

STRENGTHENING INNOVATIVE WORK BEHAVIOUR THROUGH HR PRACTICES IN MALAYSIA'S OIL AND GAS INDUSTRY: A CONCEPTUAL STUDY

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Abstract: Innovative Work Behaviour (IWB) is increasingly critical for organisations navigating competitive and technology-intensive industries, such as oil and gas, where operational resilience and continuous improvement are key to long-term success. Despite substantial investment in advanced technologies, many organisations struggle to convert these assets into employee-driven innovation, highlighting a gap in the organisational practices that support innovation. In the Malaysian oil and gas sector, this gap is particularly evident. Human Resource (HR) practices are widely acknowledged as strategic tools to build innovation capabilities by enhancing employee ability, motivation, and opportunity. However, the consistent underperformance in innovation outcomes suggests that the application of these HR practices may not be fully optimised within this context. This conceptual study aims to explore how four key HR practices, namely training and development, performance management, rewards and recognition, and employee engagement, influence IWB among employees in petrochemical operations. Guided by the Ability-Motivation-Opportunity (AMO) theory and Social Exchange Theory (SET), the study employs a narrative literature review methodology to synthesise recent scholarly findings. Based on this review, the paper proposes a conceptual framework that outlines the pathways through which HR practices foster innovative behaviours at the employee level. The framework offers theoretical insight into the mechanisms linking HRM and innovation, while also presenting practical guidance for HR professionals in high-compliance sectors. By aligning HR practices with industry-specific demands, organisations can better activate employee potential and translate it into meaningful innovation.

Keywords: Employee Engagement, Human Resource Practices, Innovative Work Behaviour, Oil and Gas Industry, Performance Management, Rewards and Recognition, Training and Development

Introduction

Innovation has become a strategic imperative for organisations operating in rapidly changing and technologically intensive environments. In Malaysia's oil and gas industry, the complexity of upstream and downstream operations requires organisations to sustain continuous improvement, enhance operational performance, and respond effectively to global competitive pressures. In this context, employees' ability to demonstrate Innovative Work Behaviour (IWB) has become increasingly critical. IWB involves the generation, promotion, and implementation of novel ideas that contribute to organisational effectiveness. Malaysian studies have highlighted the importance of innovation capabilities in resource-intensive sectors, noting that firms must leverage both technological and human resources to remain competitive in the evolving energy landscape (Munodawafa & Johl, 2022; Hashim & Mohammad, 2024). Despite technological advancements and digitalisation initiatives, many organisations continue to face challenges in translating these improvements into employee-driven innovation, signalling potential gaps in the organisational practices that support innovative behaviour.

Human Resource (HR) practices play a pivotal role in shaping employee motivation, capability, and engagement, which are essential drivers of IWB. Strategic HR practices such as training and development, performance management, rewards and recognition, and employee engagement have been shown to influence innovative behaviours by providing employees with the skills, resources, and support needed to contribute creatively to organisational goals (Abdullah et al., 2024; Mohan, 2017). Empirical evidence from various Malaysian industries indicates that HR practices not only foster technical competence but also create an organisational climate conducive to exploration, experimentation, and improved job performance. For example, research in the airline and service sectors has demonstrated that HR practices can enhance work engagement and job crafting, which subsequently strengthen IWB (Abdullah et al., 2024). Earlier studies in knowledge-intensive sectors also emphasised that HRM systems aligned with ability, motivation, and opportunity principles reinforce organisational innovation outcomes (Khar Kheng et al., 2013).

Although growing evidence highlights the positive impact of HR practices on innovative behaviour, the nature of this relationship is not fully understood in high-risk and technologically complex industries. HR practices in these settings are often designed primarily for compliance, operational control, or productivity, and may not always align with the psychological conditions that promote creativity and initiative among employees (Renkema et al., 2021). In environments such as the oil and gas sector, where safety and standardisation are paramount, the influence of HR strategies on innovation may operate differently compared to other sectors. As Li (2025) notes, even high-performance HR practices must be carefully adapted to context to effectively support creativity and innovation. Understanding how these practices simultaneously support operational discipline and promote innovation is essential to unlocking employees' creative contributions.

Problem Statement

Despite significant technological investment, organisations in Malaysia's oil and gas sector continue to experience a persistent innovation gap. The failure to translate digital advancements into employee-driven innovation suggests that the mechanisms linking HR practices and IWB remain poorly understood in this context. While prior research has explored HRM and innovation in other industries, there is a lack of integrated theoretical explanation tailored to the unique operational, safety, and compliance realities of the oil and gas sector. Addressing this

gap requires a conceptual model that clarifies how specific HR practices interact with employee behaviours to foster innovation in this high-risk, technology-intensive environment.

Given these gaps, this conceptual paper examines how HR practices can strengthen Innovative Work Behaviour in Malaysia's oil and gas industry. The objectives of this study are threefold: first, to synthesise the literature on HR practices and their influence on employee innovation; second, to identify the HR practices most relevant to fostering IWB in the oil and gas industry; and third, to propose a conceptual framework that explains the mechanisms through which HR practices can enhance employee innovation in this industry. By integrating contemporary findings with established theoretical insights, this paper contributes to a deeper understanding of the HRM-innovation relationship and offers managerial implications for cultivating an innovative workforce capable of supporting the future resilience of Malaysia's oil and gas industry.

Methodology

This conceptual study employed a narrative-based literature review approach to synthesise and integrate existing research on Human Resource practices and Innovative Work Behaviour (IWB) within organisational settings. A narrative review is suitable for conceptual papers because it enables scholars to interpret, compare, and integrate diverse theoretical perspectives and empirical findings to develop a coherent conceptual framework (Paul et al., 2021). This approach supports analytical depth by allowing the researcher to examine how HR practices have been linked to innovation-related outcomes across various organisational contexts, including high-risk and technology-intensive industries such as oil and gas.

To ensure methodological rigour, the review process followed structured and transparent procedures often applied in conceptual synthesis. Relevant peer-reviewed articles published between 2021 and 2025 were identified through major academic databases, including Scopus and Web of Science. Keywords used in the search included "innovative work behaviour," "human resource practices," "training and development," "performance management," "rewards and recognition," and "employee engagement." The initial search yielded 204 publications. After removing duplicates and screening for relevance, approximately 48 studies were included in the final review. Inclusion criteria focused on empirical and conceptual studies that specifically examined HRM practices and innovation-related employee behaviours. Studies were excluded if they lacked relevance to HRM or IWB, were not in English, or did not present primary findings or theoretical contributions. Additional sources such as book chapters, research reports, and reputable conference papers were included when they offered significant theoretical or contextual insight. The selected literature was analysed thematically to identify recurring patterns, contradictory findings, and underexplored areas. Themes were derived inductively by grouping studies that addressed similar constructs, mechanisms, or outcomes, forming the basis of the proposed conceptual framework explaining how HR practices may strengthen IWB in Malaysia's oil and gas industry.

Results and Discussions

Based on the comprehensive review of contemporary and foundational literature, this study synthesises the evolving role of Human Resource practices in strengthening Innovative Work Behaviour within Malaysia's oil and gas industry. The reviewed studies demonstrate that while HRM research spans a broad range of organisational outcomes, including performance, engagement, and workforce capability, the relationship between HR practices and employee innovation remains a critical area that warrants deeper examination. Many researchers highlight

various dimensions of HRM that influence organisational effectiveness; however, this study narrows its focus to specifically explore how selected HR practices can be strategically utilised to stimulate employee-driven innovation. In contrast to broader discussions that encompass diverse HR initiatives and organisational processes, this study emphasises the targeted connection between HR practices and IWB, particularly within oil and gas industry where innovation is essential for operational resilience, safety, and long-term competitiveness.

The subsequent sections consolidate the key themes that emerged from the literature and outline the theoretical foundations that support the proposed conceptual framework. This includes a focused discussion on how training and development, performance management, rewards and recognition, and employee engagement contribute to innovative behaviours. These behaviours include idea generation, idea promotion, and idea implementation. The synthesis also highlights industry-specific insights drawn from Malaysian oil and gas studies, demonstrating how HR practices can play a transformative role in enhancing innovation within highly regulated and technology-driven environments. By integrating these perspectives, the study provides a refined understanding of how HR practices may catalyse IWB and offers a structured basis for organisations seeking to cultivate a more innovative and proactive workforce. This focused approach not only underscores the potential value of strategic HR interventions but also guides practitioners in identifying practices that align with the innovation objectives of modern energy and petrochemical organisations.

Overview of the Synthesis Process

This section presents an integrated synthesis of existing literature explored through the narrative review. The aim is to identify how specific Human Resource (HR) practices relate to Innovative Work Behaviour (IWB) and to consolidate theoretical and empirical insights that can support the proposed conceptual framework. The literature reveals that HR practices play an important role in fostering IWB by enhancing employees' competencies, motivation, and organisational engagement. While various organisational and individual factors influence innovation outcomes, HR practices remain central in shaping conditions that encourage employees to generate, promote, and implement innovative ideas.

Innovative Work Behaviour in Organisational Contexts

Innovative Work Behaviour (IWB) is broadly defined as the intentional introduction and application of new ideas within a work role, team, or organisation to improve performance and outcomes (Jankelová et al., 2021; West & Farr, 1990). It goes beyond routine functioning and involves proactively identifying opportunities, generating novel solutions, and implementing changes that enhance work processes or outputs. Although definitions vary slightly, most scholars converge on the view that IWB includes a sequence of behaviours which are idea generation, idea promotion, and idea implementation (Janssen, 2000; Yuan & Woodman, 2010). This shared understanding reflects a long-standing consensus in the literature, though recent studies have begun to explore how contextual factors, such as organisational structure and leadership, may influence how IWB manifests across different industries (Jishnu & Hareendrakumar, 2024). This can be observed in a study by Janssen (2000) who defines IWB as the intentional creation and application of new ideas to benefit one's role or organisation, and Yuan and Woodman (2010) similarly characterize it as an employee's deliberate introduction or use of new ideas, products, or procedures in their work. Encouraging such innovative behaviour among staff is essential for organisations because it drives bottom-up innovation and continual improvement. Studies indicate that companies that support IWB can gain and sustain competitive advantages in dynamic markets (Jishnu & Hareendrakumar, 2024).

and that IWB is crucial for long-term organisational sustainability (Thurlings et al., 2015). Empirical evidence also shows a positive link between employees' IWB and higher organisational performance outcomes (Arifin et al., 2024; Thneibat, 2025). The value of IWB lies in its role as a driver of bottom-up innovation and adaptive capacity. Multiple studies link IWB to improved organisational resilience, responsiveness, and competitiveness in dynamic markets (Thurlings et al., 2015; Arifin et al., 2024). However, while these outcomes are well-documented, the underlying enablers of IWB, particularly in high-risk or compliance-heavy sectors, remain underexplored. Thneibat (2025) and others have emphasised the importance of supportive organisational environments, but few studies provide detailed accounts of how specific organisational systems, such as HR practices, shape these environments.

In high-stakes and technology-intensive sectors like oil and gas, the ability of employees to innovate is both essential and constrained. This industry demands continuous problem-solving, yet it operates under rigid safety protocols and structural hierarchies that may suppress discretionary behaviour. Hebbaz et al. (2023) argue that employee innovation in this context requires not only technical skill but also an organisational climate that empowers individuals to voice ideas and take calculated risks. Uranta and Zeb-Obipi (2024) add that firms in the oil and gas sector must actively foster individual-level innovation to remain viable amid resource volatility and global decarbonisation pressures. However, as Jankelová et al. (2021) caution, many organisations fail to capitalise on their workforce's creative potential due to a lack of systems that facilitate innovation at the employee level.

In Malaysia, the strategic importance of IWB is reflected in national policies prioritising innovation-led growth. Although research and development investment has increased substantially in recent years, innovation output remains uneven across industries (Munodawafa & Johl, 2022). Hashim and Mohammad (2024) note that the disconnect may lie in weak organisational mechanisms that fail to translate macro-level innovation priorities into micro-level employee behaviours. This reinforces the need to examine how internal systems, particularly HR practices can be better aligned with innovation objectives. Globally, organisations are turning to HRM as a strategic lever for promoting IWB, but the HR-IWB relationship in the Malaysian oil and gas sector remains under-researched. This gap underscores the urgency of building a theoretical foundation to explain how HR systems can activate employee innovation in complex operating environments (Hashim & Mohammad, 2024). On a global scale, the importance of IWB is universally acknowledged. Organisations around the world are increasingly encouraging employee innovation as a strategy to adapt to rapid technological changes and market uncertainties, seeing IWB as key to sustaining competitive advantage and long-term success (Jankelová et al., 2021).

HR Practices as Drivers of Innovative Work Behaviour

HR practices are conceptualized as organisational systems designed to enhance employee capabilities and foster positive work behaviours that support innovation outcomes. The Ability-Motivation-Opportunity (AMO) framework is commonly used to explain how specific HR practices shape employee outcomes by enhancing ability (through skill development), motivation (through rewards and recognition), and opportunity (through engagement and work design) (Ferrarini & Curzi, 2022). Recent evidence confirms that companies investing in AMO-enhancing HR practices tend to achieve higher innovation capacity (Abdullah et al., 2024). In particular, research has shown that well-designed HRM systems cultivate work environments where employees have the ability, motivation, and opportunities to engage in innovative work behaviour (Abdullah et al., 2024). The following subsections provide an in-depth discussion of

four key HR practices which are training and development, performance management, rewards and recognition, and employee engagement, and examine how each contributes to employee behaviour, capability, and motivation in innovative contexts.

Training and Development

Training and development (T&D) practices are ability-enhancing interventions aimed at building employees' knowledge, skills, and competencies (Amin et al., 2025). T&D practices play a central role in enhancing employees' ability to engage in innovative work behaviour (IWB), particularly by equipping them with the knowledge, skills, and confidence to think creatively and act proactively. A strong T&D programme increases employees' expertise and self-confidence while creating a culture of continuous learning in which individuals feel empowered to challenge the status quo and experiment with new approaches (Kusumastuti et al., 2024). By enhancing employees' capabilities, T&D directly expands their capacity to generate creative solutions and carry out innovative tasks. Literatures have also supported a significant positive impact of T&D on innovative work behaviour. For example, a 2024 study in Indonesia's public sector found that T&D positively and significantly influenced employees' IWB. This relationship was partly mediated by knowledge-sharing practices, suggesting that when employees apply and share the new skills acquired through training, it amplifies the innovative outcomes (Kusumastuti et al., 2024). In summary, robust training opportunities equip employees with the ability to perform beyond routine requirements, fostering the skill base and creative confidence necessary for innovation.

Empirical studies have consistently found that well-structured training programs foster a culture of continuous learning, which encourages employees to challenge existing routines and explore novel solutions (Kusumastuti et al., 2024; Kundu et al., 2025). T&D initiatives also improve employee self-efficacy, the belief in one's ability to innovate which is a key psychological driver of IWB (Firdaus et al., 2025). Moreover, when training is designed to promote team collaboration and knowledge sharing, it not only upgrades technical competencies but also reinforces collective learning that enhances innovation at both the individual and group levels (Aziz et al., 2022). This relationship is particularly relevant in complex and high-risk industries, such as oil and gas, where innovation must coexist with strict operational and safety standards.

In such environments, T&D has been shown to build employees' absorptive capacity, the ability to internalise and apply new knowledge which is essential for translating training into practical innovation (Sinaga et al., 2024). Research suggests that training focused solely on compliance or routine tasks is insufficient; instead, development programs should aim to empower employees to apply new ideas confidently within structured parameters. By fostering both individual competence and a supportive learning climate, T&D serves as a strategic mechanism for strengthening IWB in challenging operational settings.

Performance Management

Recent research underscores that well-designed performance management systems (PMS) can significantly influence employees' innovative work behaviour (IWB) (Thneibat, 2025; Hoang Dang, 2025). While PMSs have traditionally emphasised performance monitoring and accountability, contemporary studies highlight their broader developmental and motivational functions. Goal setting, feedback, and appraisal processes within PMSs serve not only as control mechanisms but also as symbolic signals that shape employee behaviour. A robust PMS that is distinctive, consistent, and consensual, which Bauwens et al. (2024) describe as a "strong situation," has been shown to reinforce IWB by aligning individual performance expectations

with organisational innovation goals. Their findings indicate that only coherent and well-integrated PMS configurations, which include planning, developmental feedback, and fair evaluations, successfully unlock innovative potential. This suggests that it is not merely the presence of a PMS that matters, but the clarity and alignment of its signals across the organisation. When employees perceive the performance management process as transparent and supportive, they are more likely to go beyond routine tasks and experiment with new approaches. Empirical evidence further suggests that evolving performance management beyond a narrow results focus to a development-oriented approach can inspire greater creativity and initiative among employees (Liehr & Hauff, 2025; Bauwens et al., 2024).

When performance management is perceived as fair and supportive, it fosters psychological safety and a growth mindset, encouraging employees to experiment and take initiative. Other scholars echo this developmental perspective, noting that shifting PMS away from output control toward learning-oriented practices is critical for cultivating IWB (Liehr & Hauff, 2025; Thneibat, 2025). A key feature of innovation-enabling PMS is the integration of developmental feedback and innovation-linked goals into appraisals. For instance, Li et al. (2021) found that supervisor developmental feedback, which focused on learning rather than evaluation, had a significant positive influence on IWB by boosting employee confidence and autonomy. This kind of feedback functions as a social cue, reinforcing the idea that creative effort is appreciated and supported. Liehr and Hauff (2025) similarly argue that innovation-related objectives in appraisal systems increase the salience of creative behaviours, provided these goals are flexible enough to support experimentation rather than rigid compliance. Furthermore, Thneibat (2024) found that performance evaluations emphasising employee growth rather than fault-finding enhanced affective commitment and innovation motivation. Collectively, these findings indicate that PMSs anchored in developmental intent, through constructive feedback, fair evaluations, and innovation-oriented targets, promote not just performance but also a culture of creativity and continuous improvement.

Rewards and Recognition

Rewards and recognition systems are widely recognised as central motivation-enhancing HR practices under the Ability-Motivation-Opportunity (AMO) framework (Ferrarini & Curzi, 2022). These practices satisfy employees' needs for appreciation and fair compensation, thereby energising discretionary effort toward innovation. Monetary incentives, such as innovation bonuses or performance-based pay, can bolster extrinsic motivation by signalling that creative contributions are valued. Thneibat (2024) found that such rewards significantly strengthen affective commitment, which in turn motivates employees to reciprocate with greater innovative effort. This aligns with Social Exchange Theory, which suggests that when employees perceive organisational support through fair and meaningful rewards, they are more inclined to engage in behaviours that benefit the organisation, such as generating and implementing novel ideas. However, financial rewards alone often fall short of sustaining long-term innovation. Their effectiveness appears to depend on whether they are paired with interpersonal and developmental reinforcement that nurtures intrinsic motivation.

Non-monetary forms of recognition such as verbal praise, symbolic awards, or public acknowledgment fulfil psychological needs for competence and achievement, reinforcing employees' intrinsic motivation to innovate. Bécuwe et al. (2021) demonstrated that an integrated recognition system combining financial and non-financial rewards, along with constructive feedback, produced a stronger overall impact on IWB. Their study further showed that such comprehensive recognition not only enhanced individual innovation but also

encouraged supportive behaviours among peers, contributing to a collaborative culture that sustains innovation. These findings highlight the value of a holistic recognition strategy. Rather than treating financial and non-financial rewards as separate mechanisms, combining both within a consistent and fair system appears to be more effective. When employees feel both materially valued and emotionally recognised, they are more likely to exhibit proactive, sustained engagement in innovation. Therefore, a well-designed rewards and recognition system, embedded within a broader supportive HR framework, plays a pivotal role in fostering innovative work behaviour across organisational levels.

Employee Engagement

Employee engagement represents an opportunity-enhancing HR focus, wherein organisations strive to create conditions that allow employees to be deeply involved, empowered, and psychologically present in their work. Highly engaged employees exhibit strong vigor, dedication, and absorption in their roles, which translates into greater willingness to invest effort in innovation-related activities (AlEssa & Durugbo, 2024; Elamin et al., 2024). Multiple studies demonstrate that engagement offers a unique behavioural pathway to innovation by reinforcing employees' sense of purpose and alignment with organisational values. Engagement provides employees with the opportunity to connect their personal initiative to organisational innovation needs. Engaged individuals proactively seek out ways to improve products and processes, voice new ideas, and collaborate with others to implement changes (Ababneh, 2022). A growing body of research confirms a robust positive relationship between engagement and innovative work behaviour. For example, a comprehensive review of recent studies found that workers who are highly engaged consistently display higher levels of IWB across various sectors and cultural contexts. Engaged employees tend to go beyond their formal job duties. They take initiative, share knowledge, and persist in the face of challenges, all behaviours integral to innovation (Ababneh, 2022; Elamin et al., 2024).

Empirical evidence from different industries reinforces this link. In one study, engagement significantly predicted IWB among manufacturing employees in Pakistan, while another showed that Chinese employees with higher engagement were more likely to introduce and implement new ideas (Elamin et al., 2024). While both studies support the engagement–IWB connection, contextual factors such as leadership climate and cultural expectations influence the strength of this relationship. Engagement also interacts with other HR practices to strengthen innovation outcomes. HR systems that foster engagement, such as supportive leadership and participatory decision-making, enable employees to apply their full potential toward innovation. For instance, Abdullah et al. (2024) observed that in the airline industry, a bundle of HR practices enhanced employees' work engagement, which in turn had a strong positive effect on their innovative behaviour. In essence, engaged employees are emotionally and cognitively connected to their work, which makes them more likely to volunteer ideas and efforts that drive innovation. Providing meaningful work, autonomy, and consistent managerial support strengthens the emotional commitment needed for IWB to flourish.

Underpinning Theories Supporting the HRM-IWB Relationship

In order to understand this relationship more clearly, a strong conceptual grounding is necessary to explain why Human Resource practices influence Innovative Work Behaviour (IWB). Theoretical frameworks provide the lens through which researchers can interpret the mechanisms that connect HRM systems with innovation-related employee outcomes. Two of the most widely applied theories in this domain are the Ability-Motivation-Opportunity (AMO)

Theory and Social Exchange Theory (SET). These theories help articulate how HR practices influence the willingness and capacity of employees to engage in innovation at work.

Ability-Motivation-Opportunity (AMO) Theory

The AMO framework, developed by Appelbaum et al. (2000), posits that employee performance is shaped by three key dimensions: ability, motivation, and opportunity. Within this model, HR practices are viewed as levers that can be strategically designed to improve each of these components. Training and development initiatives build ability by enhancing employees' skills and knowledge. Performance management and rewards systems foster motivation by linking recognition to desired behaviours, including innovation. Finally, employee engagement practices create opportunities for employees to apply their capabilities by offering autonomy, voice, and involvement in decision-making. Together, these practices create an enabling environment in which employees are both capable of and encouraged to generate and implement new ideas. AMO Theory therefore offers a comprehensive foundation for explaining how a system of HR practices can align with individual-level innovation behaviours (Ferrarini & Curzi, 2022).

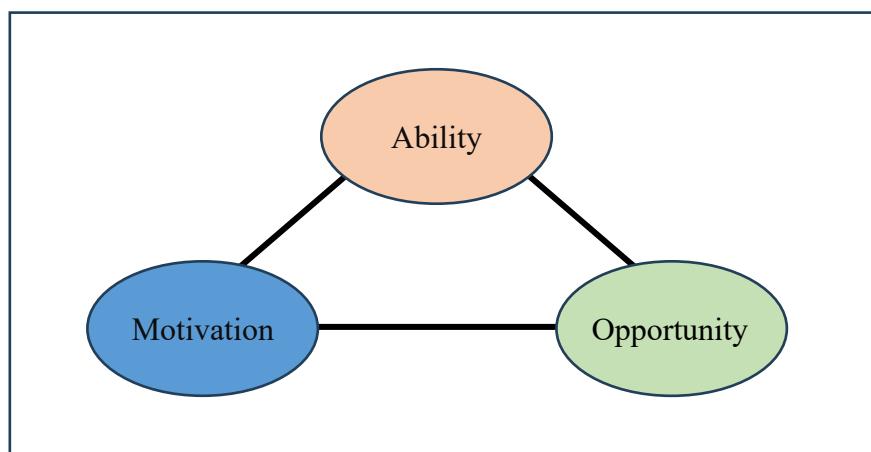


Figure 1: The Ability-Motivation-Opportunity Theory by Appelbaum et al. (2000)

Social Exchange Theory

Social Exchange Theory (SET), initially conceptualised by Blau (1964), provides a relational explanation for the HRM-IWB link. According to SET, relationships within organisations are governed by reciprocal exchanges. When employees perceive that their organisation supports them through developmental and fair HR practices, they feel a sense of obligation to reciprocate with positive behaviours that go beyond formal job descriptions. These discretionary behaviours include proposing innovative solutions, sharing ideas, and supporting change initiatives. In this context, HR practices such as recognition, fair performance appraisal, and inclusion signal organisational support. This support enhances trust and psychological safety, which are critical conditions for innovation. Employees who feel valued and respected are more likely to take initiative and invest personal resources in innovation-related efforts. SET thus complements AMO by addressing the motivational and relational dynamics that underpin employee engagement in IWB (Elamin et al., 2024).

HR Practices and IWB in Malaysia's Oil and Gas Industry

While research on HR practices and IWB is extensive in general organisational studies, literature specific to the Malaysian oil and gas industry is limited. Nonetheless, studies in

comparable contexts emphasise the importance of targeted HR practices for innovation in technology-driven and safety-centric industries where employee competencies and motivation are critical for operational resilience (Munodawafa & Johl, 2022). The synthesis highlights the need to contextualise HRM strategies within industry-specific operational dynamics, safety cultures, and regulatory demands, reinforcing the value of a conceptual framework tailored to petrochemical organisations.

The literature collectively suggests that strategic HR practices have significant positive implications for Innovative Work Behaviour, with training, performance management, rewards, and engagement emerging as key drivers of employee innovation (Ho et al., 2023). However, several gaps remain. First, there is a lack of consensus on how these practices interact in specific industry contexts such as oil and gas. Second, few studies offer comprehensive conceptual models that integrate multiple HR practices with innovation outcomes in highly regulated and complex operational settings. This synthesis highlights the need for a refined conceptual framework that accounts for industry-specific contingencies and guides future empirical research.

Conceptual Framework

This section presents the proposed conceptual framework that integrates the key themes emerging from the synthesis of literature on Human Resource practices and Innovative Work Behaviour (IWB). Grounded in established theoretical perspectives and supported by empirical findings, the framework explains how specific HR practices can stimulate IWB among employees in Malaysia's oil and gas industry. The framework is designed to offer a coherent explanation of the pathways through which training and development, performance management, rewards and recognition, and employee engagement contribute to greater employee-driven innovation.

The framework is built on two core theoretical foundations. First, the Ability-Motivation-Opportunity (AMO) theory posits that effective HR practices enhance employee performance by developing their abilities, strengthening motivation, and creating opportunities to apply their skills meaningfully. Applying AMO logic, training and development practices increase employees' innovation-related competencies, performance management and rewards enhance their motivation to participate in innovation-related activities, and engagement practices provide opportunities and organisational support for innovation to occur. Second, Social Exchange Theory (SET) provides the relational foundation for the proposed relationships. SET suggests that when employees perceive organisational support in the form of fair HR practices, they reciprocate through positive discretionary behaviours, including IWB. Thus, HR practices function as signals of organisational investment, encouraging employees to contribute ideas and take initiative in improving processes and systems. Together, AMO and SET establish a strong theoretical rationale for linking HR practices to IWB in petrochemical organisations.

The proposed framework focuses on four HR practices that emerged consistently in the literature as significant drivers of IWB. Training and development initiatives strengthen the skills and cognitive resources employees need to explore novel solutions and implement improvements. Performance management practices further reinforce innovation by clarifying expectations, aligning individual goals with organisational priorities, and providing developmental feedback that encourages innovative efforts. Rewards and recognition systems serve as motivational mechanisms that reinforce innovative actions by acknowledging and rewarding contributions. Employees who perceive that innovative efforts are valued are more

willing to take risks and contribute new ideas. Finally, employee engagement functions as an opportunity-enhancing practice that strengthens employees' emotional and cognitive commitment to their work. Engaged employees are more likely to embrace proactive behaviours, collaborate effectively, and support innovation initiatives.

Based on these arguments, the framework positions HR practices as antecedents of IWB through their influence on employee ability, motivation, and opportunity to innovate. The visual representation of the proposed conceptual framework is illustrated in Figure 2 below.

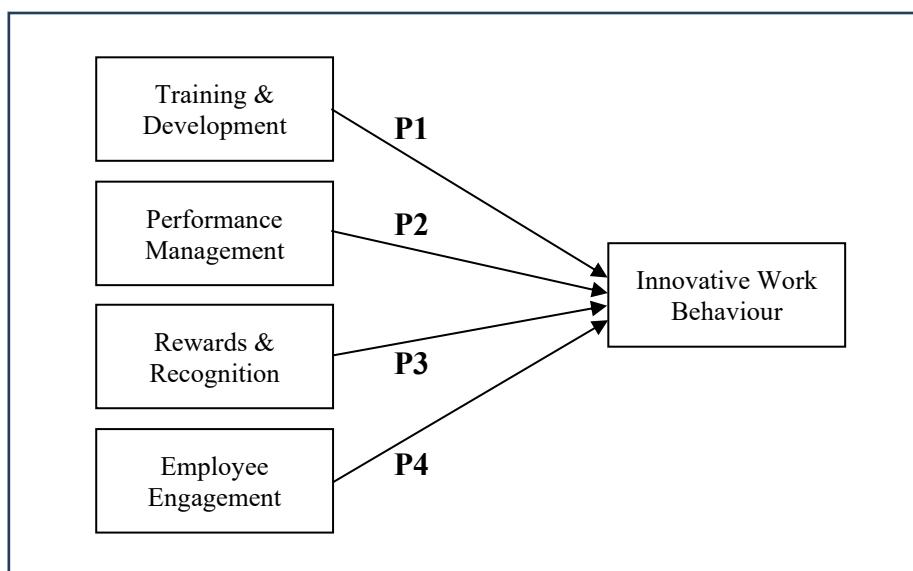


Figure 2: Proposed conceptual framework

Given that this is a conceptual paper, the framework is supported by propositions as below:

- P1:** Training and development practices are positively associated with Innovative Work Behaviour.
- P2:** Performance management practices strengthen Innovative Work Behaviour.
- P3:** Rewards and recognition practices are positively related to Innovative Work Behaviour.
- P4:** Employee engagement supports higher levels of Innovative Work Behaviour.

The proposed conceptual framework offers theoretical and practical contributions. Theoretically, it integrates HRM and innovation research to provide a consolidated explanation of how multiple HR practices influence IWB through AMO and SET. Practically, it offers managers in Malaysia's oil and gas industry a clear understanding of which HR practices can be strategically prioritised to stimulate innovation at the employee level. This framework can guide future empirical studies and help organisations build HR systems that nurture a more innovative, resilient, and forward-looking workforce.

Discussion and Implications

This section presents a synthesis of the key findings from the conceptual analysis and discusses their relevance in light of existing literature. It interprets the theoretical significance of the proposed framework and outlines the practical implications for Human Resource management, particularly in the context of promoting Innovative Work Behaviour. The section also highlights

how the integration of HR practices can inform strategic decisions in organisations operating within complex and innovation-driven industries.

Discussions

The synthesis of findings indicates that Human Resource practices play a foundational role in shaping the conditions that foster Innovative Work Behaviour (IWB), particularly in complex and regulated environments such as Malaysia's oil and gas industry. In this high-risk and technologically intensive industry, continuous innovation is essential for achieving operational resilience, upholding safety standards, and sustaining competitiveness. The proposed conceptual framework identifies four HR practices: training and development, performance management, rewards and recognition, and employee engagement. These practices contribute to building employee capabilities, strengthening their motivation, and creating environments where proactive behaviour can flourish. For example, training enhances not only technical skills but also knowledge-sharing and problem-solving, which are critical for innovation (Kusumastuti et al., 2024). Similarly, employee engagement is associated with a higher willingness to take initiative and contribute new ideas in rapidly changing operational contexts (Elamin et al., 2024).

This relationship is grounded in two complementary theoretical perspectives, namely the Ability, Motivation, and Opportunity (AMO) theory and Social Exchange Theory (SET). AMO theory suggests that HR practices improve employee performance by developing ability through training, enhancing motivation through feedback and incentives, and creating opportunity through inclusive and supportive environments (Ferrarini & Curzi, 2022). Performance management systems, for example, help align employee actions with innovation goals through well-structured feedback and developmental appraisals (Liehr & Hauff, 2025). SET further explains that when employees perceive strong organisational support through fair treatment, recognition, and inclusion, they are more likely to engage in discretionary behaviours that contribute to innovation (Elamin et al., 2024; Thneibat, 2025). These theories provide a clear rationale for why employees in supportive HR environments are more likely to take initiative, propose new solutions, and commit to continuous improvement.

In the Malaysian context, the oil and gas industry presents unique challenges and demands for innovation. The industry's structure includes compliance-heavy systems, hierarchical management, and safety-critical operations. These factors can discourage experimentation unless supported by deliberate HR strategies that promote skill development, engagement, and innovation-friendly evaluation. Research suggests that HR practices tailored to these environments can enable innovation at the employee level. For instance, Abdullah et al. (2024) found that bundled HR practices improved engagement and innovation outcomes even in highly structured industries. In oil and gas, strategic HRM systems that align employee growth, reward structures, and participation with innovation goals can help convert operational knowledge into real improvements. This approach allows organisations to transform internal capabilities into continuous innovation and long-term competitive advantage (Munodawafa & Johl, 2022).

Theoretical Implications

This conceptual paper contributes to theory in several ways. First, it strengthens the Human Resource Management and innovation literature by integrating two complementary theoretical lenses: the Ability-Motivation-Opportunity (AMO) framework and Social Exchange Theory (SET). While previous research often explores HR practices in isolation, the proposed framework positions them as interrelated mechanisms that collectively shape Innovative Work

Behaviour (IWB). This theoretical integration offers a more holistic explanation of how organisations can create internal conditions that enhance individual innovation (Ferrarini & Curzi, 2022; Elamin et al., 2024).

Second, the study extends the theoretical application of innovation models to a context that remains underrepresented in existing research, namely the Malaysian oil and gas industry. Although the literature on innovation is well established in manufacturing and service sectors, relatively few studies explore how HR systems influence innovation in petrochemical or high-compliance environments. By grounding the model in this context, the paper contributes to a more contextualised understanding of how innovation-supportive HR strategies can be designed in high-risk industries (Hashim & Mohammad, 2024; Munodawafa & Johl, 2022). Third, the framework highlights employee engagement as a strategic, opportunity-enhancing HR practice that plays a critical role in facilitating IWB. While engagement is often explored in relation to productivity and satisfaction, its role in fostering creativity and discretionary effort is still underdeveloped in innovation models. This emphasis adds conceptual depth to the AMO-based understanding of innovation by demonstrating how psychological presence, trust, and emotional connection to work empower employees to act innovatively (Elamin et al., 2024; Abdullah et al., 2024).

Managerial Implications

The conceptual framework also presents actionable insights for HR practitioners and organisational leaders. These recommendations are especially relevant for firms operating in technically demanding and safety-sensitive industries where innovation is critical but not easily implemented.

First, training and development programmes should be tailored to build not only technical competencies but also creative thinking, problem-solving, and interdisciplinary collaboration. Research indicates that learning opportunities that promote knowledge sharing and continuous improvement are key predictors of IWB (Kusumastuti et al., 2024). Well-structured training programmes can enhance employee ability and instill confidence to explore and apply novel solutions in their roles. Second, performance management systems should clearly signal that innovation is a valued performance outcome. This can be achieved through innovation-linked goals, developmental feedback, and fair appraisal mechanisms. As shown in recent studies, such practices strengthen the alignment between organisational expectations and employee motivation to take initiative (Liehr & Hauff, 2025; Thneibat, 2025). Managers should use appraisals not just for compliance but as a developmental tool that encourages creativity and experimentation.

Third, recognition practices should reward both idea generation and implementation. Financial incentives and non-monetary acknowledgments, such as awards or peer recognition, reinforce a culture where innovative contributions are visible and appreciated. Research by Bécuwe et al. (2021) confirms that comprehensive recognition systems encourage both innovative behaviour and mutual support among colleagues, further embedding innovation in the organisational culture. Fourth, employee engagement should be actively cultivated to create space for innovation. Engaged employees are more likely to voice suggestions, participate in cross-functional initiatives, and persist through challenges. Elamin et al. (2024) highlight that engagement enhances the opportunity dimension of the AMO model, particularly when paired with psychological safety and participative leadership.

Finally, HR strategies must be aligned with industry-specific constraints. In sectors like oil and gas, where compliance and safety protocols are strict, innovation cannot be left to informal processes. Structured channels for idea submission, innovation committees, and controlled experimentation platforms are necessary to manage risk while allowing creative problem-solving. This alignment ensures that innovation practices support rather than disrupt operational requirements (Hashim & Mohammad, 2024).

Practical Future Directions

To operationalise the proposed conceptual framework, organisations particularly those in technology-intensive and highly regulated sectors, should adopt a series of targeted strategies. First, training programmes should be tailored to address the specific innovation challenges within each operational environment. These programmes must go beyond technical upskilling to include creative thinking, cross-functional problem-solving, and innovation literacy at all levels of the organisation. Prior studies have demonstrated that such development initiatives improve employees' capacity to contribute meaningfully to innovation-related tasks (Kusumastuti et al., 2024). Second, performance management systems should incorporate innovation-oriented metrics that align individual objectives with broader organisational innovation goals. Appraisal mechanisms that recognise experimentation, learning from failure, and proactive improvement efforts can help reinforce innovation as a core expectation rather than an exception (Liehr & Hauff, 2025). When feedback is developmental and forward-looking, it motivates employees to engage confidently with novel tasks and contribute beyond their formal responsibilities.

Third, structured mechanisms for recognising and developing employee ideas should be established. These may include digital platforms for idea submission, innovation forums, or internal contests. Research shows that visible support for idea generation fosters a culture of openness and signals that creative input is both welcome and valued (Bécuwe et al., 2021). Such systems also facilitate knowledge sharing and cross-functional dialogue, which are essential for continuous improvement. Fourth, enhancing employee engagement should remain a strategic priority. Initiatives that promote autonomy, psychological safety, and involvement in decision-making processes have been shown to increase proactive innovation behaviours (Elamin et al., 2024). Open communication and shared ownership strengthen employees' emotional connection to their work and encourage them to take initiative in solving problems creatively.

Finally, innovation practices must be integrated with regulatory and safety requirements. This is particularly critical in industries where operational risk is high. Structured innovation pathways, supported by risk-managed experimentation and compliance-aware approval systems, allow organisations to benefit from employee creativity without compromising critical standards. Aligning innovation efforts with institutional protocols ensures that new ideas contribute constructively to strategic goals and performance stability (Hashim & Mohammad, 2024).

Conclusions

This conceptual study examined the strategic role of Human Resource practices in strengthening Innovative Work Behaviour within Malaysia's oil and gas industry. Drawing upon a synthesis of contemporary and foundational literature, the paper identified four core HR practices which are training and development, performance management, rewards and recognition, and employee engagement, as critical drivers that contribute to employees'

readiness and willingness to innovate. By integrating insights from the Ability-Motivation-Opportunity (AMO) Theory and Social Exchange Theory (SET), the proposed framework explains how HR practices enhance employee capabilities, motivate proactive behaviours, and create opportunities for innovation to occur.

The conceptual model developed in this study offers a comprehensive understanding of how HR practices can be strategically deployed to cultivate an innovative workforce capable of navigating the technological, operational, and regulatory complexities of the oil and gas industry. The findings underscore the importance of designing HR systems that not only develop employee skills but also foster motivation and engagement, enabling employees to contribute meaningfully to organisational improvement and resilience. Through this framework, organisations especially in oil and gas industry can better align their HR strategies with innovation objectives, thereby enhancing their capacity to respond to industry challenges and sustain competitive advantage.

As a conceptual analysis, this study lays the groundwork for future empirical research to validate the proposed relationships in real organisational contexts. Future studies may examine how these HR practices interact with other organisational factors, such as leadership style, organisational culture, and technological readiness, to influence IWB. Overall, this paper provides theoretical and practical insights that can guide HR practitioners, researchers, and industry leaders in fostering a culture of innovation particularly within the Malaysian oil and gas industry.

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