

Enhancing Sustainability Performance through Digital Capability: A Dynamic Capability Perspective in Indonesian National Oil and Gas Companies

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Keywords:	Abstract
e-Leadership Capability; Dynamic Digital Workplace Policy; Digital Culture; Quality Management, Social Dynamism; Sustainability Performance; Dynamic Capability View; Oil and Gas Industry.	This research aims to analyze the role of e-Leadership Capability, Dynamic Digital Workplace Policy, and Digital Culture in shaping the Sustainability Performance of Organization, with Quality Management as the mediating variable and Social Dynamism as the moderation variable, in the context of national oil and gas companies in Indonesia. This research uses a quantitative approach with the Structural Equation Modeling (SEM) method. Data was collected from 210 respondents representing various levels of the organization, ranging from Junior Analyst to Vice President (VP) levels, spread across various operational areas of national oil and gas companies in Indonesia. The results show that e-Leadership Capability has a positive and significant influence directly on Sustainability Performance, which confirms the crucial role of digital leadership in driving sustainable business achievements. In contrast, Dynamic Digital Workplace Policy and Digital Culture did not show a significant direct influence on sustainability performance. However, Dynamic Digital Workplace Policy and Digital Culture have proven to have a positive and significant effect on Quality Management, which further contributes strongly to the Sustainability Performance of Organization. The results of the mediation analysis showed that Quality Management mediated the influence of Dynamic Digital Workplace Policy and Digital Culture on the Sustainability Performance of Organization, while the mediating role between e-Leadership Capability and sustainability performance was not proven to be significant. In addition, Social Dynamism significantly moderates the relationship between Quality Management and Sustainability Performance of Organization, suggesting that social dynamics and stakeholder pressures strengthen the relationship between quality practices and sustainability achievements.

INTRODUCTION

The global oil and gas industry is currently facing increasingly complex business environment changes due to the acceleration of digital transformation, increasing sustainability demands, and the pressure of the energy transition to a low-carbon economy. In these conditions, organizational sustainability is no longer seen as just an obligation to comply with regulations, but has developed into a strategic factor that determines the competitiveness, resilience, and sustainability of the organization in the long term (Teece, 2018; Li et al., 2024). Changing stakeholder expectations, increasing attention to Environmental, Social, and

Governance (ESG) aspects, and increasing demands for transparency encourage organizations to integrate sustainability goals into their overall business strategies and processes (Eccles et al., 2014; Fatemi et al., 2018).

In the Indonesian context, national oil and gas companies have a strategic role in maintaining energy security while supporting national economic development. However, oil and gas companies also face increasing challenges related to environmental impact management, operational safety, resource use efficiency, and increased social demands from various stakeholders. These conditions show that achieving Sustainability Performance of Organization requires more than just strategic commitment or compliance with sustainability standards, but also the organization's ability to effectively integrate internal resources and capabilities in creating economic, social, and environmental value in a sustainable manner (George et al., 2016; Lozano, 2018).

The Resource-Based View (RBV) perspective explains that an organization's competitive advantage comes from strategic resources that are valuable, scarce, difficult to replicate, and not easily replaceable. However, in a dynamic and uncertain business environment, resource ownership alone is no longer sufficient to maintain a competitive advantage. Therefore, this study also adopts a Dynamic Capability View (DCV) which emphasizes the ability of organizations to sense environmental changes (sensing), seizing, and reconfigure resources (transforming) to create sustainable excellence (Teece, 2018). In this perspective, an organization's success in achieving sustainability performance depends on its ability to integrate digital capabilities, management systems, and organizational processes in an adaptive manner.

Digital transformation has given birth to various organizational capabilities that have the potential to become a new source of competitive advantage. One of these capabilities is e-Leadership Capability, which is the ability of leaders to utilize digital technology to influence, direct, and coordinate individuals and organizations in achieving strategic goals (Avolio et al., 2014; Chatterjee et al., 2023). In addition, the Dynamic Digital Workplace Policy enables organizations to build a flexible, collaborative, and responsive work environment through the integration of digital technology in daily work processes (Tarafdar et al., 2020; Chatterjee et al., 2023). On the other hand, Digital Culture reflects organizational values, norms, and behaviors that support innovation, continuous learning, collaboration, and data-driven decision-making (Kane et al., 2019; Shin et al., 2023).

Although various studies show that digital capabilities contribute to improving organizational performance, the results of research on its influence on sustainability performance still show inconsistencies. Several studies have found that digital transformation and digital capabilities have a positive effect on sustainability performance through increased innovation, operational efficiency, and organizational ability to respond to environmental changes (Shin et al., 2023; Li et al., 2024). However, other research suggests that these influences are often indirect and require organizational mechanisms capable of translating digital capabilities into structured and measurable operational practices (Kraus et al., 2023; Akanmu et al., 2023).

Based on the Dynamic Capability View perspective, the benefits of digital capabilities will not automatically generate strategic value if they are not integrated into systematic organizational processes. Therefore, this study positions Quality Management as a mediation

mechanism that bridges the relationship between digital capabilities and Sustainability Performance of Organization. A quality management system enables organizations to translate their strategies, digital policies, and organizational culture into standardized operational procedures, effective process control, and continuous improvement (Sony et al., 2020; Abbas, 2020; Akanmu et al., 2023). Various studies show that the effective implementation of quality management contributes to increased operational efficiency, waste reduction, increased environmental compliance, and the creation of long-term sustainability value (Nguyen et al., 2018; Zaid & Sleimi, 2023).

In addition to internal organizational factors, the effectiveness of implementing quality management in improving sustainability performance is also influenced by external environmental dynamics. In this study, these factors are represented by Social Dynamism, namely the level of social change marked by changes in community values, increasing stakeholder expectations, local community pressure, demands for transparency, and increasing attention to sustainability issues (Teece, 2018; O'Reilly & Tushman, 2013). An increasingly dynamic social environment requires organizations to develop management systems that are more adaptive, responsive, and sustainability-oriented.

Although research on digital leadership, digital culture, digital transformation, and sustainability performance continues to grow, there are still limitations in research that integrates e-Leadership Capability, Dynamic Digital Workplace Policy, and Digital Culture in one comprehensive conceptual model. In addition, research examining the role of Quality Management as a mediating variable and Social Dynamism as a moderation variable simultaneously is still relatively limited, especially in the context of national oil and gas companies in developing countries such as Indonesia (Shin et al., 2023; Chatterjee et al., 2023; Akanmu et al., 2023).

Based on the research gap, this research aims to analyze the influence of e-Leadership Capability, Dynamic Digital Workplace Policy, and Digital Culture on the Sustainability Performance of Organization, both directly and indirectly through Quality Management, considering the role of Social Dynamism moderation. This research is expected to make a theoretical contribution to the development of the Resource-Based View and Dynamic Capability View in the context of organizational sustainability, as well as provide practical implications for Indonesian national oil and gas companies in integrating digital transformation, quality management systems, and sustainability strategies more effectively.

METHOD

Research Design and Data Collection

This research used a quantitative approach to examine the relationship between e-Leadership Capability, Dynamic Digital Workplace Policy, Digital Culture, Quality Management, Social Dynamism, and Sustainability Performance of Organization. The survey method with a cross-sectional survey design was used to collect primary data from workers in Indonesia's national oil and gas companies.

The research population consists of workers from various levels of the organization, from Junior Analysts to Vice Presidents. The sampling technique used is purposive sampling to ensure that respondents have adequate experience and understanding of organizational processes relevant to this study. Therefore, the selected respondents have a minimum service

period of five years. Previous research has shown that longer tenure correlates with a better understanding of organizational policies, strategic initiatives, and company operational practices (Ng & Feldman, 2013).

A total of 210 questionnaires that met the validity criteria were successfully collected and used in the analysis. The number of samples exceeded the minimum size determined through statistical power analysis using G*Power software with the F-test approach (linear multiple regression: fixed model, R^2 deviation from zero), so that it was considered adequate for the hypothesis testing proposed.

Construct Measurement

All constructs in this study are operationalized as latent variables measured using several indicators adapted from previous studies that have been validated. Data were collected using a structured questionnaire on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

The **e-Leadership Capability construct** is measured through indicators that reflect digital vision, technology competence, employee empowerment, strategic communication, and change management capabilities. **Dynamic Digital Workplace Policy** is measured through indicators that describe policy adaptability, digital infrastructure readiness, governance mechanisms, stakeholder engagement, and performance monitoring. **Digital Culture** is measured through the dimensions of innovation orientation, collaboration, adaptability, continuous learning, and data-driven decision-making.

Konstruk **Quality Management** includes indicators related to continuous improvement, customer focus, process management, employee engagement, supplier quality management, and quality measurement. **Social Dynamism** represents the level of social change that an organization is facing, including stakeholder pressures, social uncertainty, changing public preferences, and the organization's ability to respond to evolving social trends. Meanwhile, **Sustainability Performance of Organization** is measured based on a triple bottom line approach that includes economic, environmental, and social dimensions.

Data Analysis Techniques

The research model was analyzed using Covariance-Based Structural Equation Modeling (CB-SEM) with the help of AMOS software. The CB-SEM approach was chosen because this study aims to test theory-based causal relationships among latent constructs while simultaneously evaluating measurement models and structural models.

The analysis is carried out through two main stages. The first stage is the evaluation of the measurement model using Confirmatory Factor Analysis (CFA). Convergent validity was evaluated through standardized factor loading and Average Variance Extracted (AVE) values, while internal reliability was measured using Composite Reliability (CR) and Cronbach's Alpha. The validity of the discriminant was tested by comparing the square root of each construct to the correlation between constructs.

The second stage is the evaluation of structural models to test the research hypothesis. The feasibility of the model (goodness-of-fit) was evaluated using several indices, namely Chi-square/df, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR), in accordance with the recommendations of Hair et al. (2022).

The mediation role of **Quality Management** was tested through indirect effect analysis using a bootstrapping procedure. Meanwhile, the role of **Social Dynamism** moderation was analyzed through latent interaction testing in the SEM framework. The level of significance is determined based on the p-value and the confidence interval at the 95% confidence level.

To minimize the potential for common method bias, this study applied several control procedures at the questionnaire preparation stage, including by ensuring the anonymity and confidentiality of respondents. In addition, the Harman's Single Factor Test was carried out to ensure that the common method variance did not have a significant effect on the research results.

RESULTS AND DISCUSSION

Data analysis was carried out using Structural Equation Modeling (SEM) to test the relationships between variables in the research model. Before hypothesis testing, an outlier test was conducted that identified three extreme data from a total of 213 respondents. The data was then eliminated so that the number of final samples used in the analysis was 210 respondents, which was considered more representative.

Furthermore, the results of the Confirmatory Factor Analysis (CFA) show that the model has an adequate level of goodness of fit. Although some indicators such as Chi-square and GFI indicate a poor fit category, other indicators such as the Chi-square/df ratio (2.540), RMSEA (0.057), and SRMR (0.076) meet the good fit criteria. In addition, the entire incremental fit index (NFI, IFI, NNFI, and CFI) was above 0.90, indicating that the research model is feasible to use for hypothesis testing.

The results of the hypothesis testing showed that out of the eleven hypotheses proposed, seven hypotheses were supported and four hypotheses were not supported. In detail, e-leadership capability has been shown to have a positive and significant influence on the sustainability performance of organization ($\beta = 0.511$; $p < 0.001$). In contrast, dynamic digital workplace policy and digital culture did not show a significant direct influence on sustainability performance, with coefficients of -0.047 ($p = 0.600$) and -0.049 ($p = 0.721$), respectively.

In relation to quality management, the results showed that dynamic digital workplace policy ($\beta = 0.279$; $p = 0.008$) and digital culture ($\beta = 0.528$; $p < 0.001$) had a positive and significant effect. However, e-leadership capability had no significant effect on quality management ($\beta = 0.140$; $p = 0.122$). Furthermore, quality management has been proven to have a positive and significant influence on the sustainability performance of organizations ($\beta = 0.449$; $p = 0.001$), which shows its important role as an operational mechanism in supporting sustainability.

In the mediation effect test, it was found that quality management did not mediate the relationship between e-leadership capability and sustainability performance ($\beta = 0.063$; $p = 0.128$). On the other hand, quality management has been shown to significantly mediate the relationship between dynamic digital workplace policy ($\beta = 0.125$; $p = 0.036$) and digital culture ($\beta = 0.237$; $p = 0.011$) on the sustainability performance of organizations.

In addition, the results of the moderation analysis showed that social dynamism played a significant positive role in strengthening the relationship between quality management and sustainability performance ($\beta = 0.119$; $p = 0.016$).

Table 1. Summary of Hypothesis Test Results

Hyp.	Hypothesized Path	Path Coefficient (b)	P-Value	Result
H1	e-Leadership Capability to Sustainability Performance	0,511	0,000	Supported
H2	Dynamic Digital Workplace Policy to Sustainability Performance	-0,047	0,600	Rejected
H3	Digital Culture to Sustainability Performance	-0,049	0,721	Rejected
H4	e-Leadership Capability to Quality Management	0,140	0,122	Rejected
H5	Dynamic Digital Workplace Policy to Quality Management	0,279	0,008	Supported
H6	Digital Culture to Quality Management	0,528	0,000	Supported
H7	Quality Management to Sustainability Performance	0,449	0,001	Supported
H8	e-Leadership to Quality Mgmt to Sustainability	0,063	0,128	Rejected
H9	Digital Policy to Quality Mgmt to Sustainability	0,125	0,036	Supported
H10	Digital Culture to Quality Mgmt to Sustainability	0,237	0,011	Supported
H11	Social Dynamism (Moderation) to QM & Sustainability	0,119	0,016	Supported

Source: Primary Data Processed with AMOS, 2024

The findings of this study contribute to the development of the Dynamic Capability View (DCV) literature by showing how digital capabilities and organizational mechanisms interact in shaping the Sustainability Performance of Organization. The results of the structural model testing indicated that the proposed model had a good degree of conformity with the empirical data. In addition, e-Leadership Capability proved to be the most dominant direct predictor of Sustainability Performance of Organization ($\beta = 0.511$; $p < 0.001$). These results indicate that digital leadership is a strategic capability that allows organizations to effectively integrate technology, processes, and resources to achieve sustainability goals. In the lens of DCV, this confirms that digital leadership acts as a key strategic capability in the sensing, seizing, and transforming process, where leaders are able to integrate technology into the core of their business strategy to drive transparency and continuous innovation. However, an interesting finding emerged in the rejection of the fourth hypothesis, where e-leadership had no significant effect on quality management ($\beta = 0.140$, $p = 0.122$). This phenomenon indicates a structural gap between the strategic and operational levels in the national oil and gas industry, which shows that the vision of digital leaders often goes beyond routine quality mechanisms that tend to be technical-procedural. Furthermore, this study reveals a paradox in policy variables and digital culture that was found to have no direct influence on sustainability performance. The test results showed that dynamic digital workplace policy ($\beta = -0.047$, $p = 0.600$) and digital culture ($\beta = -0.049$, $p = 0.721$) were not significant and even showed a tendency for negative relationships.

Contextually, this condition is influenced by the demographic characteristics of respondents who are dominated by senior employees, so radical changes in digital policies tend to trigger organizational inertia or short-term resistance. Nevertheless, both variables were

shown to have a significant influence on quality management (H5: $\beta = 0.279$, $p = 0.008$ and H6: $\beta = 0.528$, $p < 0.001$), confirming their role as enablers rather than direct drivers. This is where quality management plays a role as a critical transformation mechanism and a full mediator that transforms digital potential into tangible sustainability outputs through its strong influence on sustainability performance ($\beta = 0.449$, $p = 0.001$). Through continuous improvement practices and process standardization, quality management enables organizations to mitigate operational risks and ensure compliance with global ESG standards. The role of this mediation has proven to be significant in the digital policy path (H9: $\beta = 0.125$, $p = 0.036$) and digital culture (H10: $\beta = 0.237$, $p = 0.011$) towards sustainability. This reinforces the argument that in high-risk industries, digital transformation must be "locked" through a quality system so that there is no disconnect between innovation and occupational safety. Finally, the effectiveness of this relationship was found to be stronger with the moderation role of social dynamism ($\beta = 0.119$, $p = 0.016$). External pressures such as stakeholder expectations and changes in social regulations act as catalysts that force organizations to be more adaptive and precise in implementing their quality practices. Thus, organizational sustainability in the oil and gas industry is not only the result of strategic policies, but the fruit of harmonious collaboration between digital vision, strengthening internal operational systems, and responsiveness to external environmental dynamics.

CONCLUSION

This research provided a comprehensive understanding of how sustainability performance is shaped through the interaction between digital capabilities, quality management, and external social dynamics in the context of national oil and gas companies in Indonesia. By referring to the Resource-Based View (RBV) and Dynamic Capability View (DCV) perspectives, the findings of this study show that sustainability performance is not solely determined by the ownership of strategic resources, but rather on the organization's ability to dynamically manage and transform these resources in the face of environmental changes. From RBV's perspective, digital capabilities such as e-leadership capability, dynamic digital workplace policy, and digital culture can be seen as intangible resources that are valuable, scarce, and difficult to replicate. These resources are the foundation for the creation of competitive advantage and long-term sustainability. However, empirical results show that not all of these digital resources directly contribute to sustainability performance, thus confirming that resource ownership alone is not enough to produce superior performance. In line with the perspective of dynamic capability, this study found that e-leadership capability has a positive and significant influence directly on sustainability performance. This emphasizes the role of digital leadership as a higher-order capability that enables organizations to recognize opportunities, seizing, and transform operational processes towards sustainability. However, the insignificance of its effect on quality management shows that there is a gap between the strategic level and operational implementation. On the other hand, dynamic digital workplace policy and digital culture do not have a direct influence on sustainability performance, but have an effect through quality management. These findings confirm that quality management plays a role as an operational capability that transforms digital resources into real sustainability performance. In this context, quality management serves as a bridge that connects resource-

based perspectives with dynamic capability processes, thus ensuring that strategic initiatives can be effectively implemented at the operational level. Furthermore, the results of the study show that social dynamism significantly strengthens the relationship between quality management and sustainability performance. This indicates that external pressures such as stakeholder expectations, regulatory changes, and social dynamics play a role as contextual factors that increase the effectiveness of the organization's internal capabilities. Thus, sustainability performance is the result of alignment between internal resources, dynamic capabilities, and external environmental demands. Overall, the study concludes that the achievement of sustainability performance in the oil and gas industry depends not only on the development of digital capabilities, but also on the ability of organizations to orchestrate these resources through effective quality management practices and responsiveness to social dynamics.

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