). Individuals whose data fall outside this range may exhibit passive responding or place less importance on data accuracy due to social traits.

The use of screening was to ensure that the significant effect sizes observed in the study (e.g., IEI $\rightarrow$ HCL, $\beta = 0.799$) were not due to biased response patterns. Excluding these responses increases the likelihood that the estimated effects represent significant relationships between constructs rather than methodological distortion (Boone et al., 2014). The authors acknowledge that Rasch analysis helps reduce response bias at the individual level (Boone et al., 2014). However, it does not entirely remove common method bias in cross-sectional and self-report studies. This limitation is therefore clearly acknowledged. Future studies are encouraged to use data from multiple sources or collect data over time to further reduce the risk of remaining common method bias.

4. RESULTS

4.1. Demographic Data

Table 2 shows the demographic information of the respondents.

Table 2. Respondents' characteristics.

Characteristics		Frequency	Percentage (%)
Gender	Female	405	59.21
	Male	279	40.79
Age	19 years old – 22 years old	94	13.74
	23 years old – 26 years old	275	40.2
	27 years old – 30 years old	315	46.05
Education	High School Graduates	257	37.57
	Diploma Graduates	59	8.63
	Bachelor's degree	350	51.17
	Master's degree	18	2.63
Company type	Private Company	396	57.89
	Startup/Entrepreneur	177	25.89
	Multinational	64	9.36
	State-Owned/Government	43	6.29
	Education	4	0.59
Tenure	< 5 years	381	55.7
	5-10 years	260	38.01
	10-20 years	30	4.39
	> 20 years	13	1.9
Job level	Staff - Officer	252	36.84
	Contract employees	148	21.64
	Senior manager - General manager	90	13.16
	Supervisor	78	11.4
	Associate manager - Manager	66	9.65
	Director	37	5.41
	Associate Director - Director	13	1.9
AI usage	ChatGPT	392	57.79
	Gemini (Google AI)	174	25.57
	M-banking	91	13.38
	GPS navigation	53	7.74
	Online marketplace	45	6.63
	Chatbot	41	6.03
	Online Games	31	4.54

Source: Primary Data, 2025.

4.2. Measurement Model Analysis

Validity and reliability analyses were also conducted to ensure that the measurements were of high quality. The result confirmed that each indicator accurately represented its construct. From Table 3, it can be observed that all items have a factor loading of more than 0.70, meeting the criteria set for indicator reliability (Ghozali, 2021; Sarstedt et al., 2021). This shows that each of these items contributes adequately to their constructs.

The Variance Inflation Factor (VIF) scores ranged from 2.182 to 4.297, all below 5.0, indicating that none of the indicators have a serious multicollinearity problem (Ghozali, 2021; Sarstedt et al., 2021). Every indicator is unique in the information it provides to the construct.

Both Cronbach's Alpha and Composite Reliability are used to assess internal consistency. The Cronbach's Alpha values for all constructs range from 0.808 to 0.844, indicating acceptable to excellent scales with values above the minimum requirement of 0.60 (Ghozali, 2021; Sarstedt et al., 2021). This implies that those who responded to these

questions responded uniformly. The value for Composite Reliability above 0.70, at 0.874 to 0.888 across all constructs, provides additional assurance.

Table 3. Validity and reliability test results.

Item	Loading factor (> 0.7)	VIF (<5)	Cronbach's alpha (> 0.6)	Composite reliability (≥ 0.6)	AVE (≥ 0.5)	Remarks
KH2	0.702	4.297	0.844	0.882	0.517	Valid and reliable
EM1	0.750					
EM3	0.713					
GR1	0.700					
MS1	0.741					
MS2	0.726					
MS3	0.700					
HCL1	0.816	3.951	0.820	0.875	0.583	Valid and reliable
HCL2	0.751					
HCL3	0.725					
HCL4	0.784					
HCL5	0.738					
IWB1	0.817	2.735	0.808	0.874	0.636	Valid and reliable
IWB2	0.828					
IWB3	0.793					
IWB4	0.748					
AI1	0.866	2.182	0.811	0.888	0.726	Valid and reliable
AI2	0.866					
AI3	0.823					

Source: Primary Data, 2025.

The Average Variance Extracted (AVE) ranges from 0.517 to 0.726. All measures exceed the suggested threshold of 0.50. This confirms that more than half of the variability in the observable indicators was accounted for by the latent variables they represent (Ghozali, 2021; Sarstedt et al., 2021).

4.3. R-Square Values

The R-Square (R^2) statistics (Table 4) represent the amount of variance in the dependent variable accounted for by its predictors (Ghozali, 2021; Sarstedt et al., 2021). R^2 is employed in Partial Least Squares Structural Equation Modeling (PLS-SEM) as an index of model fit and predictive ability (Ghozali, 2021; Sarstedt et al., 2021).

The results from Table 4 show that Indonesian Emotional Intelligence (IEI) explains 69.8% ($R^2 = 0.698$) of the variance in Human-Centered Leadership (HCL), with strong categories. This clearly indicates that emotion-related variables are significantly influenced by the emergence and presence of HCL.

Table 4. R-square values.

Variables	R-square values	Remarks
Indonesian EI → Human-centered leadership	0.698	Strong
Human-centered leadership → Innovative work behavior	0.520	Moderate

Source: Primary Data, 2025.

Result for Innovative Work Behavior (IWB) = 0.520 (Ghozali, 2021; Sarstedt et al., 2021). This means that HCL explained 52% of the variance in IWB. It is also revealed that HCL plays an important role, as it significantly affects IWB.

4.4. Hypothesis Testing

Based on the results shown in Table 5 and Figure 2, there was a significant positive relationship between Indonesian EI (IEI) and Human-Centered Leadership (HCL). Analysis indicates a strong and significant relationship between IEI and HCL (path coefficient = 0.799, $p < 0.001$), supporting H1. In Indonesian organizations, leaders with higher levels of EI tend to express themselves through behaviors such as empathy, humility, and awareness. They play a very important role in maintaining harmony and psychological safety in the workplace.

In the literature, such behaviors are generally perceived as core dimensions of an HCL style (Goleman & Boyatzis, 2017; Hougaard & Carter, 2021). Within a collectivist culture such as Indonesia, EI tends to manifest in various valued behaviors, such as mutual cooperation (*gotong royong*), the process and act of discussion and deliberation (*musyawarah*), empathy and compassion (*tepa selira*), and humility (*kerendahan hati*). The valued culture plays a significant role in leadership behaviors and practices. These findings are generally consistent with those studies indicating a close relationship between EI and relationship leadership behaviors (Hindiawati, 2022; Porter et al., 2022; Simarmata et al., 2020). This study not only clarifies Goleman's EI model but also indicates that it can operate effectively even in collectivist cultural contexts. This study indicates EI serves as a social capability (Goleman & Boyatzis, 2017). This study provides supporting evidence for the development of HCL processes and practices in Indonesian work settings.

Results presented in Table 5 and Figure 2 show a positive correlation between Human-Centered Leadership and Innovative Work Behavior (IWB) (path coefficient = 0.678, $p < 0.001$), thus confirming hypothesis H2. This suggests that leaders who display empathy towards employees, give them authority, and behave ethically tend to perform better, inducing their employees to be receptive to innovative processes.

Based on the Social Information Processing Theory (SIPT), the findings suggest that the display of supportive behavior by leaders is perceived as an important signal of encouragement from the organization regarding innovation by employees (Miao et al., 2024). Leadership behaviors, such as showing compassion, fostering psychological safety, and recognizing individuals' efforts, tended to predict employees' perceptions of security (Evers-Gerdes & Matera, 2025; Hougaard & Carter, 2021; Komm et al., 2025). The sense of security influenced the evaluation of new ideas, making them appear more valuable and thus making the employees more ready to perform creative and innovative tasks (Lv, Tan, Shi, & Gao, 2024; Mack et al., 2025; Tan et al., 2025).

Table 5. Hypothesis testing results.

Hypothesis	Original sample (O)	Standard errors (SE)	p values (<0.05)	Remarks
IEI → HCL	0.799	0.035	<0.001	H1 supported
HCL → IWB	0.678	0.036	<0.001	H2 supported
IEI → HCL → IWB	0.541	0.026	<0.001	H3 supported
AIU*IEI → HCL	-0.078	0.038	0.020	H4 supported
AIU*HCL → IWB	-0.082	0.038	0.015	H5 supported

Source: Primary Data, 2025.

Research does support the findings given by Evers-Gerdes and Matera (2025), Hougaard and Carter (2021), Javed et al. (2021), and Rick et al. (2024) about how HCL cultivates an environment conducive to innovation by transforming empathy and moral purposes into minimized fear of failure and boosted collective trust. It has become clear that humanistic leadership serves as an encouraging mechanism that effectively facilitates idea-sharing and proactive participation in innovation among workers. It may lead to effective outcomes for workers and the organization as a whole.

Results of the mediation analysis, as presented in Table 5 and Figure 2, demonstrate that human-centered leadership is a significant determinant of Indonesian EI and IWB, fully supporting hypothesis H3. According to Social Information Processing Theory (SIPT), emotionally intelligent leaders' human-centered practices are positively related to IWB (path coefficient = 0.799,

$p < 0.001$). Leaders with high EI use these practices as significant cues, making workers' perceptions of innovation more positive because new behaviors are perceived as appropriate. Results also show a direct relationship between Indonesian EI and IWB (path coefficient = 0.541, $p < 0.001$).

These findings indicate that the role of individuals with high EI in innovative activities is mediated by empathy and social awareness within the leadership framework. This finding is described by other previous analyses that proposed leaders with high EI could increase trust (Lee et al., 2023), facilitate teamwork collaboration (Yang & Wang, 2024), or attain psychological safety (Aboramadan & Kundi, 2023; Sulistiyorini et al., 2024). These elements play a significant role in encouraging innovation.

This finding adds to the SIPT by showing how leadership is an interpretive process through which EI manifests as action to promote innovation. The process of emotional alignment facilitates group creativity and sustainable innovation for Indonesia's business systems. In a collectively oriented workplace culture, leaders show empathy (*tepa selira*), are humble (*kerendahan hati*), and practice cooperative interaction (*gotong royong*). These factors enable the development of teamwork-oriented workplaces.

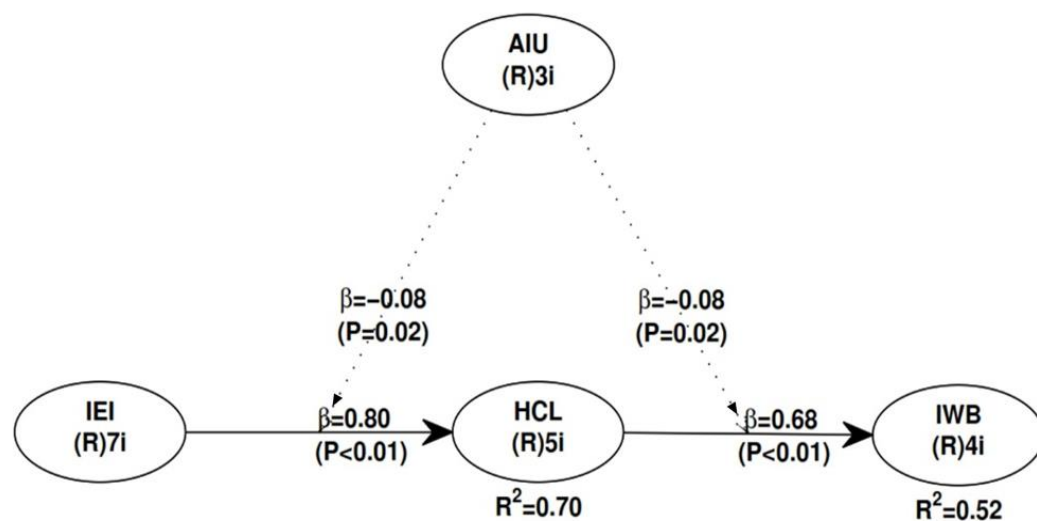


Figure 2. Path analysis.

Moreover, the results (Table 5 and Figure 2) suggest a significant negative moderating effect of AI usage on the relationship between Indonesian Emotional Intelligence (IEI) and Human-Centered Leadership (HCL) (interaction term (path coefficient = -0.078 , $p = 0.020$) – H4). These outcomes imply that as more AI applications are used at the firm level, the relationship between EI and leadership practices focused on people may diminish. While AI significantly influences managers' daily activities (Jia et al., 2025), managers might distance themselves emotionally when interacting with others (Zheng, Zhang, Kamal, Liang, & Alzeiby, 2025). In turn, this can minimize their own emotional sensitivity when interacting with people (Jovid, Li, Khuram, & Ekaterina, 2025). This will further restrict them from acting or performing as HCL managers (Jia et al., 2025; Zhang, Liao, et al., 2025).

These results are consistent with previous studies expressing worry about overdependence on AI because it may affect key human leadership qualities (Hougaard & Carter, 2024), like empathy (Kim et al., 2025), trust (Klingbeil et al., 2024), and relationship awareness (Jia et al., 2025; Zhang, Liao, et al., 2025).

On the other hand, existing studies have found that AI may increase the effectiveness of leaders when it assists human judgment (Hu, Gao, Agafari, Zhang, & Cong, 2025) rather than simply displace them (Jia et al., 2025). If technology is implemented within the bounds of human values, it has the potential to increase the effectiveness of leaders (Hougaard & Carter, 2024).

The above-stated finding is important to this study as it reflects the relevance of consensus (*musyawarah*) (Sumarmi et al., 2022) and mutual cooperation (*gotong royong*) within the collectivist culture of the Indonesian nation (Hindiawati, 2022; Simarmata et al., 2020). The culture supports the concept of empathy and community responsibility as core attributes of effective leaders (Zulaikah et al., 2024). According to some researchers, AI has the advantage of increasing efficiency and is incapable of replacing the sentimental element of effective human leaders (Zhang, Wang, Liao, & Li, 2025). In order for AI to be effective within the Indonesian work environment, humanism will continue to play a prominent role (Hougaard & Carter, 2021; Komm et al., 2025).

In Indonesia's collectivist and relationship-based work culture, interpersonal warmth and trust are important for collaboration. Excessive automation can weaken these social cues and may also reduce the conditions needed to support innovative behavior.

The result enhances Social Information Processing Theory (SIPT) by emphasizing the influence of technology on employees' perceptions of their work environment. Technological signals, especially the presence of AI and how it is framed, send messages to workers (Geddard et al., 2024). These signals affect how employees read and respond to social cues from their leaders (Mack et al., 2025). Consequently, employees' perceptions regarding the organization's support for innovation are influenced (Agarwal et al., 2025; Qian, Chen, & Zhao, 2025).

The results show a strong negative moderating impact of AI adoption on the relationship between Human-Centered Leadership (HCL) and Innovative Work Behavior (IWB), supporting hypothesis H5 (interaction term path coefficient = -0.082 , $p\text{-value} = 0.015$).

The results suggest that the increased use of AI systems in the organization may impact the ability of human-oriented leaders to encourage the development of innovation within the workforce (Jia et al., 2025; Zheng et al., 2025). In such environments where automation is common, the workforce perceives AI systems to be instruments for observation purposes only (Komm et al., 2025). Employees may start to perceive that they have less freedom to act if AI systems are viewed from this angle (Klingbeil et al., 2024; Komm et al., 2025). In such circumstances, Employees are less likely to participate in creative activities if they perceive a lack of psychological freedom (Morandini et al., 2023). This supports existing literature that considers an AI system to be a dual-purpose technology (Zheng et al., 2025).

For a collectivist and relationship-oriented work culture, such as that in Indonesia, working in a warmer and trusting manner is considered crucial for teamwork (Suryadimulya et al., 2023). Too much automation can undermine this aspect (Aly, 2024). It could affect the factors essential for supporting creativity and innovative behavior (Jia & Hou, 2024).

This outcome advances SIPT by considering the role of technology and its impact on employees' perceptions of their work context. Technological cues, such as the presence and positioning of AI technology, communicate to the workers (Geddard et al., 2024). These technological cues shape the way workers interpret social information from their superiors (Mack et al., 2025). This, in turn, shapes employees' perceptions of the organizational support for innovation (Agarwal et al., 2025; Qian et al., 2025).

5. DISCUSSION

The findings apply Goleman's theory of EI to the Indonesian context. They demonstrate the relevance of EI in Indonesia's collectivist culture. In Indonesian culture, EI can be measured by *gotong royong* or mutual cooperation, *musyawarah* or collective decision-making, *tepa selira* or empathy, and *kerendahan hati* or humility. Leaders can apply these to build trust and make others feel secure in a climate conducive to creative work behavior.

According to Social Information Processing Theory, employees perceive their superiors' behavior as an indicator of the company's value. Employees feel valued and safe when their superiors demonstrate empathy toward them. Feeling safe increases the likelihood that an employee will speak out, share, or apply new ideas at work. As a

collectivist society in Indonesia, the above style of leadership also helps maintain harmony within the social group, allowing innovation to occur as a group activity rather than an individual one.

The mediating variable HCL describes how Indonesian EI leads to IWB among Indonesian employees. EI is adopted through relational behaviors that promote innovation. Yet, its effect is mostly achieved through leadership methods that depend on empathy and awareness. Hence, EI is an organizational resource.

What this means is that an overreliance on technology has become an obstacle not only in the IEI-HCL relationship but also in general. There may come a time when leaders show less emotional engagement and dynamics with their employees as more and more decisions become data-influenced. If AI assists rather than replaces human judgment, it can provide leaders with more insight into employees' needs and concerns.

Indeed, in the work culture in Indonesian society, which is relationship-based, working together is only possible if it is accompanied by warmth and trust among people. In connection with the above, technology must be used in a manner that respects human rights and enables people to work together.

This research extends Social Information Processing Theory by treating AI as a context-related signal in a work environment. AI affects how employees view their work environment. It gives us a new lens through which we can view how humans interact with technology in a work environment. The findings from this research show that workers take both social information from their superiors and digital information from technology. It affects how workers view support for innovation within their organization, as well as how leaders behave. The findings indicate that digital transformation should focus on people. Innovation depends on highly advanced technology and leaders who embrace emotions and relationships.

5.1. Managerial Implications

From the results, several key implications develop for managers and HR practitioners operating within AI-powered organizational settings. These key implications apply within collectivist cultures, such as that of Indonesia.

Emotional intelligence needs to be considered one of the key competencies for leaders. As such, organizations will need to integrate the development of such qualities into their leadership training and planning. This will require training that can enhance self-awareness, empathy, self-regulation, and effective communication. Such skills will allow leaders to incorporate HCL styles. This kind of leadership will therefore involve establishing trust, developing psychological safety, and demonstrating IWB. For Indonesia, leadership development needs to embed local cultural values such as *tepa selira* (empathy), *gotong royong* (mutual cooperation), and *musyawarah* (deliberative decision-making). This will ensure cultural fit. Additionally, such an approach will enhance leadership effectiveness.

Second, organizations need to have HCL as a way of doing things. The main agenda for leadership should be to create a workplace where employees feel valued and respected. In this type of workplace, employees feel free to express their ideas without the fear of being blamed or failing. Employees feel psychologically safe. Giving employees the freedom to decide gives them a sense of feeling safe. Employees feel valued when their strengths are appreciated. This makes them do the things they are good at. Leaders should focus on learning from mistakes. Employees will feel free to propose innovative ideas.

Third, this study reveals that AI implementation requires proper management. AI can increase efficiency and improve decision-making. Nevertheless, when leaders rely too heavily on AI, they may become less emotionally connected and less motivated to promote novel ideas. This problem can be prevented by viewing AI as a complement to their judgment. It is important to clearly define what AI implementation entails and does not, to alleviate employees' concerns. It can also prevent technostress and encourage people to realize that they are still human beings in their profession.

Fourth, a mix of data-driven leadership and relational leadership is a must for modern-day executives. While AI can speed up and improve accuracy, trust-building and collaboration can be achieved only through in-person conversations that listen from a point of empathy and foster greater IWB in AI-enabled workplaces.

6. CONCLUSION

This study describes how emotions, relations, and technologies affect innovative behavior in work environments. It is grounded in the EI Framework and the Social Information Processing Theory. The results of this study suggest that Indonesian EI enhances HCL. When HCL is promoted, it encourages IWB. The results of this study also suggest that overreliance on AI weakens these human-centered outcomes. Major contributions of the Study:

Theoretical Contribution

- It is an expansion of Social Information Processing Theory, which now considers the presence of AI as part of the social context. The role of AI is to serve as a signal that influences how people perceive emotional information and leadership behavior. It is important in the digital workplace.
- It also enhances the theory developed by Goleman on Emotional Intelligence by relating EI to Indonesian collectivist values. These values are highlighted by the terms *kerendahan hati* (self-awareness), *tepa selira* (self-management), *gotong royong* (social awareness), and *musyawarah* (relationship management). These values, when combined, form what is termed Indonesian EI.

Empirical Contribution

- It offers empirical evidence that Human-Centered Leadership partly explains the connection between Indonesian EI and IWB. Stronger EI results in more effective HCL. EI translates into Innovative Behavior through HCL.
- AI usage to the point of overabundance reduces the relationship strength of Indonesian EI and HCL, and HCL and IWB. The result of this reduction will negatively impact IWB, as empathy and psychological safety will be reduced.

Methodological Contribution

- The research relies on a large and representative sample of 684 Indonesian employees in major economic regions. This enhances the validity of the findings. It further increases the relevance of the findings within the Indonesian context.
- The study has culturally valid measuring instruments. This enhances the validity of the concepts. It further underscores the importance of research on leadership and innovative behavior in collectivist environments in Asia.

Practical Contribution

- Practical recommendations can be found in this study, which serves as a guide for a leader or an organization undergoing a digital transformation. This study reveals the significance of teaching people to be AI-literate. Beneath that, there is a need to integrate technology with empathetic leadership.
- It emphasizes that AI needs to aid human labor and not replace human judgment or decision-making capabilities. When AI is used as an instrument, it fosters psychological safety. It also promotes collective innovative behavior.

Although the study has made many contributions, there are some limitations. The study has both cross-sectional and self-reported characteristics.

This makes it difficult to establish any cause-and-effect relation. Future research should consider longitudinal or combined-method designs.

Additionally, more than one source should be incorporated. There should also be more investigation into the characteristics of AI design, such as transparency and explainability. There should also be cross-cultural comparative research on human AI collaboration and innovation.

Funding: The authors gratefully acknowledge the financial support from the Directorate General of Higher Education, Research, and Technology (Direktorat Jenderal Pendidikan Tinggi, Riset, dan Teknologi/DIKTI), Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia.

Institutional Review Board Statement: This study was approved by the Institutional Review Board of Bina Nusantara University, Jakarta, Indonesia, under protocol No. [030/VRRTT/II]. Informed verbal consent was obtained from all participants, and all data were anonymized to protect participant confidentiality.

Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: Conceptualization, validation, investigation, resources, data curation, writing—original draft preparation, writing—review and editing, visualization, supervision, project administration, and funding acquisition, Maria Grace Herlina (M.G.H.); methodology, software, validation, formal analysis, investigation, resources, data curation, writing—review and editing, visualization, and funding acquisition, Sambudi Hamali (S.H.); methodology, validation, investigation, resources, data curation, writing—review and editing, and funding acquisition, Karto Iskandar (K.I.). Final manuscript review and approval, all authors.

Open Data Availability:

<https://zenodo.org/records/18075432/files/Open%20Data%20Paper%20Hibah%202025.xlsx?download=1>

Disclosure of AI Use: The authors acknowledge the use of AI technologies. Grammarly and QuillBot were used to improve the manuscript's clarity and readability, including grammar/spelling checks and translation. All outputs were reviewed and verified by the authors, and they are the sole authors of this article and take full responsibility for the content.

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