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# DETERMINANTS OF INNOVATIVE WORK BEHAVIOR MEDIATED BY PSYCHOLOGICAL CAPITAL IN OIL AND GAS INDUSTRY EMPLOYEES

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**ABSTRACT**

***Introduction:*** *This study aims to examine the effects of authentic leadership, psychological empowerment, and empowering leadership on innovative work behaviour (IWB) among oil and gas employees in the North Sumatra (Sumbagut) region, with psychological capital mediating the relationship. Given the complex operational demands of the oil and gas industry — including expectations for efficiency, transparent governance, and sustainable innovation — fostering innovative work behaviour among employees has become a strategic priority for organizational competitiveness and resilience.*

***Methods:*** *This study employs a quantitative descriptive methodology using an online survey (Google Forms) administered to 398 oil and gas employees from Pertamina, Pema Global Energy (PGE), and Medco Energy in the Sumbagut region. Data were collected on a cross-sectional basis and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) through SmartPLS version 3.0.*

***Results:*** *The findings indicate that authentic leadership does not have a direct positive effect on IWB, but positively and significantly influences psychological capital. Psychological empowerment and empowering leadership both exert positive and significant effects on IWB and psychological capital. Psychological capital is the strongest direct predictor of IWB and significantly mediates the effects of authentic leadership, psychological empowerment, and empowering leadership on IWB, confirming its central role as a psychological mechanism that translates leadership and empowerment into innovative employee behaviour.*

***Conclusion:*** *This study offers a practical contribution to human resource management in the oil and gas industry by demonstrating that strengthening employees' psychological capital — through authentic and empowering leadership practices and psychological empowerment — is a key strategic lever for fostering innovative work behaviour. Organizations are encouraged to invest in integrated leadership development and psychological capital-building programs to sustain innovation and long-term organizational performance.*

## INTRODUCTION

The oil and gas industry is one of the strategic sectors that plays a critical role in supporting national economic growth and energy security (Soesanto et al., 2025). Based on reports from the Ministry of Energy and Mineral Resources, the sector contributes significantly to state revenues through taxes, profit sharing, and non-tax state revenues (ESDM, 2023), with the upstream oil and gas industry alone accounting for approximately 9% of national revenue in 2022 (Ministry of Finance of the Republic of Indonesia, 2023). However, in recent years, the industry has faced increasingly complex challenges, including global oil price volatility, global economic uncertainty, and the transition toward more sustainable alternative energy sources (International Energy Agency, 2023), all of which directly affect industry stability and the performance of energy companies (OPEC, 2023). These conditions demand that companies adapt swiftly and sustainably to maintain their competitiveness, making Innovative Work Behaviour (IWB) — defined as employees' initiatives in generating, promoting, and implementing new ideas for process, product, or service improvement (Indrayanti et al., 2025) — a crucial determinant of organizational effectiveness and resilience (Faulks et al., 2021; Vuong & Hieu, 2023; Fatemi et al., 2022).

The urgency of fostering IWB is particularly evident in the oil and gas sector in the North Sumatra region (Sumbagut), where internal reports indicate that only approximately 53% of field employees consistently exhibit innovative work behaviour, a figure that is concerning given that the majority of the workforce falls within the productive age range of 20–39 years and is dominated by the millennial generation — a cohort known for its adaptability to technology and high innovation potential in the era of Industry 4.0 (Soesanto et al., 2025). Furthermore, a high-profile corruption scandal in 2025 involving oil import manipulation, fuel blending, and unauthorized LNG procurement — resulting in estimated state losses of IDR 193.7 trillion (Reuters, 2025) — highlighted the consequences of weak internal oversight, low organizational integrity, and a work environment that fails to support employee voice and innovation. Against this backdrop, scholarly attention has increasingly turned to the role of leadership styles and psychological factors in driving IWB. Authentic leadership, characterized by honest, transparent, and morally consistent leader behaviour, has been shown to build trust, enhance employee commitment, and create a psychologically safe climate conducive to innovation (Grošelj et al., 2020; Younas et al., 2023; Yamak & Eyupoglu, 2021). Empowering leadership, which involves delegating authority, removing bureaucratic barriers, and enabling employee participation in decision-making (Singh & Rangnekar, 2020), has similarly demonstrated positive effects on creativity and IWB across various sectors (Cui & Yu, 2021; Khalifa et al., 2023; Li et al., 2023), yet remains underexplored in large-scale oil and gas companies (Latuihamallo, 2024).

At the individual level, psychological empowerment — reflecting employees' perception of control over their work environment and alignment between personal and organizational values (Shah et al., 2019; Amundsen, 2019) — has been identified as a key driver of innovative attitudes and IWB (Dan et al., 2018; Sjabadhyni & Mustika, 2018), while psychological capital (PsyCap), encompassing self-efficacy, optimism, hope, and resilience, has been shown to mediate the relationship between empowerment and innovation (Mutonyi, 2021; Slåtten et al., 2019; Efandi et al., 2023).

Despite these advances, prior research has largely focused on large corporations with mature organizational structures, and studies examining the mediating role of psychological capital in the relationship between authentic leadership, psychological empowerment, empowering leadership, and IWB — particularly in the energy sector in Sumbagut — remain scarce. Accordingly, this study aims to analyze: (1) the positive effect of authentic leadership on IWB; (2) the positive effect of authentic leadership on psychological capital; (3) the positive effect of psychological empowerment on IWB; (4) the positive effect of psychological empowerment on psychological capital; (5) the positive effect of empowering leadership on IWB; (6) the positive effect of empowering leadership on psychological capital; (7) the positive effect of psychological capital on IWB; and the mediating role of psychological capital in (8) the relationship between authentic leadership and IWB, (9) the relationship between psychological empowerment and IWB, and (10) the relationship between empowering leadership and IWB among employees in the oil and gas industry.

## LITERATURE REVIEW

### Authentic Leadership

Authentic leadership (AL) is a leadership style that not only attracts and promotes positive individual psychological capital but also cultivates a positive organizational climate by fostering higher levels of self-awareness, internalized moral perspective, balanced information processing, and relational transparency for both leaders and followers (Bilgetürk & Baykal, 2021). AL has emerged as a critical concept in promoting positive leadership, characterized by transformational, servant, and ethical behaviour (Jang, 2022; Zhou et al., 2024), with authenticity — defined as a clear and firm understanding of oneself across all dimensions and behaving consistently through self-awareness — serving as its core value (Jang, 2022). Authentic leaders demonstrate high levels of self-awareness, acknowledge their mistakes, and extend the same degree of consideration to others; when employees perceive their managers as tolerant of errors, they are more likely to engage in risk-taking behaviours such as IWB (Kafeel et al., 2023). AL is also particularly well-suited to promoting innovation and nurturing creativity, as evidenced by its core characteristics (Grošelj et al., 2021), and plays an important role in promoting healthy work environments by influencing employees and generating positive organizational outcomes, including supportive environments, employee empowerment, organizational identification, creativity, proactive behaviour, and the suppression of negative outcomes such as silence behaviour (Adil & Kamal, 2020). In this study, AL is measured using four dimensions adapted from Zhou et al. (2024) and Grobler (2024): self-awareness, referring to a leader's capacity to understand their own strengths, weaknesses, and impact on others; internalized moral perspective, which reflects consistency with personal moral values and ethical standards; balanced processing, involving the objective evaluation of all relevant information before making decisions; and relational transparency, denoting openness and honesty in relationships with subordinates.

### Psychological Empowerment

Psychological Empowerment (PE) is often highlighted as a managerial practice involving the transfer of power and authority from employers to employees, typically focusing on organizational structures that promote autonomy and decision-making (Al-Sabi et al., 2023). Ebrahim (2025) defines PE as a process through which individuals gain motivation and strengthen their confidence in their work, understood through four cognitive orientations: meaning, competence, self-determination, and impact. When employees feel free to make their own decisions, exercise flexibility, and are driven by intrinsic motivation, they are more likely to generate better ideas and perform more effectively overall (Abuzaid & Ghadi, 2024; Kustanto et al., 2020). Empirically, Stanescu et al. (2020) demonstrated that psychologically empowered employees perform better in IWB by generating new ideas, while Vu et al. (2025) conceptualize PE as intrinsic task motivation manifested in four cognitions reflecting an individual's orientation toward their work role, with employees motivated by intrinsic rather than extrinsic rewards being more likely to exhibit work commitment (Zhang & Yang, 2021). In this study, PE is assessed using a 12-item scale comprising four dimensions developed by Bhattacharya and Narad (2024): meaning, reflecting the sense of alignment between personal and organizational goals; competence, referring to an individual's belief in their ability to perform job tasks effectively; self-determination, denoting employees' capacity to make choices about how to carry out work-related tasks; and impact, representing employees' perception that their work influences organizational outcomes and processes.

### Empowering Leadership

Empowering Leadership (EL) reflects a leadership approach that emphasizes power sharing, trust, and support for employee development (Kim & Beehr, 2023). EL creates a conducive work environment by assigning responsibility and autonomy to employees, sharing information about organizational vision and mission, and involving employees in decision-making processes (Coun et al., 2021; Jønsson et al., 2021). Empowering leaders encourage their subordinates to adopt innovative approaches without fear of punishment when results fall short of expectations (Hassi et al., 2022), and under their guidance, employees are granted greater autonomy to engage in workplace experimentation, reflected in behaviours such as discovering and applying new methods, technologies, and ideas (Guo et al., 2023). In this study, EL is measured using the Empowering Leadership Scale (ELS) adapted from Schermuly (2025), comprising five dimensions: sense making, referring to leaders' efforts to communicate goals and provide

clear direction; coaching, focusing on the leader's role in building positive working relationships and supporting employee development; participation, emphasizing employee involvement in organizational decision-making; transfer of power, whereby leaders actively share control over resources such as information, budgets, and career opportunities; and competence development, reflecting leaders' active efforts to enhance team members' work capabilities.

**Psychological Capital**

Psychological Capital (PC) is a positive psychological condition possessed by individuals (Chen et al., 2021) and has been identified as an important factor shaping IWB (Kumar et al., 2022; Ullah et al., 2024). Employees with high PC demonstrate greater curiosity and openness to new ideas, forming the initial foundation of IWB (Chen et al., 2021; Uen et al., 2021), while also exhibiting enhanced problem-solving capacity, rapid recovery from challenges, and optimal performance achievement (Brunetto et al., 2024). Mishra et al. (2019) note that employees with strong PC display positive attitudes and behaviours — including high goal attainment ability, strong motivation and self-control, risk-taking courage, and a tendency toward creative and innovative problem-solving — and Bak et al. (2022) further confirm that employees with high PC tend to overcome work obstacles using innovative ideas and methods that are rarely employed otherwise. In this study, PC is measured using the Combined Psychological Capital Scale-12 Revised (CPC-12R) as applied by Neuwirth et al. (2025), comprising four dimensions known by the acronym HERO: hope, referring to individuals' ability to set clear goals and maintain motivation and alternative pathways to achieve them; self-efficacy, denoting individuals' belief in their capacity to accomplish challenging tasks; resilience, representing the ability to sustain, adapt, and recover from adversity or failure; and optimism, reflecting a positive disposition toward current and future success, including the ability to perceive opportunities within challenges (Djourova et al., 2019)

**Innovative Work Behaviour**

Innovative Work Behaviour (IWB) refers to the actions undertaken by individuals to develop new ideas that produce products, services, or processes beneficial to the organization (Srirahayu et al., 2024). Mozie and Mahadi (2024) further define IWB as behaviour involving the active initiation, introduction, and implementation of new ideas, work processes, or beneficial procedures, influenced by individual characteristics such as intrinsic motivation and proactivity. IWB plays a significant role in fostering organizational innovation, as employees are directly involved in generating and applying new solutions to organizational challenges, contributing to cost reduction and problem-solving (Tanuwijaya et al., 2025). It is manifested in employees' efforts to identify and implement new processes, methods, or technologies in response to workplace challenges (Mutonyi et al., 2020), encompassing two core stages — creation and implementation — where the former involves exploring ideas that improve task performance, and the latter involves transforming those ideas into practice and disseminating them among colleagues (Na-Nan & Arunyaphum, 2021). Khalifa et al. (2023) further argue that IWB leads to the development of new procedures and services, strengthening an organization's competitive advantage. In this study, IWB is measured using three dimensions proposed by Zargar et al. (2025): idea generation, referring to an individual's ability to create useful ideas for solving process, service, or procedural problems; idea promotion, which involves championing new ideas within the organization; and idea realization, pertaining to the implementation of innovative ideas to drive tangible outcomes.

**Previous Study and Hypothesis**

**The Impact of Authentic Leadership and Innovative Work Behaviour**

Authentic leaders, characterized by high self-awareness and tolerance for mistakes, create an environment where employees feel safe to take risks and engage in IWB (Kafeel et al., 2023). Prior studies consistently support this relationship: Grošelj et al. (2021) found a positive association between authentic leadership and IWB, Khan et al. (2024) confirmed this in Pakistani firms, and Rashid et al. (2023) demonstrated that authentic leadership significantly enhances creative performance through employees' psychological resources. Consistent findings were also reported in educational and manufacturing contexts by Purwanto et al. (2021) and Novita et al. (2020).

**H1:** Authentic leadership has a positive effect on innovative work behaviour (IWB).

**The Impact of Authentic Leadership and Psychological Capital**

Under authentic leadership, followers tend to experience positive emotions toward both the organization and them, enhancing their psychological resources (Baykal, 2018). Siagian et al. (2024) found that authentic leadership enables freer self-expression, boosting motivation and psychological capacity. Supporting evidence comes from Alavi et al. (2025), Zhou and Yusof (2024) in a sample of 406 Chinese manufacturing employees, and Yollu and Korkmaz (2024) in Turkey, all confirming a positive direct effect of authentic leadership on psychological capital.

**H2:** Authentic leadership has a positive effect on psychological capital.

**The Impact of Psychological Empowerment and Innovative Work Behaviour**

Psychological empowerment encompasses autonomy, competence, meaning, and impact — catalyzes IWB by strengthening employees' intrinsic motivation to generate and implement new ideas (Curran et al., 2021). Empowered employees are more willing to take risks and propose creative ideas (Messmann, 2023), and dimensions such as meaningful work and self-determination have been identified as direct predictors of innovative outcomes (Muneer et al., 2025). Multiple studies confirm this positive relationship, including Ali et al. (2022), Ismail et al. (2024), Yadav et al. (2023), and Kustanto et al. (2020).

**H3**: Psychological empowerment has a positive effect on innovative work behaviour (IWB).

**The Impact of Psychological Empowerment and Psychological Capital**

Psychological empowerment — by granting autonomy, resources, and decision-making opportunities — directly strengthens employees' positive psychological resources. Anggreni et al. (2022) found a significant effect of psychological empowerment on psychological capital among marketing employees in Indonesia, a finding replicated by Kariri et al. (2023) in a large Saudi sample of 813 employees and further supported by Al-Dosari et al. (2024) and Khieowan et al. (2025) across different national contexts.

**H4:** Psychological empowerment has a positive effect on psychological capital.

**The Impact of Empowering Leadership and Innovative Work Behaviour**

Empowering leadership — through delegation, autonomy, and participation in decision-making — reduces bureaucratic barriers and creates conditions conducive to creativity and IWB (Singh & Rangnekar, 2020; Cui & Yu, 2021). This relationship has been evidenced across multiple sectors including hospitality (Khalifa et al., 2023; Lin et al., 2022), education (Zhu et al., 2019), and technology firms (Li et al., 2023), with mediating mechanisms such as trust, work-related flow, and meaningful work further explaining the pathway to IWB (Rai & Kim, 2021; Coun et al., 2021; Guo et al., 2023).

**H5:** Empowering leadership has a positive effect on innovative work behaviour (IWB)

**The Impact of Empowering Leadership and Innovative Work Behaviour**

Empowering leaders — by granting autonomy, involving employees in decision-making, and supporting skill development — directly strengthen employees' psychological resources. Haq et al. (2021) found that empowering leadership enhances self-efficacy and optimism, while Mustikarini et al. (2022) demonstrated that delegation increases hope and resilience. Burhan et al. (2024) further confirmed that empowering leadership significantly improves psychological capital by creating positive, growth-oriented work environments.

**H6:** Empowering leadership has a positive effect on psychological capital.

**The Impact of Psychological Capital and Innovative Work Behaviour**

Employees with high psychological capital — characterized by self-efficacy, hope, resilience, and optimism — are better equipped to engage in innovative behaviours, take risks, and pursue creative problem-solving (Sadat et al., 2024). Karimi et al. (2023) highlighted resilience as a key enabler of innovation in the face of obstacles, Youn and Jia Xin (2024) emphasized the role of hope in driving innovative approaches, and Suryanto and Rachmawati (2025) confirmed a significant direct effect of psychological capital on IWB.

**H7:** Psychological capital has a positive effect on innovative work behaviour (IWB).

**The Mediating Role of Psychological Capital between Authentic Leadership and Innovative Work Behaviour**

Authentic leadership can enhance employees' psychological capital — including self-efficacy, hope, resilience, and optimism — which in turn enables greater innovative behaviour. Purwanto et al. (2021) confirmed this mediation in Indonesian manufacturing firms (n = 195), Khan et al. (2024) replicated the finding in Pakistani companies (n = 314), and Novitasari (2020) further demonstrated that psychological capital mediates the relationship between authentic leadership practices and IWB.

**H8:** Psychological capital mediates the effect of authentic leadership on innovative work behaviour (IWB).

**The Mediating Role of Psychological Capital between Psychological Empowerment and Innovative Work Behaviour**

When employees experience psychological empowerment, their sense of meaning, confidence, and influence at work strengthens their psychological capital, which in turn drives IWB. Anggreni et al. (2022) found partial mediation of psychological capital in this relationship among 168 marketing employees using PLS-SEM, and Slåtten et al. (2019) confirmed full mediation in a survey of automotive service salespeople. Asih and Indriati (2020) further support the significant positive role of psychological capital in this pathway.

**H9**: Psychological capital mediates the effect of psychological empowerment on innovative work behaviour (IWB).

**The Mediating Role of Psychological Capital between Empowering Leadership and Innovative Work Behaviour**

Empowering leadership fosters employees' confidence, optimism, hope, and resilience — the core dimensions of psychological capital — which subsequently facilitate IWB. Jabid et al. (2025) confirmed this mediation in a sample of 244 SME employees, and Pangaribuan (2022) demonstrated partial mediation among statistical agency employees in Papua Province, Indonesia, concluding that empowering leadership strengthens psychological capital as an intermediate mechanism toward innovative work behaviour.

**H10**: Psychological capital mediates the effect of empowering leadership on innovative work behaviour (IWB).

## RESEARCH METHODS

This study employs a descriptive quantitative methodology with hypothesis testing as its primary approach. The subjects of the study comprise employees of oil and gas companies in the North Sumatra region (Sumbagut), specifically Pertamina, Pema Global Energy (PGE), and Medco Energy, encompassing both head office and field office personnel. Data were gathered via a cross-sectional survey conducted during May–June 2026, employing an online questionnaire distributed through Google Form. The study population comprises all employees of oil and gas companies in the Sumbagut region. The sample was selected using purposive sampling, adhering to established criteria pertinent to the research objectives — specifically, active employees of oil and gas companies in the Sumbagut region. According to Hair et al. (2020), the advised sample size for Structural Equation Modeling (SEM) ranges from 5 to 10 times the total number of items in the questionnaire. Given that this study contains 70 items, the required sample size ranges from a minimum of 350 to a maximum of 700 respondents, with up to 700 targeted to provide a buffer for incomplete or invalid responses. To ensure data completeness, all questionnaire items were set as mandatory prior to submission. This study examines ten hypotheses utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM) with the support of SmartPLS version 3.0, which facilitates the simultaneous investigation of complex relationships among multiple variables, including the mediating role of psychological capital, within a reflective measurement model structure.

**RESULT AND ANALYSIS**

Table 1
Respondent Characteristic

| Profile | Category | n | % |
|---|---|---|---|
| **Gender** | Male | 350 | 87.9 |
| | Female | 48 | 12.1 |
| **Age** | 17–25 years | 58 | 14.6 |
| | 26–35 years | 253 | 63.6 |
| | 36–45 years | 78 | 19.6 |
| | 46–55 years | 7 | 1.8 |
| | 56–65 years | 2 | 0.4 |
| **Education** | Senior High School | 1 | 0.3 |
| | Diploma (D3) | 23 | 5.8 |
| | Bachelor's (S1) | 350 | 87.9 |
| | Master's (S2) | 19 | 4.8 |
| | Doctorate (S3) | 5 | 1.3 |
| **Employment Status** | Permanent | 303 | 76.1 |
| | Contract | 95 | 23.9 |
| **Company** | Pertamina | 304 | 76.4 |
| | Pema Global Energy (PGE) | 60 | 15.1 |
| | Medco Energy | 34 | 8.5 |
| **Tenure** | 1–4 years | 112 | 28.1 |
| | 5–9 years | 249 | 62.6 |
| | 10–14 years | 30 | 7.5 |
| | 15–19 years | 5 | 1.3 |
| | >19 years | 2 | 0.4 |
| **Position** | Staff | 363 | 91.2 |
| | Supervisor | 20 | 5.0 |
| | Manager | 12 | 3.0 |
| | Director | 3 | 0.8 |
| **Total** | | **398** | **100** |

Source: Data processed through SPSS

The tables above present the complete demographic profile of the 398 respondents. The sample is predominantly male (87.9%), aged 26–35 years (63.6%), holds a bachelor's degree (87.9%), and is employed on a permanent basis (76.1%). Most respondents work at Pertamina (76.4%), have between 5–9 years of tenure (62.6%), and hold staff-level positions (91.2%), reflecting the typical workforce composition of the oil and gas industry in the Sumbagut region.

**Hypothesis Testing Results**

Table 2. Hypothesis Testing Results

| No. | Hypothesis | Estimate | p-value | Conclusion |
|---|---|---|---|---|
| **1.** | H1 | -0.040 | 0.321 | Not Supported |
| **2.** | H2 | 0.300 | 0.001 | Supported |
| **3.** | H3 | 0.212 | 0.013 | Supported |
| **4.** | H4 | 0.297 | 0.006 | Supported |
| **5.** | H5 | 0.211 | 0.007 | Supported |
| **6.** | H6 | 0.240 | 0.012 | Supported |
| **7.** | H7 | 0.527 | 0.000 | Supported |
| **8.** | H8 | 0.158 | 0.002 | Supported |
| **9.** | H9 | 0.156 | 0.011 | Supported |
| **10.** | H10 | 0.126 | 0.014 | Supported |

*Source: Processed Data PLS SEM*

The rationale for each hypothesis, as stated in the table above, is as follows:

**H1: Authentic Leadership → Innovative Work Behaviour**

Hypothesis 1 examined the positive effect of authentic leadership on IWB. The path coefficient was −0.040, indicating that authentic leadership does not positively contribute to IWB in this sample. As the result is not statistically significant, H0 is accepted and H1 is not supported. Authentic leadership was not proven to have a positive and significant effect on innovative work behaviour.

**H2: Authentic Leadership → Psychological Capital**

Hypothesis 2 examined the positive effect of authentic leadership on psychological capital. The path coefficient of 0.300 indicates that higher authentic leadership is associated with higher psychological capital. With a p-value of $0.001 < 0.05$, H0 is rejected and H2 is supported. Authentic leadership was proven to have a positive and significant effect on psychological capital.

**H3: Psychological Empowerment → Innovative Work Behaviour**

Hypothesis 3 examined the positive effect of psychological empowerment on IWB. The path coefficient of 0.212 indicates that higher psychological empowerment is associated with higher IWB. With a p-value of $0.013 < 0.05$, H0 is rejected and H3 is supported. Psychological empowerment was proven to have a positive and significant effect on innovative work behaviour.

**H4: Psychological Empowerment → Psychological Capital**

Hypothesis 4 examined the positive effect of psychological empowerment on psychological capital. The path coefficient of 0.297 indicates that higher psychological empowerment is associated with higher psychological capital.

With a p-value of 0.006 < 0.05, H0 is rejected and H4 is supported. Psychological empowerment was proven to have a positive and significant effect on psychological capital.

**H5: Empowering Leadership → Innovative Work Behaviour**

Hypothesis 5 examined the positive effect of empowering leadership on IWB. The path coefficient of 0.211 indicates that higher empowering leadership is associated with higher IWB. With a p-value of 0.007 < 0.05, H0 is rejected and H5 is supported. Empowering leadership was proven to have a positive and significant effect on innovative work behaviour.

**H6: Empowering Leadership → Psychological Capital**

Hypothesis 6 examined the positive effect of empowering leadership on psychological capital. The path coefficient of 0.240 indicates that higher empowering leadership is associated with higher psychological capital. With a p-value of 0.012 < 0.05, H0 is rejected and H6 is supported. Empowering leadership was proven to have a positive and significant effect on psychological capital.

**H7: Psychological Capital → Innovative Work Behaviour**

Hypothesis 7 examined the positive effect of psychological capital on IWB. The path coefficient of 0.527 indicates the strongest direct effect observed in this study, suggesting that psychological capital is a key driver of innovative work behaviour. With a p-value of 0.000 < 0.05, H0 is rejected and H7 is supported. Psychological capital was proven to have a positive and significant effect on innovative work behaviour.

**H8: Authentic Leadership → Psychological Capital → IWB (Mediation)**

Hypothesis 8 examined the mediating role of psychological capital in the relationship between authentic leadership and IWB. The indirect path coefficient of 0.158 indicates that although authentic leadership does not directly influence IWB (H1), it exerts a positive indirect effect through psychological capital. With a p-value of 0.002 < 0.05, H0 is rejected and H8 is supported. Psychological capital fully mediates the effect of authentic leadership on innovative work behaviour.

**H9: Psychological Empowerment → Psychological Capital → IWB (Mediation)**

Hypothesis 9 examined the mediating role of psychological capital in the relationship between psychological empowerment and IWB. The indirect path coefficient of 0.156 indicates that psychological capital strengthens the positive effect of psychological empowerment on IWB. With a p-value of 0.011 < 0.05, H0 is rejected and H9 is supported. Psychological capital was proven to partially mediate the effect of psychological empowerment on innovative work behaviour.

**H10: Empowering Leadership → Psychological Capital → IWB (Mediation)**

Hypothesis 10 examined the mediating role of psychological capital in the relationship between empowering leadership and IWB. The indirect path coefficient of 0.126 indicates that psychological capital strengthens the positive effect of empowering leadership on IWB. With a p-value of 0.014 < 0.05, H0 is rejected and H10 is supported. Psychological capital was proven to partially mediate the effect of empowering leadership on innovative work behaviour.

## Discussion

### Authentic Leadership and Innovative Work Behaviour

The results indicate that authentic leadership does not have a direct positive and significant effect on IWB ($\beta = -0.040$), meaning H1 is not supported. This suggests that although leaders in the oil and gas companies of the North Sumatra region exhibit authentic leadership characteristics, its impact on employees' innovative work behaviour is not felt directly. Authentic leadership appears to exert greater influence on trust, openness, and psychological well-being, while IWB is more directly shaped by other factors such as psychological empowerment, organizational support, and an embedded culture of innovation. This finding is consistent with Srimongkolkul et al. (2025), whose study of 614 logistics employees in Thailand's Eastern Economic Corridor found only a weak correlation between authentic leadership and IWB, reinforcing that this relationship is not always direct and may depend on mediating or moderating variables across different organizational contexts.

### Authentic Leadership and Psychological Capital

Authentic leadership was found to have a positive and significant effect on psychological capital ($\beta = 0.300$, $p = 0.001$), supporting H2. This indicates that leadership grounded in authenticity — characterized by transparency, self-awareness, and moral integrity — creates an open and supportive work environment that allows employees' psychological resources to develop optimally. This finding aligns with Siagian et al. (2024), who found that authentic leadership enables employees to express themselves more freely, thereby boosting motivation and psychological capacity. Supporting evidence also comes from Alavi et al. (2025), Zhou and Yusof (2024) in a sample of 406 Chinese manufacturing employees, and Yollu and Korkmaz (2024) in Turkey, all of whom confirmed a direct positive effect of authentic leadership on psychological capital.

### Psychological Empowerment and Innovative Work Behaviour

Psychological empowerment was found to have a positive and significant effect on IWB ($\beta = 0.212$, $p = 0.013$), supporting H3. When employees perceive autonomy, competence, meaning, and impact in their work, they are more motivated to generate new ideas, propose innovative approaches, and implement creative solutions in the face of operational challenges in the oil and gas industry. This finding is consistent with Ali et al. (2022), Ismail et al. (2024), and Messmann (2023), all of whom demonstrated that psychological empowerment is a key driver of IWB. Yadav et al. (2023) further found that highly empowered individuals are more likely to seek new opportunities and take initiative, while Kustanto et al. (2020) confirmed that employees with strong psychological empowerment exhibit greater self-belief, which facilitates the emergence of innovative behaviour.

### Psychological Empowerment and Psychological Capital

Psychological empowerment was found to have a positive and significant effect on psychological capital ($\beta = 0.297$, $p = 0.006$), supporting H4. When employees feel empowered in terms of autonomy, competence, meaning, and impact, they develop greater confidence, optimism, resilience, and hope in confronting the demanding challenges of the oil and gas work environment. This aligns with Anggreni et al. (2022), who found that empowered employees tend to possess stronger psychological resources, and with Kariri et al. (2023), whose study of 813 employees in Saudi Arabia showed that psychological empowerment positively increases self-efficacy and optimism. Al-Dosari et al. (2024) and Khieowan et al. (2025) further corroborate these findings across different national contexts, collectively confirming that psychological empowerment is a key factor in building and strengthening employees' psychological capital.

**Empowering Leadership and Innovative Work Behaviour**

Empowering leadership was found to have a positive and significant effect on IWB (β = 0.211, p = 0.007), supporting H5. Leaders who grant autonomy, provide support, and extend trust to employees encourage the emergence of creative ideas and the willingness to implement new approaches in problem-solving. This finding is consistent with Rai and Kim (2021), Coun et al. (2021), and Guo et al. (2023), who examined trust, work-related flow, and meaningful work as mediating mechanisms and consistently found that empowering leadership positively influences IWB across various organizational settings.

**Empowering Leadership and Psychological Capital**

Empowering leadership was found to have a positive and significant effect on psychological capital (β = 0.240, p = 0.012), supporting H6. Leaders who delegate authority, foster independence, and actively support employees contribute to the growth of self-efficacy, optimism, hope, and resilience in facing work challenges. This finding aligns with Burhan et al. (2024), who provided evidence that empowering leaders enhance employees' psychological capital by creating positive, growth-oriented work environments that promote mental well-being and positive work attitudes.

**Psychological Capital and Innovative Work Behaviour**

Psychological capital was found to have the strongest direct effect on IWB in this study (β = 0.527, p = 0.000), supporting H7. Employees with high self-efficacy, optimism, hope, and resilience are more willing to generate new ideas, propose creative solutions, and implement innovative approaches in their work. This is consistent with Suryanto and Rachmawati (2025), who confirmed a significant direct effect of psychological capital on IWB, and with Youn and Jia Xin (2024), who found that individuals with high psychological capital demonstrate superior creative problem-solving and are more capable of adopting innovative approaches in the workplace.

**Mediating Role of Psychological Capital: Authentic Leadership → IWB**

Psychological capital was found to significantly mediate the effect of authentic leadership on IWB (β = 0.158, p = 0.002), supporting H8. Although authentic leadership does not directly influence IWB, it exerts a meaningful indirect effect by first strengthening employees' psychological capital, which in turn drives innovative behaviour. This indicates that authentic leaders play a crucial role in building the psychological foundation — self-efficacy, hope, resilience, and optimism — that ultimately enables employees to behave innovatively. This finding is consistent with Novitasari (2020), who confirmed that psychological capital mediates the relationship between authentic leadership and IWB, and with Khan et al. (2024), who demonstrated that authentic leadership positively influences IWB through the enhancement of employees' psychological capacity.

**Mediating Role of Psychological Capital: Psychological Empowerment → IWB**

Psychological capital was found to significantly mediate the effect of psychological empowerment on IWB (β = 0.156, p = 0.011), supporting H9. This indicates that psychological empowerment influences IWB not only directly but also indirectly by strengthening employees' psychological capital. Employees who feel empowered at work develop higher levels of psychological capital, which subsequently drives more active and sustained innovative behaviour. This finding is consistent with Slåtten et al. (2019), who confirmed the mediating role of psychological capital in this pathway, and with Asih and Indriati (2020), who found that psychological capital has a positive and significant effect on innovative work behaviour.

**Mediating Role of Psychological Capital: Empowering Leadership → IWB**

Psychological capital was found to significantly mediate the effect of empowering leadership on IWB ($\beta = 0.126$, $p = 0.014$), supporting H10. This indicates that empowering leadership influences IWB not only through direct mechanisms but also by first enhancing employees' psychological capital — specifically self-efficacy, optimism, hope, and resilience — which then serves as the foundation for innovative work behaviour in the oil and gas industry. This finding aligns with Jabid et al. (2025), who confirmed the mediating role of psychological capital among 244 SME employees, and with Pangaribuan (2022), who found partial mediation of psychological capital in the empowering leadership–IWB relationship among government statistical agency employees in Papua Province, Indonesia.

## CONCLUSION

### Conclusion

This study analyzed the effects of authentic leadership, psychological empowerment, and empowering leadership on innovative work behaviour, mediated by psychological capital, among 398 oil and gas employees in the North Sumatra (Sumbagut) region. The sample was predominantly male, aged 26–35 years, permanent employees working at Pertamina, holding a bachelor's degree, with 5–9 years of tenure, and occupying staff-level positions. Based on the hypothesis testing, the findings conclude that authentic leadership does not have a direct positive effect on IWB, but positively and significantly influences psychological capital. Psychological empowerment and empowering leadership both have positive and significant effects on both IWB and psychological capital. Psychological capital itself is the strongest direct predictor of IWB in this study. Furthermore, psychological capital was proven to mediate the effects of authentic leadership, psychological empowerment, and empowering leadership on IWB, confirming its central role as a psychological mechanism through which leadership and empowerment translate into innovative employee behaviour in the oil and gas industry.

### Suggestion

This study has several limitations that should be acknowledged. The research was conducted exclusively among employees of oil and gas companies in the Sumbagut region, which limits the generalizability of the findings to other industries or geographical contexts. The sample size of 398 respondents, while sufficient for PLS-SEM analysis, may not fully represent the broader population, and the study examined only five variables, leaving other potentially relevant factors unexplored. Future studies are therefore encouraged to extend the research context to other industries such as banking, education, or healthcare, where innovation dynamics may differ. Increasing the number of respondents would further enhance statistical power and generalizability. Additionally, future research could explore additional variables that may influence IWB, such as perceived organizational support (Tjanturi et al., 2024) and internal communication (Santos et al., 2024), to provide a more comprehensive understanding of the antecedents of employee innovation in organizational settings.

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