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Strategic Change Management Practices and Performance of Geothermal Development Company, Kenya

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Abstract: Kenya is capable of producing significant volumes of electricity from geothermal which ranges between 7,000 MW - 10,000 MW, yet the Geothermal Development Company (GDC) has only realized about 863 MW with a history of poor achievement. The study examined the effect of Strategic Change Management (SCM) practices, on organizational performance, in the geothermal energy sector. The research study adopted a descriptive design and collected quantitative data using structured questionnaires. The sample consisted of 96 middle to senior management staff from 6 directorates of the GDC. The research utilized Kotter's Eight-Step Change Model, Stakeholder Theory, Resource-Based View and the Balanced Scorecard Framework in analysing the data in response to the research objectives. Correlation and regression analyses indicated that Communication (r=0.633, p<0.05), Employee Participation (r=0.688, p<0.05), Leadership (r=0.406, p<0.05) and Organizational Learning (r=0.900, p< 0.05) all had a significant effect on performance. Organizational Learning had the highest significant predictive effect on performance and explained approximately 69.4% of the variance of organizational performance. This indicates that if organizations would provide support for communication, participation and learning as an aspect of their organizational strategies and further strengthen their leadership practices, performance in the geothermal energy sector will be significantly enhanced. The study recommends policy and organizational interventions, specifically for organizational learning and employee participation, to be mainstreamed in Kenya's renewable energy sector.

Keywords: *Strategic Change Management, Organizational Performance, Geothermal Energy, Organizational Learning, Employee Participation.*

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I. INTRODUCTION

There are profound changes happening in the global energy market, as nations are developing renewable energy sources in support of climate change mitigation and energy security. Geothermal energy, which is harnessed from the heat produced by the Earth's inner processes, is becoming a dependable, low-carbon baseload supply, and a reliable alternative to fossil fuels. According to the International Energy Agency (2023), it is projected that by 2028, more than 40% of the electricity generation globally will be from renewable sources, and geothermal capacity will reach 24 GW by 2030. Kenya has harnessed geothermal energy and leads its development in Africa – it is the first African country to significantly adopt geothermal energy. In 2021, the contribution from geothermal sources was 40.7% of the electric supply and has established Kenya as the leader in renewable energy generation and consumption on the continent. The government has established the Geothermal Development Company (GDC), a company that is wholly owned by the state and was established for the purpose of exploring, developing and assessing geothermal resources that may assist in meeting Kenya's energy needs and progress towards Sustainable Development Goal 7 (SDG7).

GDC has been in operation for more than 16 years, yet the company is struggling with significant challenges in performance. The company only produces 863 MW, despite a

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potential of KES 7000-10,000 MW, reveals a major underutilization of available potential. There are many factors that impact performance; technology adaptation, human capacity development, deficient training, sustaining the financial viability of the public-private partnership (PPP) model. Additionally, it has been reported that KES 8.9 billion worth of equipment is presently lying idle because of 'software incompatibility' issues and there are no operational efficiencies within the system (Kisia, 2024). Consequently, this calls for urgent strategic change management (SCM) practices to address the shifts occurring in the geothermal energy sector. SCM is the process through which an organization systematically considers how to plan, implement, and support the changes it is making for the sake of viable objectives throughout the longer-term while remaining competitive. There is substantial literature on how to apply the process of SCM practice across every sector, but little academic literature exists on SCM from a geothermal perspective, particularly in developing countries such as Kenya.

To fill a gap in the literature, this research investigates how four SCM practices–organizational learning, communication, leadership, and employee participation–influence managerial performance in GDC. This research responds to calls for more empirical evidence of change management in the proactive renewable energy drawing on energy efficiency and change management literature. This research will offer useful perspectives for policymakers, practitioners within the energy sector who focus on change management, and organizational leadership pursuing performance improvements in this space.

➢ *Research Gaps*

An abundant amount of literature discusses strategic change management, but several gaps remain. First, most current research has been conducted in banking, manufacturing, and telecommunications industries, and this topic hasn't been researched in a geothermal energy context. Second, most research has focused on qualitative one-off studies or generalized frameworks containing various SCM practices in performance, rather than assessing the relative importance of specific SCM practices. Third, there are contextual differences in practices in developed and developing countries, which limit the applicability of the research results, even more so in Africa due to specific energy sector challenges. Therefore, this study contributes to these gaps by providing some quantitative evidence regarding the effects of different SCM practices in a relative way in Kenya's geothermal energy sector.

II. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

➢ *Theoretical Foundation*

This study is situated in four related areas of theory, which work together to illuminate the associations between strategic change management practices and organizational performance. Cotter's Eight-Step Change Model is the principal theory influencing the study and understanding of organizational change. Developed by Dr. John Kotter in 1996, Cotter outlines eight critical steps for managing change effectively at a managerial level: build a sense of urgency, action guide, create a shared vision, communicate that vision, remove obstacles, create short wins, don't let up, and don't let change slip back into the usual way of functioning (Kotter, 1996). Because of GDC's organizational change needs, prior work emphasizes that successful change requires senior-level commitment to innovation and change, clear actions and communications, and employee engagement, among other factors. Cotter's model parallels Darwin's hypothesis of "survival of the fittest", suggesting that organizations that adapt continuously to changes in the environment are most likely to be successful, to improve organizational performance, and to remain competitive.

- Stakeholder Theory, proposed by Edward Freeman, emphasizes that organizations that thrive do so by managing the myriad of interests of stakeholders, such as employees, customers, and investors, as well as others like suppliers and government regulators. Freeman (1984) goes on to indicate that while stakeholder organizations would ultimately experience more success, to achieve that end, organizations that manage stakeholder engagement and focus on creating shared value experience higher levels of long-term success. Stakeholder interests are particularly salient in geothermal, as the interests of stakeholders are more complex and mean the engagement of different groups of stakeholders, including government agencies, local communities, environmental advocates, and investors. It is for these reasons that stakeholder theory will be used to assess communication and employee engagement as strategic supply chain management (SCM) practices at GDC.

Resource-Based View (RBV), introduced by Barney (1991), explains competitive advantage based on a firm's resources. The theory explains that firms achieve a sustainable competitive advantage when they have one or more resources that are valuable, rare, inimitable, and non-substitutable— the VRIN framework. The essential resources for GDC include unique geothermal technology, skilled labor, and knowledge capital. RBV theory specifically informed the focus on organizational learning as a process of leveraging and developing intangible resources in the study.

- The Balanced Scorecard Framework, introduced by Kaplan and Norton in 1996, is a multidimensional strategy that measures performance from four perspectives: financial, customer, internal processes, and learning and growth. The Selected Balanced Scorecard measures performance beyond traditional financial performance and includes non-financial measures, providing a multidimensional view of performance. The Balanced Scorecard supported the conceptualization of performance for GDC and elaborated the meaning of performance to include measures of

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financial profitability, operational performance, and organizational learning as outcomes.

➢ *Strategic Change Management Practices*

Communication is demonstrated as a core SCM practice of speeding up information, relieving tension with change management, and ensuring alignment of strategic focus among employees. Effective communication is vital to have well-communicated and clear messages on the why of change, an open door to talk with employees or stakeholders, and solid feedback mechanisms throughout the organization. Atambo and Momanyi (2016) cited upward, downward, lateral, and horizontal communication as a means of organizational performance at Kenya Power and Lighting Company. Additionally, Asamu (2014) findings suggest that effective communication improved employee commitment, productivity, and performance of organizations in Nigeria. These authors and findings support the importance of communication across organizations and through the change management process.

When organizations go through restructuring, employee participation has the potential to involve employees in decision-making. The stakeholder theory recognizes that participation can enhance a person's ownership of decisions; decreased resistance, and improved the quality of the decisions by drawing on the diversity of perspectives. Mugenda (2015) argues that worker participation in restructuration in Kenyan manufacturing organizations increased productivity, increased employee satisfaction, and reduced turnover. Likewise, Ochieng (2017) argued that employees who were engaged during the restructuring process in the banking sector resulted in much higher acceptance of change and improved performance. These studies underline the significance of employee participation as a key influence on both organizational change and organizational success.

In organizational change, leadership plays a vital role in creating the vision, using resources, and creating a viable environment for change. An effective leader supports the change process, delegates authority as warranted, and encourages leadership skill development in the organization. Lee and Welliver (2018) suggested that the leadership strategy construct produced positive organizational success through change in a supply chain management context. Gupta (2018) also noted that establishing a vision and managing competencies are keys to achieving quality performance outcomes. Leadership effectiveness is context-based on the situational state of an organization (e.g., culture, industry forces, and available resources).

- Organizational Learning refers to acquiring, maintaining, storing, and sharing knowledge through training, talent development, and knowledge-sharing practices. On the other hand, the Resource-Based View refers to the idea that organizational learning generates intangible benefits or resources that help a company stay competitively advantaged in the long run. According to Sampe (2012), organizational learning was an active process in Indonesian SMEs, acquiring greater efficiencies and thus enabling both greater productivity for the enterprises and greater success for the business overall. Zhou, Hu, and Shi (2015) find a systematic relationship between organizational learning and firm performance covering the performances of 287 companies in China. Overall, the ability to continuously learn allows firms to adapt to changing circumstances within the environment and thus improve performance.

III. RESEARCH METHODOLOGY

➢ *Research Design*

The study employed a descriptive research design to systematically explore the relationship between strategic change management processes and GDC's performance. Descriptive research design is generally used to answer "what," "when," &" where" without manipulating any variables (Mohajan, 2018). This chance for descriptive research design explored the existing relationships of communication, employee involvement, leadership, organizational learning, and performance outcomes.

➢ *Target Population and Sampling*

The research included 204 subjects from different fields of management, i.e., mid-senior managers, from six GDC directorates: Drilling & Infrastructure (34); Finance (31); Geothermal Resource Development (55); Human Resource & Administration (36); Strategy, Research and Innovation (38); and Regional Operations (10). Mid-level senior managers have a well-rounded comprehension of change management processes for GDC's strategic change management model and organizational performance. Stratified sampling was used to select the study participants (102 or 50% of the target population), and sample sizes represented the approved proportions across the directorates. The sample size exceeds the minimum recommended by Mugenda and Mugenda (2003), who state that the sample size should be at least 10% of the target population, increasing the validity of the sample results. The treated stratified sample also allowed for adequate representation across the directorates and minimized bias in the sample selection process.

➢ *Data Collection*

A structured data collection method was utilized, with closed-ended questionnaires that included items with five-point Likert scales and five-point response scales ranging from (1) Strongly Disagree to (5) Strongly Agree. The closed-ended questionnaire consisted of six sections: demographics, communication practices, employee engagement, leadership, and organizational learning and performance indicators. The closed-ended questionnaire was chosen because it standardized responses in a manner that could be quantitatively analyzed while providing respondents with the opportunity to complete the questionnaire at their convenience (Cooper et al., 1995, Desai & Reimers, 2019). The instrument was piloted with ten randomly chosen GDC employees in advance of the main data

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collection. The piloting of the closed-ended instrument was done to assess validity and reliability. Content validity was assessed through an expert review, and construct validity was assessed through exploratory factor analysis; each factor needed to be at least (.5). Face validity was demonstrated using feedback from the pilot study participants. Reliability was assessed using Cronbach's Alpha, and the results showed that all constructs were above the recommended reliability alpha of (.7), which indicates consistency (Rousson et al., 2002).

➢ *Data Analysis*

In SPSS Version 22, two types of statistics were utilized for the data analysis: descriptive and inferential. First, descriptive statistics (i.e., means, standard deviations, and frequency distributions) were used to provide each respondent's preliminary information and the distribution of the measured variables. Correspondingly, the Pearson's correlation analysis examined what correlation was present (strength and direction) for each independent variable in relation to organizational performance. Lastly, a multiple regression analysis demonstrated the combined and unique contributions to the amount of variance in organizational performance as it related to communication, employee participation, leadership, and organizational learning.

The regression model has been denoted as:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where:
Y = Organizational performance (dependent variable)
β_0 = Constant term
β_1-β_4 = Regression coefficients
X_1 = Communication
X_2 = Employee participation
X_3 = Leadership
X_4 = Organizational learning
ε = Error term

Statistical significance was tested at the 95% confidence level ($p < 0.05$)

IV. FINDINGS AND DISCUSSION

A. Response Rate and Demographic Profile

Out of the 102 questionnaires issued, 96 respondents completed the questionnaire and returned them. This study recorded a 94% response rate, which is high and above the minimum of 70% as indicated by Mugenda and Mugenda (2003), that is considered a minimal threshold for reliability and generalizability. On average, the respondents were 41 years of age, which shows that the workforce was relatively mature and experienced. More than 80% had at least a Bachelor's degree, and 32% had qualifications at the postgraduate level. Such a finding would affect any GDC's management and is likely to show up as principal expertise. Additionally, 78% had worked at GDC for over six years, they were organizationally knowledgeable and had direct experience in performing SCM practices.

B. Descriptive Analysis

➢ *Communication and Performance*

Respondents reported strongly in favor of Communication as an important SCM practice at the GDC (aggregation mean = 4.02, SD = .72). Specifically, respondents agreed that information is communicated clearly across the organization (mean = 4.11, SD = 0.74), strong internal channels of communication exist (mean = 4.02, SD = 0.71), and feedback is given to employees on concerns and suggestions (mean = 4.05, SD = 0.75). However, respondents were neutral in response to whether management communicates in a timely, transparent manner about any organizational changes (mean = 3.92, SD = 0.70), possibly indicating an area for improvement with respect to communication on organizational change. This finding is consistent with research by Atambo and Momanyi (2016) that demonstrated communication channels had an influence on employee performance at Kenya Power and Lighting Company. Additionally, transparent communication contributes to transparency, strategic intent alignment with stakeholder behaviors, and a reducing resistance to change, leading to more effective organizations.

➢ *Employee Participation and Performance*

The findings presented high levels of employee engagement at GDC (mean overall = 4.15, SD = 0.77). Specifically, the respondents confirmed that employees felt a sense of value when they offered suggestions on how to improve the company's performance (mean = 4.46, SD = 0.78); there was engagement of employees in discussions regarding change processes (mean = 4.06, SD = 0.80); employees received the training (education) needed for the change (mean = 4.05, SD = 0.77); and employees were engaged in decision making (mean = 4.03, SD = 0.77). This finding corroborates Mugenda (2015), and implies that high levels of employee engagement in the context of Kenyan manufacturing firms resulted in an increase in productivity and a decrease in employee turnover due to employee engagement. Ownership occurs and as the employees are better informed about the strategies of the organization, they are motivated and inclined to perform better on the job.

➢ *Leadership and Performance*

The leadership results were mixed (aggregate mean = 3.93, SD = 0.78). Respondents agreed that leaders valued creativity and innovation (mean = 4.04, SD = 0.82) and that management was committed to realizing change (mean = 4.00, SD = 0.81). While they were neutral about whether leaders provided clear and focused direction during the organizational change (M=3.81, SD=0.73) and valued collaboration and teamwork (M=3.88, SD=0.76), the results appear to indicate that GDC has not quite embraced leadership as part of a core SCM practice. This contrasts with Lee and Welliver (2018) and Gupta (2018), who found significant correlations between

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leadership and organizational performance. A somewhat weak result on leadership may also indicate that the structure of GDC may emphasize individual accountability over collective leadership.

➢ *Organizational Learning and Performance*

Mean ratings suggested that organizational learning was rated quite highly (mean = 4.07, SD = 0.75) as respondents likewise indicated the GDC valued ongoing training and development of skills (mean = 4.11, SD = 0.67), sharing knowledge and experiences in positive ways (mean = 4.07, SD = 0.76), valuing creativity and learning (mean = 4.06, SD = 0.83), and applying experiences from previous engagements to re-design future engagements (mean = 4.03, SD = 0.74). These results are consistent with Zhou et al. (2015) and Sampe (2012), where substantial changes in organizational learning to firm performance were found. Furthermore, when firms instill continuous learning, it promotes the development of knowledge assets, builds employee competencies, and enables the organization to adapt to changes in its environment.

➢ *Organizational Performance*

The respondents consistently agreed that supply chain management practices were effective and beneficial to the performance of the GDC (aggregate mean = 4.08, SD = 0.66). Specifically, they agreed that strategic management practices increased operational efficiency (mean = 4.24, SD = 0.68) and that employee participation and involvement enhanced performance (mean = 4.09, SD = 0.68). Additionally, the participants believed that the GDC had financially developed due to the work of supply chain management (mean = 4.03, SD = 0.63). However, respondents were neutral about whether or not the leadership strategies reported by the GDC led to an overall company impact (mean = 3.95, SD = 0.68), which is consistent with previously reported findings of leadership.

V. INFERENTIAL ANALYSIS

➢ *Correlation Analysis*

A Pearson's correlation analysis revealed that all independent variables (i.e., employee participation, communication, leadership, and organizational learning) were positively statistically related to organizational performance. Organizational learning had the strongest relationship ($r = 0.900$, $p < 0.05$), followed by employee participation ($r = 0.688$, $p < 0.05$) and communication ($r = 0.633$, $p < 0.05$), while leadership had a lower but still significant relationship with organizational performance ($r = 0.406$, $p < 0.05$). All practices had p-values below 0.05, indicating all correlations were statistically significant at the 95% confidence level, and that all practices contributed towards organizational performance. The high organizational learning and performance relationship suggests that learning through knowledge, building capacity, and embedding a continuous improvement approach are essential to organizational performance in the geothermal energy industry. The high employee participation and performance relationship indicates that introducing practices to engage employees in decision-making and implementation improves organizational effectiveness by developing commitment and tapping into diverse perspectives.

➢ *Regression Analysis*

The model produced by multiple regression analysis resulted in $R = 0.833$ and $R^2 = 0.694$, suggesting that the four SCM practices accounted for the decrease in performance (69.4%) at GDC. The F-statistic was significant ($p < 0.05$). Thus, it conceptually supports the overall validity of the model. The coefficients of the regression equation were:

$$Y = 0.763 + 0.064X_1 + 0.027X_2 + 0.068X_3 + 0.079X_4$$

where X_1 = Communication, X_2 = Leadership, X_3 = Employee Participation, and X_4 = Organizational Learning.

The regression equation coefficients suggested that organizational learning had the highest significance, followed by employee participation, lingering communication, and leadership last. The coefficients for each variable were also provided as follows: ($\beta = 0.079$, $p = 0.037$), ($\beta = 0.068$, $p = 0.022$), ($\beta = 0.064$, $p = 0.041$), ($\beta = 0.027$, $p = 0.035$). All the coefficients were statistically significant in establishing that each SCM practice was related to improved performance. These findings substantiate the assertion of the Resource-Based View that intangible assets, specifically knowledge and skills, are one of the primary sources of competitive advantage for an organization (Barney, 1991). The fact that organizational learning had the most significant influence means GDC's commitment to training (of employees), knowledge sharing, and continual improvement had to have considerably influenced performance.

VI. DISCUSSION

The findings from the study provide a strong endorsement that understood and practiced modes of change management can have a positive and necessary impact on performance in Kenya's geothermal energy sector. The strong positive relationship between organizational learning and performance ($r = 0.900$) underscores the importance of learning and enhancing skills in a technology-intensive industry. This result supports the Resource-Based View's argument that intangible assets can help create a sustained competitive advantage (Barney, 1991). GDC's investment in continuous training, knowledge creation, and innovation builds organizational capabilities that GDC needs to adjust to the industry's distinctive temporality alongside its conflicting technological nature. Given the geothermal energy industry's rapidly changing conditions at a pace GDC cannot control, GDC needs to rely on its internal competencies and external associations to create innovative outputs, while managing internal efficiencies alongside external partners. Even as the geothermal energy industry rapidly changes due to technological advances or failures associated with equipment incompatibility (Kisia,

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2024), organizational learning will remain a necessary component of operational efficiencies and competitiveness.

The high correlation between employee involvement (r = 0.688) endorses the principle implied in Stakeholder Theory that organizations will be better off with a dual stakeholder relationship with employees by involving employees and including them in the process of making and building decisions that directly and indirectly impact them and the GDC operations (Freeman, 1984). When employees feel their input is valued, they belong to the organization and its values and are involved in relevant decision-making processes that align with the organization's change. They reflect and connect their input to GDC's mission, vision, and principles and modify their behavior to demonstrate greater buy-in and actual input to performance improvements. This presents real meaning when shifted to GDC's challenge of beginning to develop human capacity, as explained in Onyambu (2010). The strong positive correlation between communication and performance (r = 0.633) supports Kotter's (1996) argument that successful change management rests on honesty and the prevalence of a successful communication plan. GDC's communication worked well and at strategic levels helped the organization align work efforts strategically, mitigate the resistance to change, and gave employees clues to the place of the organization as they understood their level of organizational context and scope of work to achieve the goals. For sure, respondents' more neutral feelings and responses to timely communication for organizational change may indicate some level of organizational opportunity wherever the organization was looking to determine and discuss any change communications (timely) with stakeholders.

It's interesting to note the weak correlation between leadership and performance (r = 0.406) because the current literature points to leadership's significant role in change management (Lee & Welliver, 2018; Gupta, 2018), highlighting the use of leverage and improving the leadership framework at GDC, e.g., providing leadership during an organizational change, and building team and collaboration while enhancing its response for GDC. The neutral responses regarding commitment (i.e., management's commitment to the work) indicate that GDC management committed themselves to the change effort in their organization and that change management capabilities may not have been meaningfully drawn upon to influence change practice. These findings suggest that strategic change practice is not a singularly valuable construct but a multi-faceted process that leverages integrative capabilities and/or approaches. Finally, the significance of the regression analysis, the mutual explanatory value of the four SCM practices, and their role in accounting for 69.4% of the explanatory variance in performance suggested that there is the potential for a meaningful predictive value, but also literature points to other factors that would influence organizational performance dependent on GDC context (e.g., market, regulatory, and/or technology) factor.

Our contribution not only confirms previously identified theoretical relationships but also offers contextual insights that are particular to the geothermal energy industry in Kenya. Prior studies have focused on distinct organizations related to selected manufacturing, banking, or telecommunications industries, and this project summary illustrates how SCM practices occur in a heavy capital, advanced technological, and environmentally conscious industry. This finding is valuable to policymakers in the energy sector looking to enhance performance in the same or similar contexts.

VII. CONCLUSION AND RECOMMENDATIONS

A. Conclusions

The focus of the current study was to investigate the influence of strategic change management practices on organizational performance at the Geothermal Development Company in Kenya. Survey data from 96 middle-to-senior management employees indicated that the following conclusions could be drawn. Organizational learning was the strongest predictor of performance in the geothermal energy sector. GDC's continued investment in continuous learning, organizational learning, and a culture of knowledge sharing and innovation allowed the organization to develop and build capabilities necessary to deal with the technological and operational challenges posed by geothermal energy. The implications from this finding are significant in that they emphasize developing knowledge as part of a strategic decision rather than only as an issue for human resources.

In addition, employee involvement shapes organizational performance by virtue of ownership over organizational change, employee commitment and engagement, and building additional perspectives into the decision of strategic change. When employees at GDC had experiences of being valuable organizational members as a part of the organizational change agendas, they committed, ensured engagement, and added value to organizational performance. This conclusion supports the stakeholder perspective of change management and confirms the value of participatory change management versus hierarchical or top-down change management.

Communication is critical in change management, as it offers strategic congruence, reduces resistance, and enables collective action in the organization. I would say that, despite GDC's strong communication process, there continues to be room for additional frequency and transparency regarding communication around change. I would also conclude that when we examine the four SCM practices, leadership emerges as the least strong predictor of performance, while being statistically significant in explaining value in change initiatives. This would indicate that the GDC also is not fully capitalizing on the possibilities of their leadership for strategic change, particularly in terms of direction-setting and ability to work on their teams. A more conscious focus on leadership practices is incredibly beneficial for organizational improvement. This study also encourages thinking of strategic change management

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as inherently complex, and this research supports intellectual and practical cases for integrating practices that holistically address communication, participation, learning, and leadership. To participate in the creation of cohesive change management strategies, organizations must be prepared to move beyond singular practices to develop organization-wide practices that can view the interdependencies of the four strategic change management practices.

B. Recommendations

- *For GDC Leadership and Management:*

GDC should focus on building organizational learning by expanding training initiatives, establishing knowledge management systems, and starting standardized methods for capturing and sharing lessons learned from projects. The most significant impact on performance comes from organizational learning, so these imperative actions should be considered more strategic necessities and general operations for the organization. Examples might include developing a GDC learning academy, establishing a mentor program to align experienced staff with new staff, and developing a knowledge repository for staff that is easy to access. Second, GDC should engage employees in strategic decision-making by establishing cross-functional teams, a cadence for consulting forums for input from as many employees as possible, and developing transparent systems for incorporating input from employees into organizational strategies. Engagement strategies should be broadened beyond regular operations, such as strategic planning, budgeting, and performance evaluations.

- *For Other Geothermal Energy Sector Organizations:*

Energy sector organizations in Kenya and Africa can use the findings of the case studies in their organizations by incorporating communication, participation, and learning into organizational strategy. While the energy sector presents specific challenges from technological complexity, capital intensity, and an environmentally sensitive situation, there is a clear need for sound change management. Organizations should be able to gain insights from the GDC to compare their practices, question their approaches, and learn from the drawbacks they identify and consider challenging.

- *For the Kenyan Government and Energy Sector Regulators:*

To begin with, it is crucial to develop policies that ensure organizations invest in organizational learning within the geothermal and renewable energy sectors. This study illustrates that organizational learning has an empirically demonstrated link to performance. Policy approaches could include establishing minimum percentage investments in training or employee learning and development as part of payroll, government allowances for organizations that invest, and government initiatives establishing cross-sector knowledge sharing where organizations collaborate to develop learner networks across and within the industry.

Secondly, governmental agencies could develop scholarship opportunities and provide support for organizational learning through workshops and certification to employees in the geothermal sector. While the approach also supports the development of the sector's organizations, it lessens the individual organization's challenge of developing capacity in new functional areas. Third, regulatory requirements related to organizational learning could allow employees to participate in decision-making at the managerial level, particularly for state-owned enterprises such as GDC. Apart from Board representation, public policy guidelines might include required processes for consultation before an organization changes its operations, or periodic employee surveys with results published to employees.

- *Recommendations for Future Research*

To begin with, future research should consider studying mediating variables, such as organizational culture, employee motivation, or change readiness, that might mediate strengthening or weakening relationships between SCM practices and performance, which would provide more comprehensive views of the dynamics of the change management process.

Also, longitudinal studies examining SCM practices and performance for an extended period would reveal any relationship changes, offer opportunities to understand better key moments within the initiatives designed to change organizational practices, and examine the sustainability of benefits when improvements are identified post-SCM. In addition, comparative studies of SCM practices across numerous geothermal energy organizations in multiple countries would further explain how contextual variables, such as national culture, regulatory environment, and market structure, impact change management effectiveness. The outcome of this research would add to the degree of generalizability and create opportunities for varied perspectives as it relates to practitioners and their settings.

Further, research could explore other SCM practices not examined in this study, such as transformation of organizational culture, resistance management strategies, monitoring and evaluation systems, or technological adoption processes. Adding these components to research would provide more comprehensive models supporting the understanding of the change management process. Finally, qualitative approaches using case studies, interviews, or ethnographically qualitative approaches would complement this quantitative examination by illustrating minor details of how SCM practices change influence performance and articulating the more nuanced perspectives that may be difficult to measure quantitatively.

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