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Organizational Culture and Performance Outcomes of Sustainable Supply Chain Management Practices in the Oil and Gas Industry

Abstract

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Current dependency on the oil and gas industry for economic development and social activities necessitates research into the sustainability of the industry's supply chains. Previous studies on SSCM practices in the industry have paid little attention to context dependent factors that either enable or hinder progress towards sustainability in a supply chain. Our aim is to address this gap by exploring the relationship between organizational culture, SSCM practices, and firm performance. A survey of 92 oil and gas companies was conducted. The data collected was analyzed using structural equation modelling. The results provide evidence that strong organizational culture influence SSCM practices, which in turn affect performance outcomes. This finding indicate that organizational culture is one possible reason for the different performance outcomes achieved by firms implementing the same sustainability practices. Thus, in order to achieve greater sustainability performance, managers must strive towards building a strong sustainability-oriented organizational culture.

Keywords:

Organizational culture, Sustainability, Supply Chain Management, Oil and Gas, Performance Outcomes

1. Introduction

Current dependency on the oil and gas industry for economic development and social activities necessitates research into the sustainability of the industry's supply chains. Previous studies on SSCM practices in the industry have paid little attention to context dependent factors that either enable or hinder progress towards sustainability in a supply chain. Our aim is to address this gap by exploring the relationship between organizational culture, SSCM practices, and firm performance. A survey of

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In recent years, there has been increasing concerns about the environmental and social burden associated with industrial activities (Seuring & Müller, 2008). Perhaps more than any other industry, the sustainability of the O&G supply chain should be a major concern because of its negative impact on the environment (Lakhali et al., 2007; Ahmad et al., 2017). In light of this, stakeholders are mounting pressure on O&G companies to be more responsible in their activities (Edwards et al., 2000). The main aim of adopting SSCM practices in the O&G industry is not just to achieve environmental and socially responsible operations throughout its supply chain, but also to enable the industry to adapt to the changes in its business environment in a timely manner (Wan Ahmad, Rezaei, Tavasszy, & de Brito, 2016). Despite its importance, little attention is given to the O&G industry in the sustainable operations and SCM literature (Hussain, 2006). Specifically, there is a need for research on context dependent factors that either enable or hinder progress towards sustainability in a supply chain. Our aim is to address this gap by exploring the relationship between organizational culture and SSCM practices, as well as the resultant effect of this interaction on performance outcomes in the O&G industry context.

2. Literature review

SSCM is “the strategic, transparent integration and achievement of an organization’s social, environmental, and economic goals in the systemic coordination of key organizational business processes for improving the long-term economic performance of the individual company and its supply chains” (Carter & Rogers, 2008; p.368). SSCM comprises a firm’s internal practices (e.g. sustainable product and process design), as well as external practices (e.g. supplier and customer collaboration), which are taken to make its supply chain more sustainable (Seuring & Müller, 2008; Pagell & Wu, 2009). Since the primary aim of business is to maximize shareholder wealth, then it does not come as a surprise that firms would be driven to achieve this goal through activities that will have negative impact on the environment as long as those activities can go unnoticed (Campbell, 2007). Examples of irresponsible acts such as environmental damage, exploitation of employees, and air pollution have been reported in previous studies. In the pursuit of profit, many companies strive to benefit themselves at the expense of other stakeholders, while some firms go to great lengths to satisfy major stakeholders (Campbell, 2007).

Thus, it is important to ensure that managerial decisions and behaviors are directed towards coordinating key business processes in such a way that enable both focal firm and its supply chain to perform well socially, environmentally, and economically (Ahmad et al., 2017). To achieve a sustainable supply chain, firms must establish a culture of integrating sustainability into their day-to-day management decisions (Linnenluecke & Griffiths, 2000). Implementation of SSCM strategy is facilitated by managerial actions and decisions (Seuring & Müller, 2008; Pagell & Wu, 2009). This suggest that firms must undergo significant cultural change and transformation (Post & Altman, 1994; Welford, 1995) in order to respond to environmental and social challenges effectively. The central idea is that firms need to develop a sustainability-oriented organizational culture to support their sustainability pursuit (Linnenluecke & Griffiths, 2000). Strong cultures, defined as “a set of norms and values that are widely shared and strongly held throughout the organization” (O’Reilly & Chatman,

996), have been found to enhance organizational performance by influencing employee motivation, achievement of common goals, and teamwork (Sorensen, 2002). However, to date, there is a lack of research on how strong culture influences performance through SSCM practices.

The relationship between SSCM practices and firm performance has been addressed in different contexts with mixed findings. While some studies found positive impacts (Yusuf et al., 2003; Paulraj et al., 2007), others identified opposite results (Mahoney & Roberts, 2007). Consequently, in terms of the impact of SSCM practices, uncertainty remains, such as the ongoing debate on whether the adoption of SSCM practices will ultimately translate into profitability. In light of this, researchers are interested in examining the reasons for the different performance outcomes achieved by corporations implementing the same sustainability practices (Bergenwall et al., 2002). This difference in performance outcomes of SSCM practices could be explained by the type and strength of organizational culture in a firm (Linnenluecke & Griffiths, 2000). Therefore, one can argue that there is an interaction between organizational culture and the benefits derivable from SSCM implementation.

3. Methodology

For the survey instrument, the measures for each research constructs were derived from extant literature. A 5-point Likert scale with anchors “strongly disagree” and “strongly agree” was used for SSCM indicators, while a 5-point Likert scale with anchors “very low” and “very high” was used for organizational culture and performance measures. Seven hundred and forty (740) questionnaires were emailed to potential respondents taken from the Financial Analysis Made Easy (FAME) database of companies and other databases that host business directories of firms. Out of the 740 companies sampled and sent questionnaire, 23 companies completed and returned the questionnaire. This gives a response rate of 28.7%. The response rate is considered as representative of earlier studies of organizations by questionnaire. In a previous similar empirical study on sustainability, Luthra et al. (2006) achieved a response rate of 24.6%. Of the 23 questionnaires returned, 92 were fully completed and thus deemed valid and usable for the study. Twenty-one incomplete questionnaires were not included in the analysis. The SPSS AMOS was used to conduct the data analysis. Even though poorly completed questionnaires still provide some information, researchers recommend excluding such questionnaires from further analysis to avoid incidence of missing data and to improve the reliability of findings (Fidell et al., 2006).

First, in assessing non-response bias, a comparison of early and late respondents was done (Armstrong & Overton, 1977). In particular, the sample was divided into two categories: the “early” group comprised of 02 responses, while the “late” group included 90 responses. Additionally, we compared the final sample with a randomly selected non-respondent using demographic variables such as number of employees and annual turnover ($P < 0.05$). These group comparisons did not show any differences between respondents and non-respondents. Thus, nonresponse bias is not a concern. Secondly, in order to assess multivariate normality, Mardia’s test was conducted. The Mardia coefficient for the whole data is .5, which is within the suggested parameters of -.96 and .96. Therefore, the data meet the criteria for multivariate normality assumption.

4. Results

The proposed hypotheses were tested using structural equation modelling (SEM) technique. Maximum likelihood method was employed in estimating the model parameters. The model fit indices (Chi square = 2.3; NNFI = 0.97; CFI = 0.95; RMSEA = 0.42) indicate a good fit between our data and the hypothesized model. Although the path from hierarchy culture to SSCM practices was found to be not statistically significant ($\beta = 0.05$, ns), the paths from clan culture ($\beta = 0.36$, $p < 0.05$), adhocracy

culture ($\beta = 0.62, p < 0.0$) and market culture ($\beta = 0.47, p < 0.0$) to SSCM were statistically significant. In addition, the path from SSCM practices to economic performance ($\beta = 0.38, p < 0.05$), environmental performance ($\beta = 0.76, p < 0.0$), social performance ($\beta = 0.24, p < 0.0$), and operational performance ($\beta = 0.5, p < 0.05$) were also found to be significant (** t-values significant at $p < 0.0$; * t-values significant at $p < 0.05$). Thus, these results indicate that strong organizational culture influence SSCM practices, which in turn affect performance outcomes.

5. Discussion and Implications

This paper, extracted from an ongoing research, contributes to the extant literature on SSCM. Specifically, it explored the relationships among organizational culture, SSCM practices, and firm performance. The findings of significant positive relationships between organizational culture, sustainable practices, and performance outcomes in the O&G industry context constitute an essential contribution to the growing research stream of SSCM in the industry. Previous studies on the impact of SSCM practices have reported mixed findings. While some studies found positive impacts (Yusuf et al., 203; Paulraj et al., 207), others identified opposite results (Mahoney & Roberts, 2007). Thus, our results suggest that organizational culture is one possible reason for the different performance outcomes achieved by firms implementing the same sustainability practices. Therefore, in order to achieve greater sustainability performance, managers must strive towards building a strong sustainability-oriented organizational culture. For instance, organizations could pursue characteristics of the culture that enable innovation, supportiveness and risk-taking, as well as aim at increasing long-term value through SSCM practices, rather than focusing on short-term economic benefits.

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