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The Influence of Career Sensing Agility, Digital Literacy, and Psychological Capital on Career Adaptability among Oil and Gas Industry Employees: A Systematic Literature Review

Chaerul Firmansyah¹, Hapzi Ali²

¹ Doctoral Student, Faculty of Economics and Business, Bhayangkara Jakarta Raya University, Bekasi, Indonesia, 202530152006@mhs.ubharajaya.ac.id

² Faculty of Economics and Business, Bhayangkara Jakarta Raya University, Bekasi, Indonesia, hapzi@dsn.ubharajaya.ac.id

Corresponding Author: 202530152006@mhs.ubharajaya.ac.id¹

Abstract: The oil and gas industry is currently facing significant challenges due to the energy transition and rapid digital transformation, requiring employees to continuously adapt to evolving technologies, work processes, and competency demands. In this context, career adaptability has become a critical capability for maintaining employees' long-term career sustainability. Previous studies have examined various antecedents of career adaptability; however, limited research has systematically integrated Career Sensing Agility, Digital Literacy, and Psychological Capital within the context of the oil and gas industry. Therefore, this study aims to systematically review the influence of these three individual capabilities on career adaptability. This study employs a Systematic Literature Review (SLR) following the PRISMA 2020 guidelines by reviewing peer-reviewed journal articles published in reputable international databases. The findings indicate that Career Sensing Agility enhances employees' ability to recognize career opportunities and respond proactively to workplace changes. Digital Literacy improves employees' capability to adapt to technological advancements, while Psychological Capital strengthens confidence, resilience, optimism, and hope in managing career challenges. Collectively, these factors contribute positively to the development of Career Adaptability. The study provides a comprehensive theoretical framework that may support future empirical research and offers practical insights for organizations in developing adaptive and sustainable human resources within the oil and gas industry.

Keyword: Career Adaptability, Career Sensing Agility, Digital Literacy, Psychological Capital, Oil and Gas Industry, Systematic Literature Review.

INTRODUCTION

The global energy sector is undergoing significant changes driven by the energy transition and rapid digital transformation. These developments have changed workforce competency requirements, particularly in the oil and gas industry, where employees are expected to continuously adapt to technological advances and evolving job demands.

According to the International Energy Agency (IEA, 2024), the global energy sector employed more than 67 million workers in 2023, with an annual employment growth of 3.8%.

In Indonesia, the oil and gas industry is also facing major challenges due to the national commitment to achieving Net Zero Emissions by 2060 and the increasing adoption of digital technologies. SKK Migas (2024) reported that the upstream oil and gas sector employed approximately 18,627 workers, highlighting the importance of developing adaptive human resources capable of responding to industrial transformation.

Career Adaptability has been recognized as an essential capability that enables employees to manage career transitions and respond effectively to changing work environments (Savickas & Porfeli, 2012). Previous studies have identified Digital Literacy (van Laar et al., 2020) and Psychological Capital (Luthans et al., 2021) as important determinants of Career Adaptability. However, studies integrating Career Sensing Agility, Digital Literacy, and Psychological Capital within a single conceptual framework remain limited, particularly in the context of the oil and gas industry.

Therefore, this study aims to systematically review the influence of Career Sensing Agility, Digital Literacy, and Psychological Capital on Career Adaptability. This study contributes by proposing an integrated theoretical perspective that supports workforce adaptability in the oil and gas industry amid digital transformation and the energy transition

METHOD

This study employed a Systematic Literature Review (SLR) to identify, evaluate, and synthesize previous studies examining the influence of Career Sensing Agility, Digital Literacy, and Psychological Capital on Career Adaptability. A Systematic Literature Review is a structured research method that systematically collects, critically evaluates, and integrates evidence from previous studies to provide a comprehensive understanding of a particular research topic (Snyder, 2019).

The review process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines, which provide a transparent and standardized procedure for identifying, screening, assessing eligibility, and selecting relevant studies (Page et al., 2021). The PRISMA framework was adopted to minimize selection bias and improve the reliability and reproducibility of the review process.

The literature search was conducted using six major academic databases, namely Scopus, ScienceDirect, SpringerLink, Emerald Insight, Taylor & Francis Online, and Google Scholar. These databases were selected because they provide access to high-quality peer-reviewed publications in the fields of management, organizational behavior, and human resource management. The search employed combinations of the keywords "Career Adaptability," "Career Sensing Agility," "Digital Literacy," and "Psychological Capital" using Boolean operators (AND, OR) to obtain relevant publications.

To ensure the quality and relevance of the reviewed studies, several inclusion and exclusion criteria were established. The inclusion criteria consisted of: (1) peer-reviewed journal articles; (2) publications written in English; (3) articles published between 2020 and 2025; (4) empirical or review studies discussing one or more research variables; and (5) studies providing sufficient theoretical or empirical evidence regarding the relationships among the variables. Meanwhile, conference proceedings, books, theses, dissertations, editorials, duplicate publications, and studies unrelated to the research topic were excluded.

Following the screening process, the selected articles were analyzed using a narrative synthesis approach. This approach allows researchers to compare theories, research findings, methodologies, and contexts across studies to identify consistent patterns, research gaps, and future research opportunities (Campbell et al., 2020). The synthesis focused on explaining how Career Sensing Agility, Digital Literacy, and Psychological Capital contribute to the

development of Career Adaptability, particularly within the context of workforce development in the oil and gas industry.

Table 1. Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Publication Type	Peer-reviewed journal articles	Conference papers, books, theses, dissertations
Publication Year	2020–2025	Before 2020
Language	English	Other languages
Research Topic	Career Adaptability, Career Sensing Agility, Digital Literacy, Psychological Capital	Unrelated topics
Database	Scopus, ScienceDirect, SpringerLink, Emerald Insight, Taylor & Francis, Google Scholar	Non-academic sources

RESULTS AND DISCUSSION

Results

Based on the research background, objectives, and the systematic literature review method employed in this study, the findings are presented according to the four variables investigated, namely Career Adaptability, Career Sensing Agility, Digital Literacy, and Psychological Capital.

Career Adaptability (Y)

Career Adaptability is defined as an individual's psychosocial resource to anticipate, prepare for, and respond effectively to career-related tasks, occupational transitions, and unexpected changes throughout career development (Savickas & Porfeli, 2012). This capability enables individuals to maintain career resilience in a dynamic work environment.

According to Johnston (2018), Career Adaptability reflects an employee's ability to adjust to organizational changes, technological advancements, and evolving labor market demands through proactive career management and continuous learning.

The dimensions of Career Adaptability consist of Concern, Control, Curiosity, and Confidence, which describe an individual's future career orientation, responsibility for career decisions, willingness to explore career opportunities, and confidence in overcoming career challenges (Savickas & Porfeli, 2012).

Career Adaptability has been widely investigated in previous studies. Research conducted by Rudolph et al. (2017), Johnston (2018), and Rudolph et al. (2021) consistently reported that Career Adaptability positively contributes to career success, employability, and sustainable career development.

Career Sensing Agility (X₁)

Career Sensing Agility refers to an individual's capability to identify career opportunities, recognize environmental changes, and respond proactively to evolving career demands (Akkermans et al., 2022). It enables employees to anticipate future career challenges and opportunities.

De Vos et al. (2020) describe Career Sensing Agility as proactive career behavior that supports employees in monitoring labor market trends and adapting their career strategies accordingly.

The main dimensions of Career Sensing Agility include environmental scanning, opportunity recognition, proactive career behavior, and career responsiveness, which help employees remain competitive in changing work environments (Akkermans et al., 2022).

Previous studies by Akkermans et al. (2022), De Vos et al. (2020), and Spurk et al. (2021) indicate that Career Sensing Agility positively influences employees' adaptability, employability, and career development.

Digital Literacy (X₂)

Digital Literacy is defined as the ability to access, understand, evaluate, and effectively utilize digital technologies and information to accomplish work-related tasks (van Laar et al., 2020). It has become a fundamental competency in the digital workplace.

According to Ng (2012), Digital Literacy encompasses technical, cognitive, and social skills that enable individuals to use digital technologies efficiently for communication, collaboration, and problem-solving.

The dimensions of Digital Literacy include technical skills, information management, communication, collaboration, critical thinking, and problem-solving (van Laar et al., 2020). These competencies support employees in adapting to digital transformation.

Digital Literacy has been extensively examined by previous researchers. Studies by van Laar et al. (2020), Ferrari (2013), and Falloon (2020) found that Digital Literacy significantly improves learning capability, work performance, and career adaptability.

Psychological Capital (X₃)

Psychological Capital is a positive psychological state characterized by self-efficacy, hope, optimism, and resilience, enabling individuals to achieve better personal and organizational outcomes (Luthans et al., 2021).

Avey et al. (2011) explain that Psychological Capital strengthens employees' confidence, motivation, and persistence in facing challenges and uncertainty within the workplace.

The dimensions of Psychological Capital consist of Hope, Self-efficacy, Resilience, and Optimism, which collectively enhance employees' psychological capacity to adapt and perform effectively in changing environments (Luthans et al., 2021).

Previous studies conducted by Luthans et al. (2021), Avey et al. (2011), and Newman et al. (2014) consistently demonstrated that Psychological Capital has a positive influence on Career Adaptability, employee performance, and long-term career sustainability.

Review of Relevant Studies

Relevant previous studies were reviewed to provide a theoretical and empirical basis for developing the research hypotheses. The review aims to identify the findings of previous studies, examine the relationships among the research variables, and compare the similarities and differences between previous studies and the proposed research. Through this review, research gaps are identified to strengthen the conceptual framework and justify the proposed hypotheses. A summary of the relevant previous studies is presented in Table 1.

Table 1. Findings of Relevant Prior Studies

No	Author (Year)	Previous Research Findings	Similarities with This Study	Differences with This Study	H
1	Akkermans et al. (2022)	Career agility positively influences employees' career adaptability and career development.	Examines the influence of Career Sensing Agility on Career Adaptability.	This study also examines Digital Literacy and Psychological Capital as additional antecedents.	H1
2	De Vos et al. (2020)	Proactive career behavior enhances employees' adaptability and career development in dynamic work environments.	Supports the relationship between Career Sensing Agility and Career Adaptability.	This study focuses on employees in the oil and gas industry.	H1
3	van Laar et al. (2020)	Digital Literacy significantly improves employees' learning capability, adaptability, and work performance.	Examines the influence of Digital Literacy on Career Adaptability.	This study integrates three antecedent variables into one conceptual framework.	H2
4	Falloon (2020)	Digital competencies enable employees to adapt	Supports the relationship between	This study specifically discusses adaptability	H2

No	Author (Year)	Previous Research Findings	Similarities with This Study	Differences with This Study	H
		more effectively to technological and organizational changes.	Digital Literacy and Career Adaptability.	within the context of the energy industry.	
5	Luthans et al. (2021)	Psychological Capital positively affects employee resilience, adaptability, and career success.	Examines the influence of Psychological Capital on Career Adaptability.	This study combines Psychological Capital with Career Sensing Agility and Digital Literacy.	H3
6	Avey et al. (2011)	Psychological Capital strengthens employees' confidence and adaptability in responding to organizational change.	Supports the positive relationship between Psychological Capital and Career Adaptability.	This study proposes an integrated conceptual model for oil and gas employees.	H3
7	Rudolph et al. (2021)	Career Adaptability mediates the relationship between individual psychological resources and positive career outcomes in dynamic work environments.	Reinforces the importance of Career Adaptability as the main dependent variable.	This study focuses on identifying key antecedents of Career Adaptability, namely Career Sensing Agility, Digital Literacy, and Psychological Capital.	H1, H2, H3

Discussion

Based on the findings of the literature review, this section discusses the relationships among the research variables by synthesizing theoretical perspectives and empirical evidence from previous studies. The discussion aims to explain how Career Sensing Agility, Digital Literacy, and Psychological Capital contribute to the development of Career Adaptability, particularly in the context of the oil and gas industry, which is currently facing digital transformation and the global energy transition. The discussion also provides managerial implications and serves as the foundation for developing the proposed research hypotheses.

1. The Effect of Career Sensing Agility on Career Adaptability

Career Sensing Agility is recognized as an essential capability that enables employees to identify environmental changes, recognize emerging career opportunities, and respond proactively to evolving job demands. In today's dynamic business environment, organizations continuously experience technological innovation, organizational restructuring, and changing competency requirements. Consequently, employees are expected not only to perform their current responsibilities but also to anticipate future career challenges and prepare themselves for continuous career development. According to Akkermans et al. (2022), Career Sensing Agility reflects an individual's ability to continuously monitor career opportunities and respond strategically to changes in the labor market, making it a fundamental capability for maintaining career sustainability.

The findings of this literature review indicate that Career Sensing Agility has a positive influence on Career Adaptability. Employees who actively evaluate their competencies, seek information regarding industry trends, and recognize future career opportunities are generally more capable of adjusting to organizational and technological changes. This proactive behavior enables individuals to anticipate competency gaps before they become obstacles to career development. In the oil and gas industry, where digitalization, automation, and energy transition continue to transform occupational requirements, Career Sensing Agility becomes increasingly important because employees must continuously update their competencies to remain employable and competitive.

To strengthen employees' Career Adaptability, organizations should establish comprehensive career development systems that encourage proactive career management. Such initiatives may include competency assessments, career planning programs, mentoring,

coaching, succession planning, and continuous learning opportunities. Organizations should also communicate future competency requirements and industry developments transparently so that employees are able to recognize changing career expectations at an early stage. These managerial initiatives not only improve employees' readiness for organizational change but also contribute to the development of a sustainable workforce capable of supporting long-term organizational competitiveness.

The positive relationship between Career Sensing Agility and Career Adaptability is supported by several previous studies. Akkermans et al. (2022) concluded that career agility significantly enhances employees' adaptability and career development. Similarly, De Vos et al. (2020) reported that proactive career behavior improves employees' ability to manage career transitions and organizational change, while Spurk et al. (2021) demonstrated that career self-management positively contributes to long-term career success. Based on these theoretical arguments and empirical findings, this study proposes that Career Sensing Agility positively influences Career Adaptability (H1).

2. The Effect of Digital Literacy on Career Adaptability

Digital Literacy has become one of the most important competencies required in the modern workplace because almost every organizational activity is supported by digital technologies. Employees are expected to possess the ability to access, evaluate, manage, and utilize digital information effectively while adapting to new technologies and digital work processes. According to van Laar et al. (2020), Digital Literacy extends beyond technical skills and also includes cognitive, communication, collaboration, and problem-solving competencies that enable individuals to perform effectively in digitally connected organizations.

Based on the reviewed literature, Digital Literacy positively contributes to Career Adaptability because employees with strong digital competencies can more easily acquire new knowledge, adopt emerging technologies, and adjust to organizational transformation. Digital technologies have significantly changed the nature of work, particularly in the oil and gas industry, where digital exploration systems, artificial intelligence, automation, and data analytics are increasingly integrated into operational activities. Employees who demonstrate higher Digital Literacy are therefore better prepared to respond to technological changes and maintain their professional relevance in rapidly evolving work environments.

Organizations seeking to improve employees' Career Adaptability should invest continuously in digital capability development. Digital training programs, online learning platforms, professional certifications, and technology-based knowledge sharing are effective strategies for improving employees' digital competencies. Furthermore, creating a digital learning culture encourages employees to continuously update their knowledge and develop new skills required by future jobs. Such initiatives not only improve organizational performance but also strengthen employees' confidence in adapting to technological innovation and future workforce demands.

These findings are consistent with previous empirical studies. Van Laar et al. (2020) found that Digital Literacy significantly enhances employees' learning capability and adaptability in digital workplaces. Falloon (2020) also demonstrated that digital competence improves employees' ability to adapt to technological change, while Ferrari (2013) emphasized that Digital Literacy is a key competency for lifelong learning and career development. Therefore, this study proposes that Digital Literacy positively influences Career Adaptability (H2).

3. The Effect of Psychological Capital on Career Adaptability

Psychological Capital represents employees' positive psychological resources that enable them to cope effectively with challenges, uncertainty, and organizational change. It consists of four components: self-efficacy, hope, optimism, and resilience, which collectively strengthen

employees' confidence in achieving career goals and overcoming work-related difficulties (Luthans et al., 2021). As organizations continue to experience rapid technological and structural transformation, Psychological Capital has become increasingly important because career success depends not only on technical competence but also on employees' psychological readiness to manage change.

The literature consistently indicates that Psychological Capital positively influences Career Adaptability. Employees with strong Psychological Capital tend to demonstrate greater confidence when facing uncertainty, maintain optimism during organizational change, recover more quickly from career setbacks, and remain motivated to pursue long-term career development. These psychological strengths encourage continuous learning, proactive career behavior, and resilience in responding to changing job requirements. In the context of the oil and gas industry, where employees are increasingly required to adapt to digital transformation and energy transition, Psychological Capital provides an important internal resource for maintaining career sustainability.

Organizations can enhance employees' Psychological Capital by developing supportive leadership, employee recognition systems, coaching and mentoring programs, and initiatives that promote psychological well-being. Creating an organizational climate characterized by trust, collaboration, and continuous development encourages employees to build resilience, confidence, and optimism when facing organizational change. These initiatives not only improve employees' psychological well-being but also strengthen their capacity to adapt successfully to future career challenges.

The positive influence of Psychological Capital on Career Adaptability has been widely supported by previous empirical research. Luthans et al. (2021) demonstrated that Psychological Capital significantly improves employees' adaptability, resilience, and work performance. Similarly, Avey et al. (2011) reported that employees with higher Psychological Capital exhibit stronger adaptability during organizational change, while Newman et al. (2014) concluded that Psychological Capital positively contributes to employee development, career success, and long-term organizational performance. Therefore, this study proposes that Psychological Capital positively influences Career Adaptability (H3).

Research Conceptual Framework

Based on the research problems, literature review, and previous empirical studies, a research conceptual framework is developed to explain the relationships among the research variables. Figure 1 positions Career Sensing Agility, Digital Literacy, and Psychological Capital as three exogenous variables expected to influence Career Adaptability among employees in the oil and gas industry. These variables represent individual capabilities that enable employees to recognize career opportunities, respond to technological change, and maintain psychological readiness in adapting to dynamic work environments. The research conceptual framework is presented in Figure 1.

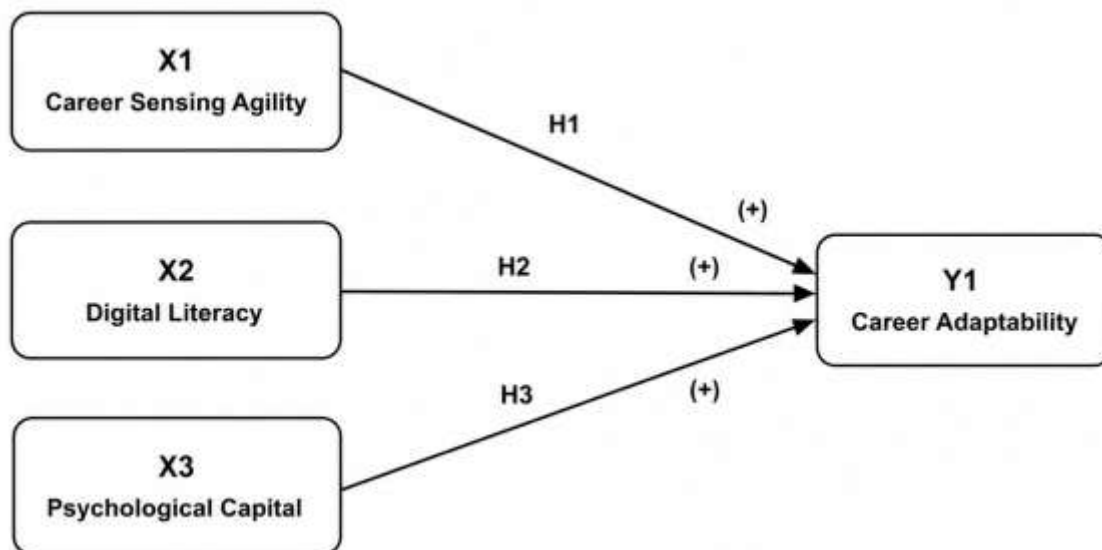


Figure 1. Research Conceptual Framework

Figure 1 positions Career Sensing Agility, Digital Literacy, and Psychological Capital as three exogenous variables expected to influence Career Adaptability. In addition to these variables, the literature identifies several other factors that may also influence Career Adaptability, including:

1. Career Resilience (X4): Career Resilience refers to an individual's ability to recover from career setbacks, cope with uncertainty, and maintain career performance under changing work conditions. Employees with stronger Career Resilience are generally more capable of adapting to organizational transformation and sustaining long-term career development. This relationship is supported by Rudolph et al. (2017), Johnston (2018), and Rudolph et al. (2021).
2. Perceived Organizational Support (X5): Perceived Organizational Support reflects employees' perceptions that their organization values their contributions and cares about their well-being. Supportive organizational practices, including career development opportunities, training, and supervisory support, encourage employees to adapt more effectively to changing job demands. This relationship is supported by Eisenberger et al. (1986), Kurtessis et al. (2017), and Caesens and Stinglhamber (2020).
3. Career Self-Management (X6): Career Self-Management refers to employees' proactive efforts to plan, monitor, and develop their careers through continuous learning, networking, and competency development. Employees who actively manage their careers are generally more capable of responding to labor market changes and sustaining their long-term employability. This relationship is supported by De Vos et al. (2020), Akkermans et al. (2022), and Spurk et al. (2021).

Although Career Resilience, Perceived Organizational Support, and Career Self-Management have been identified as important determinants of Career Adaptability, they are not included as the primary variables in the research conceptual framework. Instead, this study focuses on Career Sensing Agility, Digital Literacy, and Psychological Capital because these variables are considered highly relevant to the challenges of digital transformation and the energy transition faced by employees in the Indonesian oil and gas industry. Nevertheless, the three additional variables may be considered as control variables or incorporated into future empirical studies to provide a more comprehensive understanding of the determinants of Career Adaptability.

CONCLUSION

Conclusion

Based on the research objectives, literature review findings, and discussion, this article concludes that the proposed hypotheses can be formulated for future empirical research as follows:

1. Career Sensing Agility positively influences Career Adaptability.
2. Digital Literacy positively influences Career Adaptability.
3. Psychological Capital positively influences Career Adaptability.

These findings indicate that employees with higher career agility, stronger digital competencies, and better psychological resources are more likely to demonstrate higher levels of Career Adaptability. Therefore, these three variables are considered important antecedents in developing employees' adaptability to the challenges of digital transformation and the energy transition in the oil and gas industry.

Recommendations

Career Adaptability may also be influenced by several other variables beyond those examined in this study, such as Career Resilience (X4), Perceived Organizational Support (X5), and Career Self-Management (X6). Therefore, further empirical research is recommended to investigate the effects of these variables on Career Adaptability in order to develop a more comprehensive understanding of career adaptability among employees in the oil and gas industry.

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