THE IMPACT OF ADMINISTRATIVE LEADERSHIP ON GREEN MANAGEMENT: THE CASE OF LEADERS OF SAUDI UNIVERSITIES

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ABSTRACT

Objectives: The importance of the study is to analyze the relationship between administrative leaders in Northern Border University and green management to contribute to sustainable development. The university is an integral part of society, especially in providing competencies to graduates, which can have a role in applying green management in the future and achieving sustainable development. Methods/Approach: This study will be carried out by distributing questionnaires to a random sample of leaders of Northern Border University. After that, the answers are collected and analyzed using the descriptive analytical method based on the SPSS statistical program. Results: The study results indicate an overall impact of administrative leadership at Northern Border University on green management. This impact varies between male and female leaders, with male leaders exhibiting a weakness in implementing strategic management, while female leaders need to improve in effective communication. Meanwhile, the Leader’s academic qualification positively influences green management practices. Conclusions: This study adds value by examining novel connections between leadership and environmentally friendly actions by utilizing gender-specific perspectives to enhance academic sustainability.

Keywords: Administrative Leadership, Green Management, Green Economy, Northern Border University

JEL classification: M1; M29; Q20

Paper type: Research article


INTRODUCTION

Global warming is a significant and pressing issue that the world is grappling with; according to WWF, global temperature increases directly affect human health and livelihoods. Economic losses are incurred due to drought, heat waves, sea-level rise, storms, and floods, which impact infrastructure and the agricultural and tourist industries. This situation has prompted firms and communities to place increased emphasis on and support ecologically sustainable enterprises.

Corporate economic and development efforts have both positive and negative consequences, which can result in conflicts between communities or stakeholders and companies. Saudi Arabia is not exempt from experiencing the adverse consequences of commercial activities that result in environmental degradation, such as water pollution, deforestation, and social harm. Consequently, the government should make efforts to address and restore these social and environmental concerns.

The issue of green governance has emerged as a significant concern in recent years. Society has become increasingly aware of the need to lead a healthy lifestyle, encompassing concerns such as environmental
degradation, air pollution, floods, access to clean water, and the consumption of unhealthy food. This awakening has emphasized the necessity for ecologically friendly products and services. Green management is a business practice that aims to transform inputs (such as raw materials and auxiliary resources) into outputs (such as goods and services) by emphasizing the need to achieve a harmonious and mutually beneficial relationship between economic, social, and environmental factors (Mutamimah & Sugiyanto, 2011; Mutaminah & Siyatimah, 2012).

Consequently, it is crucial to examine green management models in Saudi Arabia, beginning with the identification of environmentally friendly resources, the implementation of eco-friendly procedures for handling raw materials (green process), the production of eco-friendly products (green outputs), the development of skills aligned with the green economy (green economy), and the enforcement of government regulations and public awareness campaigns to enhance the performance of both public and private universities. Green management is anticipated to assist universities in producing graduates who possess skills and knowledge aligned with sustainable development. Additionally, it enables universities to fulfill their social obligations to society and uphold environmental sustainability. Maximizing stakeholders’ entails that colleges generate advantages and enhance the well-being of all parties involved in society, including university leaders, faculty members, students, administrators, communities, and the environment. Moreover, the present-day global transformations have emphasized the significance of organizational leadership as a crucial element for current and future financial advancement in the green economy. This necessitates leaders dedicated to executing strategies, policies, and programs that can foster environmentally sustainable practices within their organizations and society while simultaneously striving for economic prosperity (Metcalf & Benin, 2013).

When administrative leadership is applied in the context of environment and sustainable development, it is referred to as sustainability leadership, sustainable leadership, or green leadership. This involves connecting leadership with sustainable green management methods (Cosby, 2014). Sustainable leadership, a prominent concept in the green economy, places significant emphasis on various stakeholders such as government agencies, environmental pressure groups, and organizations. This approach has become widely adopted (Avery & Bergsteiner, 2011; Elkington & Heitz, 2014; Margaretha Saragih, 2013; McCann Holt, 2012; McCann Sweet, 2014; Suriyankeetaew Avery, 2016). In addition, sustainability leadership has been recognized as a crucial regulatory endeavor for the effectiveness of the education process (Metcalf & Benn, 2013; Riseley, 2016). Sustainable leadership refers to the behaviors and practices that generate enduring value for all stakeholders, encompassing the environment, future generations, and society. Integrating regulatory activities and environmental consciousness combines and incorporates measures imposed by regulations with a conscious understanding and consideration of the environment (Backer, 2002). The analysis above indicates that the main priority for leadership is to concentrate on the environment, as this could give Banerjee (2002) a competitive edge. The practice of sustainable leadership by various organizations presents an opportunity for additional innovation, a successful long-term strategy, ongoing improvement, and a sustainable competitive advantage (Berchicchi et al., 2012; Fable et al., 2005; McCann & Holt, 2011; Porter & Kramer, 2011; Siegel,
According to Slankis (2006), using sustainability can drive new inventions, methodologies, or corporate procedures that aim to improve operations. Sustainable leaders are crucial in promoting green initiatives and improving environmental performance within their organizations. They are accountable for developing an environmental vision by implementing changes in corporate culture and forming partnerships with various stakeholders to address environmental concerns and accomplish environmental objectives (Bansal, 2003; Dechant & Altman, 1994).

Furthermore, "Sustained leadership entails generating both present and future financial gains for an organization while simultaneously enhancing the well-being of all individuals involved." McCann and Holt (2011). The study is flawed due to a fundamental question that arises:

What was the impact of Northern Border University leaders on green management and their contribution to sustainable development?

The study examines the correlation between management leaders in Saudi universities and green management to promote sustainable development. As universities are crucial to society, this research seeks to explore how graduates can contribute to implementing green management practices and achieving sustainable development.

This research aims to elucidate the theoretical aspects of the correlation between managerial leadership and green management. To ascertain the primary limitations that impact management leadership in executing environmentally friendly management procedures. Furthermore, the study examines measures implemented by policymakers to support sustainable development via green management.

This study aims to enhance our understanding of the relationship between administrative leadership and green management. It is organized into five sections. The structure of the research paper consists of three main sections: the introduction, the literature review and hypotheses, and the materials and methods. The fourth section, which includes the results and discussion, is regarded as the crucial component of the study. In the final section, the conclusion should address the implications, limitations, and future directions of the research and provide recommendations.

**LITERATURE REVIEW AND HYPOTHESIS**

**Literature Review**

Recent studies have indicated that sustainable leadership can enhance organizational performance by minimizing expenses and maximizing potential revenues (Ambec & Lanoie, 2008; Marcus & Freeth, 2009).

Ambec and Lanoie (2008) further identified four categories where cost reduction can be influential: risk management and external stakeholder relationships, as well as the costs associated with materials, energy, and services. III. The capital expenditure. Furthermore, there are expenses associated with hiring and retaining employees. Sustainable leadership is characterized by proactive behavior and ongoing analysis of the organization's operating environment to identify any external forces of change. This necessitates the ability of organizational leadership to establish enduring relationships with all stakeholders both within and outside the
organization. Graen and Uhl-Bien (1995) conducted a study. In terms of organizational actions, sustainable leadership typically involves the development of a long-term vision for making environmentally sustainable decisions. It also promotes the fundamental green values of sustainability, acknowledges the challenges associated with sustainability, implements green management systems, and demonstrates innovation in providing high-quality products, services, and solutions (Avery & Bergsteiner, 2011; Crossman, 2011; Maak & Pless, 2006). Nevertheless, sustainable leadership beyond the company aims to attain optimal environmental and societal performance (Avery & Bergsteiner, 2011). Organizations that embrace sustainable leadership techniques can have numerous advantages. Some examples of these practices include reducing pollution, efficiently using water and energy, utilizing renewable energy sources, managing waste from viable resources, recycling, conducting research and education, improving organizational reputation, reducing costs, and increasing productivity (Ambic & Lanoie, 2008; Jafri, 2015). Organizations worldwide face sustainability challenges that have significantly pressured higher education institutions to educate and train leaders in sustainable environmental practices (Brown et al., 2010; Scott et al., 2012). Higher education institutions function as commercial enterprises and serve as the foundation of environmental sustainability (Leach, 2008). Higher education institutions' expertise and R&D endeavors can provide valuable guidance to business organizations in formulating new strategies to incorporate the environment into their business processes, thereby attaining optimal performance in terms of business, community, and environmental aspects (Foo, 2013).

According to a study carried out by Patwary et al., 2023, they found a relationship between green inclusive leadership (GIL), green human resource management (GHRM), and proactive pro-environmental behaviour (PEB). The findings also suggested that GHRM mediates the links between GIL and proactive PEB.

The study by Özgül & Zehir (2023) examines the moderating impact of a differentiation strategy on the relationship between green transformational leadership (GTL) and competitive advantage (CA). The impact of top management's Global Talent Leadership (GTL) on the firm's Global Organizational Learning Capability (GOLC) is beneficial. Furthermore, GOLC has a good impact on the firm's CA. This study demonstrates that GTL has a substantial indirect impact on CA via GOLC.

The study conducted by Niazi et al. (2023) revealed that green human resource management (GHRM) and green innovation (GI) had a beneficial influence on green corporate social responsibility (GCSR). Although the correlation between GHRM and environmental performance (EP) was negligible, GI substantially impacted environmental performance. Moreover, GCSR benefited EP, supporting its position as a mediator between GHRM, GI, and EP.

**Hypothesis**

In order to respond to the problem of research and to achieve its desired objectives, we propose a series of hypotheses, as follows:

H1: Clear Communication and Adaptability have a positive impact on green management.
H2: Visionary Strategic Planning has a positive impact on green management.

H3: Ethical Decision-making and Fostering a Positive Organizational Culture positively impact green management.

H4: Team Collaboration and Continuous Learning positively impact green management.

H5: Leadership practices consistent with green management differ between men and women at Northern Border University.

H6: Leadership practices that align with green management vary between leadership positions at NBU.

H7: Leadership management practices that align with green management vary between different academic qualifications at Northern Border University.

MATERIALS AND METHODS

Data

Sample Selection
The leadership of Northern Border University approved a sample.

Sources of Data
One hundred forty-two leaders answered a questionnaire prepared to test hypotheses based on the model of study.

Tools used in the study
This study is based on a theoretical model linking management leadership to green management by examining the determinants of managerial leadership, which in turn contribute to the application of green management, and by finding out whether there are differences in age, Gender, Administrative position, or Academic position in its application from Northern Border University in Saudi Arabia.

Study Model

Measures
The analogy was derived from a questionnaire on administrative leadership at Northern Borders University in Saudi Arabia. The questionnaire was distributed to 142 leaders, 77 males and 65 females. The responses received were varied. The user has presented a set of questions categorized into five sections: Clear Communication and Adaptability (CCA), Visionary Strategic Planning (VSP), Ethical Decision-making and Fostering a Positive Organizational Culture (EDFPOC), Team Collaboration and Continuous Learning (TCCL), and Green Management (GM), as illustrated in Figure 1. A Likert scale ranging from "Strongly Agree" to "Strongly Disagree" assessed all construction aspects.

The empirical section should provide appropriate citations to the methodology used. Paper's argument should be built on an appropriate base of theory, concepts, or other ideas. The research or equivalent intellectual work on which the paper is based should be well designed. Methods employed should be appropriate.
Descriptive Analysis

The questionnaire was distributed to a group of administrators at Northern Border University who hold leadership positions. The responses were collected from 142 leaders, and it was found that 95% of them practice leadership in alignment with sustainable management principles. The results are displayed in Table 1.

Table 1. Respondents Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>77</td>
<td>54,23</td>
</tr>
<tr>
<td>Female</td>
<td>65</td>
<td>45,77</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-30</td>
<td>9</td>
<td>6,34</td>
</tr>
<tr>
<td>31-35</td>
<td>14</td>
<td>9,86</td>
</tr>
<tr>
<td>36-40</td>
<td>26</td>
<td>18,31</td>
</tr>
<tr>
<td>41-45</td>
<td>54</td>
<td>38,03</td>
</tr>
<tr>
<td>46-50</td>
<td>21</td>
<td>14,79</td>
</tr>
<tr>
<td>50+</td>
<td>18</td>
<td>12,68</td>
</tr>
</tbody>
</table>
Measurement Model Analysis

Validity and Reliability

The Cronbach's Alpha coefficient is employed to assess the internal consistency of any structure. The Alpha Cronbach values, measured using the recommended 0.60 thresholds (Fornell & LaCroix, 1981), ranged from 0.66 to 0.94 for all constructs. These values, as presented in Table 2, indicate that the elements within each underlying structure demonstrate internal solid consistency.

The study yielded a Cronbach's Alpha value of 0.817 (<0.94) on a global scale, indicating that the data is acceptable and reliable. This high level of reliability enhances the likelihood of obtaining accurate and favorable outcomes.

Table 2. Reliability Questionnaire Test

<table>
<thead>
<tr>
<th>N</th>
<th>Cronbach's Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>0.817</td>
</tr>
</tbody>
</table>

Source: Secondary Data, Data analyzed using SPSS.

Descriptive Statistics

Furthermore, it is universally acceptable across all research variables, as evidenced by the data presented in Table 3.

Table 3. Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Sd.dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>0</td>
<td>1</td>
<td>0.5422</td>
<td>0.4999</td>
</tr>
<tr>
<td>CCA</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>0.9893</td>
</tr>
<tr>
<td>VSP</td>
<td>1</td>
<td>5</td>
<td>4.0704</td>
<td>0.9795</td>
</tr>
<tr>
<td>EDFPOC</td>
<td>1</td>
<td>5</td>
<td>4.1338</td>
<td>0.9544</td>
</tr>
<tr>
<td>TCCL</td>
<td>1</td>
<td>5</td>
<td>3.8521</td>
<td>1.1041</td>
</tr>
<tr>
<td>GM</td>
<td>1</td>
<td>5</td>
<td>3.8802</td>
<td>0.9414</td>
</tr>
</tbody>
</table>

Note: Clear Communication and Adaptability (CCA), Visionary Strategic Planning (VSP), Ethical Decision-making and Fostering a Positive Organizational Culture (EDFPOC), Team Collaboration and Continuous Learning (TCCL), and Green Management (GM.)

Source: Output SPSS.
Additionally, it presents the mean and standard deviation for each variable. Upon gathering and organizing the data, the individual groups were consolidated into a single variable to regulate the research variables. This variable encompassed ten factors, comprising both essential variables that directly influenced the model and variables that indirectly affected it.

Table 4. Inter-item correlation matrix

<table>
<thead>
<tr>
<th></th>
<th>CCA</th>
<th>VSP</th>
<th>EDFPOC</th>
<th>TCCL</th>
<th>GM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VSP</td>
<td>0.783**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDFPOC</td>
<td>0.616**</td>
<td>0.718**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCCL</td>
<td>0.351**</td>
<td>0.318**</td>
<td>0.456**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>GM</td>
<td>0.643**</td>
<td>0.674**</td>
<td>0.638**</td>
<td>0.587**</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: ** Correlation is significant at the 0.01 level
Source: Output SPSS

The correlation matrix in Table 4 indicates correlation among the variables in the model. This correlation enhances the model's accuracy, which utilizes the most accurate linear unbiased estimators.

RESULTS AND DISCUSSION

After examining the impact of leadership on green management at Northern Borders University, we conducted a survey among university leaders. The findings revealed that most of these leaders support implementing practices in their roles. However, we aim to clarify some areas based on the results concerning both male and female leaders. Additionally, we observed that the academic qualifications of these leaders also influence their approach to management while exercising their leadership responsibilities. To delve deeper into our analysis, we have divided the discussion of the research results into three sections: First, an Overall analysis; second, an analysis specifically focused on male leaders at Northern Borders University; and finally, an analysis within the category of female leaders within the same institution.

Overall analysis

In this section, the analysis of Model 01's summary, ANOVA test, and estimation coefficients yields comprehensive insights into relationships, significance, and variable dynamics.

Table 5. Summary of Model 01

<table>
<thead>
<tr>
<th>Model 01</th>
<th>R</th>
<th>R Sqr</th>
<th>Adj R Sqr</th>
<th>Std. Err</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.808*</td>
<td>0.654</td>
<td>0.641</td>
<td>0.56423</td>
</tr>
</tbody>
</table>

* Predictors: (Constant), TCCL, VSP, EDFPOC, CCA, LQ.

In Table 5, the R-value is 0.808, indicating a correlation between Clear Communication and Adaptability (CCA), Visionary Strategic Planning (VSP), Ethical Decision-making and Fostering a Positive Organizational
Culture (EDFPOC), Team Collaboration and Continuous Learning (TCCL), and Green Management (GM) in model 01.

The R squared value is 0.641, representing the proportion of variance in Green Management (GM) that can be predicted by Clear Communication and Adaptability (CCA), Visionary Strategic Planning (VSP), Ethical Decision-making, and Fostering a Positive Organizational Culture (EDFPOC), Team Collaboration and Continuous Learning (TCCL). In this case, 64% of the variation in Green Management can be accounted for by Clear Communication and Adaptability, Visionary Strategic Planning, Ethical decision-making and Fostering a Positive Organizational Culture, Team Collaboration, and Continuous Learning.

Table 6. Test of ANOVA* of model 01

<table>
<thead>
<tr>
<th></th>
<th>Sum. Sqr</th>
<th>df</th>
<th>Mean Sqr</th>
<th>F</th>
<th>Sig.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>81.669</td>
<td>5</td>
<td>16.334</td>
<td>51.307</td>
<td>0.000</td>
</tr>
<tr>
<td>Residual</td>
<td>43.296</td>
<td>136</td>
<td>0.318</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>124.965</td>
<td>141</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*aDependent Variable: GM.

Based on the analysis of Table 6, which presents the ANOVA findings for Model 01, it is evident that there is a fit. The regression model, including predictors such as Constant, TCCL, VSP, EDFPOC, and CCA, explains a portion of the variation in the variable GM. The F statistic of 51.307 and its associated p-value of 0.000 provide evidence to reject the hypothesis, indicating that at least one predictor significantly impacts GM. Examining the analysis reveals a sum of squared residuals (43.296), indicating that the model successfully captures a substantial portion of the variance. These ANOVA results confirm that Model 01 effectively explains the variability observed in GM.

Table 7. Estimation Coefficients of model 01

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Err</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>-0.194</td>
<td>0.274</td>
<td>-</td>
<td>-0.706</td>
</tr>
<tr>
<td>CCA</td>
<td>0.173</td>
<td>0.079</td>
<td>0.182</td>
<td>2.200</td>
</tr>
<tr>
<td>VSP</td>
<td>0.298</td>
<td>0.090</td>
<td>0.310</td>
<td>3.333</td>
</tr>
<tr>
<td>EDFPOC</td>
<td>0.149</td>
<td>0.077</td>
<td>0.152</td>
<td>1.945</td>
</tr>
<tr>
<td>TCCL</td>
<td>0.327</td>
<td>0.049</td>
<td>0.383</td>
<td>6.634</td>
</tr>
<tr>
<td>Leader Qualification</td>
<td>0.196</td>
<td>0.065</td>
<td>0.157</td>
<td>3.036</td>
</tr>
</tbody>
</table>

*aDependent Variable: GM

\[
GM_i = -0.194 + 0.173 \times CCA_i + 0.298 \times VSP_i + 0.149 \times EDFPOC_i + 0.327 \times TCCL_i + 0.196 \times LQ_i
\]  

(1)
Equation (1) represents the regression model 01 for GM, where the intercept is 0.207. The coefficients for CCA, VSP, EDFPOC, TCCL, and Leader Qualification (LQ) are 0.173, 0.298, 0.149, 0.327, and 0.196, respectively. Each coefficient indicates how much GM changes when the corresponding predictor changes by one unit while keeping predictors constant. The standard errors in parentheses (0.482, 0.029, 0.001, 0.054, 0.000, and 0.003) show how precise the coefficient estimates are. Notably, the p values associated with each help determine their significance; smaller p values (<0.05) indicate predictors.

Based on the analysis, it was found that the factors of Clear Communication and Adaptability (CCA), Visionary Strategic Planning (VSP), and Team Collaboration and Continuous Learning (TCCL) have an impact on Green Management (GM). To be more specific, a 1 percent increase in CCA leads to a 0.17 percent increase in GM, supporting hypothesis H1. Similarly, a 1 percent increase in VSP results in a 0.31 percent rise in GM, supporting hypothesis H2. An increase of 1 percent in EDFPOC corresponds to a 0.15 percent increase in GM, providing evidence for hypothesis H3. Additionally, an increase of 1 percent in TCCL corresponds to a 0.3 percent increase in GM, providing evidence for hypothesis H4.

However, the variable Leader Qualification (LQ) also positively impacts Green Management (GM); an increase of 1 percent in LQ corresponds to a 0.2 percent increase in GM, providing evidence for hypotheses H6 and H7.

**Analysis of Male Leaders**

According to the results of regression analysis presented in Table 8, we can see the coefficients, standardized coefficients (Beta values), t values (T), and significance levels (Sig.) for the model and its predictor variables. The predicted variable is GM (likely referring to General Management), while the variables used as predictors are CCA, VSP, EDFPOC, TCCL, and LQ. It is important to note that this analysis only includes cases where the Leader's gender is male. In summary, CCA, TCCL, and LQ appear to have effects on GM as predictors, while VSP and EDFPOC do not show significant effects. However, it is essential to interpret these findings as significance levels should be considered along with factors like the study context and sample size.

**Table 8. Estimation Coefficients a,b of model 02**

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>-0.442</td>
<td>-</td>
<td>-1.164</td>
<td>0.248</td>
</tr>
<tr>
<td>CCA</td>
<td>0.337</td>
<td>0.349</td>
<td>3.021</td>
<td>0.004</td>
</tr>
<tr>
<td>VSP</td>
<td>0.215</td>
<td>0.233</td>
<td>1.719</td>
<td>0.090</td>
</tr>
<tr>
<td>EDFPOC</td>
<td>0.053</td>
<td>0.052</td>
<td>0.490</td>
<td>0.625</td>
</tr>
<tr>
<td>TCCL</td>
<td>0.395</td>
<td>0.448</td>
<td>5.821</td>
<td>0.000</td>
</tr>
<tr>
<td>LQ</td>
<td>0.276</td>
<td>0.218</td>
<td>3.170</td>
<td>0.002</td>
</tr>
</tbody>
</table>

a Dependent Variable: GM.
b Selecting only cases for which Leader Gender = Male
Based on Equation 2, we can determine that the model is suitable for the sample involving the category. Effective communication, collaboration, continuous learning, and the academic qualifications of the Leader hold significant impact. This implies that a 1% increase in communication leads to a 0.33% advancement in management. Similarly, a 1% increase in efforts and continuous learning yields a 0.4% improvement in management. Moreover, a 1% increase in the Leader's academic qualifications results in a 0.3% enhancement in management. This confirms the hypothesis H5.

Nevertheless, strategic planning, ethical decision-making, and fostering a culture do not influence green management among male leaders at Northern Borders University. This is because strategic planning, ethical decision-making processes, and promotion of culture are centrally executed by the university's top Leader - the university director-based on directives from the ministry.

Analysis of Female Leaders

Table 9 shows results for female leaders; VSP, EDFPOC, and TCCL are significant predictors of GM, while CCA and LQ do not show statistically significant effects. These interpretations are based on the provided coefficients, standardized coefficients, and significance levels. Remember that significance levels should be interpreted cautiously, and other contextual factors should also be considered.

### Table 9. Estimation Coefficients of model 01

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>0.113</td>
<td>0.383</td>
<td>0.294</td>
<td>0.770</td>
</tr>
<tr>
<td>CCA</td>
<td>0.028</td>
<td>0.113</td>
<td>0.030</td>
<td>0.248</td>
</tr>
<tr>
<td>VSP</td>
<td>0.376</td>
<td>0.126</td>
<td>0.391</td>
<td>0.02986</td>
</tr>
<tr>
<td>EDFPOC</td>
<td>0.231</td>
<td>0.110</td>
<td>0.249</td>
<td>2.110</td>
</tr>
<tr>
<td>TCCL</td>
<td>0.261</td>
<td>0.074</td>
<td>0.323</td>
<td>3.510</td>
</tr>
<tr>
<td>LQ</td>
<td>0.081</td>
<td>0.097</td>
<td>0.065</td>
<td>0.836</td>
</tr>
</tbody>
</table>

* Dependent Variable: GM.

Selecting only cases for which Leader Gender = Female

\[
GM_i = -0.442 + 0.337 \times CCA_i + 0.215 \times VSP_i + 0.053 \times EDFPOC_i + 0.395 \times TCCL_i + 0.276 \times LQ_i \quad (2)
\]

\[
GM_i = 0.113 + 0.028 \times CCA_i + 0.376 \times VSP_i + 0.231 \times EDFPOC_i + 0.261 \times TCCL_i + 0.081 \times LQ_i \quad (3)
\]

Based on Equation 3, we can determine that the model is deemed acceptable when applied to the sample that includes the category. The analysis reveals that collaborative efforts, continuous learning, strategic planning, ethical decision-making, and promoting a culture hold statistical significance and meaningful implications. This indicates that a 1% increase in efforts and continuous learning leads to a 0.4% improvement
in management. Similarly, a 1% increase in planning results in a 0.25% improvement, while a 1% increase in decision-making and promoting a positive organizational culture leads to a 0.3% improvement in green management. This confirms the hypothesis H5.

However, practical communication skills and the academic qualifications of leaders at Northern Borders University do not appear to impact management. This lack of influence can be attributed to these leaders needing to adopt an open-door policy.

Its purpose is to present the new information gained in the study being reported. Results should be presented clearly and analysed appropriately. The Results are core of the paper. You shouldn‘t start the Results section by describing methods that you inadvertently omitted from the Materials and Methods section.

CONCLUSION

The study investigating the influence of administrative leadership on green management, specifically examining leaders at Northern Border University, has revealed significant insights into administrative leadership and green management. The study findings suggest that Northern Border University's administrative leadership significantly influences green management. The impact of gender on leadership differs, as male leaders tend to struggle with adopting strategic management, while female leaders face challenges in effective communication. Simultaneously, the Leader's academic credentials benefit the implementation of environmentally friendly management techniques. The study emphasizes the critical role of leadership in promoting sustainable practices inside an academic institution. The research has demonstrated that the indicated leadership skills or techniques directly impact the implementation and success of green management projects.

Moreover, the results indicate that a forward-thinking and ecologically aware administrative leadership can be a driving force for beneficial transformation within the university and the broader society. The case study on Northern Border University offers significant insights into the obstacles and prospects leaders encounter in advancing sustainability and environmentally conscious practices.

As organizations globally increasingly acknowledge the significance of environmental accountability, the ramifications of this research go beyond the academic domain. The findings emphasize the need for universities and similar organizations to prioritize implementing environmentally friendly practices. They also highlight the role of strong leadership in driving and maintaining such programs.

The study contributes substantially to comprehending the connection between administrative leadership and green management. However, there are opportunities for future research to explore more topics in greater detail. In summary, this research contributes to the expanding knowledge base on sustainability in higher education and offers practical consequences for administrators aiming to improve their institutions' environmentally friendly efforts.

Recommendation: Through the results of this study, we can provide a set of recommendations, which we mention as follows:
- Leadership Training Programs via developing leadership training to enhance strategic and communication skills.
- Gender-Inclusive Leadership Workshops via conduct workshops addressing gender-specific leadership challenges for sustainable practices.
- Communication Enhancement Initiatives via implementing communication improvement programs for female leaders in green initiatives.
- Strategic Management Enhancement offers training programs to strengthen strategic management skills among male leaders.
- Academic Qualification Support via encouraging continuous academic development to bolster green management practices.
- Diversity and Inclusion Policies via advocating for gender-inclusive policies to foster diverse leadership styles.
- Longitudinal studies will be conducted via longitudinal studies to monitor changes in green management over time.

The multi-method Research Approach utilizes diverse research methods to enrich understanding leadership dynamics.

- Collaborative Initiatives encourage collaborative efforts among leaders for collective sustainability goals.
- Feedback Mechanisms establish feedback mechanisms to assess and improve green practices continuously.

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Conceptualization, H.A. and L.B.; methodology, H.A.; software, B.L.; validation, J.B., M.T. and B.L.; formal analysis, J.B.; investigation, B.L.; resources, M.T.; data curation, H.A.; writing—original draft preparation, J.B.; writing—review and editing, B.L.; visualization, H.A.; supervision, B.L.; project administration, H.A.; funding acquisition, H.A. All authors have read and agreed to the published version of the manuscript.”

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