

Social sustainability in the oil and gas industry: institutional pressure and the management of sustainable supply chains

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Social sustainability in the oil and gas industry: institutional pressure and the management of sustainable supply chains / Rentizelas, Athanasios; Lopes de Sousa Jabbour, Ana Beatriz; Al Balushi, Ahmed Darwish; Tuni, Andrea. - In: ANNALS OF OPERATIONS RESEARCH. - ISSN 1572-9338. - ELETTRONICO. - 290:1-2(2020), pp. 279-300. [10.1007/s10479-018-2821-3]

Availability:

This version is available at: 11583/2970179 since: 2022-07-19T10:34:10Z

Publisher:

Springer

Published

DOI:10.1007/s10479-018-2821-3

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Can coercive pressure effectively stimulate social sustainability in supply chains?

Abstract

This article aims to bring evidence on how strategic plans of a government can drive organisations to incorporate social sustainability aspects in their supply chains. A successful case of how the social dimension of sustainability has been considered for selecting suppliers in the Oil and Gas sector in Oman is presented and the role of and the mechanisms applied by the government are discussed. A survey and interviews with purchasing, procurement and supply chain managers of the major Oil and Gas organisations that operate in Oman were conducted. The results of the research were further analysed through the institutional theory lens, addressing a genuine research gap. It was found that governmental coercive pressure is not sufficient to develop truly socially sustainable practices in organisations if the self-initiative of organisations doesn't exist too, as it leads to compliance practices rather than innovative ones. This article addresses gaps highlighted in the literature relating to investigation of the theme of supplier selection through a theoretical lens, based on contextual factors, institutional pressures, and industrial features. Policy makers need to be aware that coercive pressure alone does not lead to continuous improvement of social sustainability performance, as it leads to the ceiling effect, i.e. the organisations meeting only the minimum governmental requirements. The empirical evidence presented the interplay of public concerns and sustainable operations in multi-channel business.

Keywords: supplier selection, supply chain, sustainability, social responsibility, institutional pressure, coercive pressure, Oil and Gas.

1. Introduction

The increase in global outsourcing of production has led to the emergence of social and ethical risks to supply chains (Amos and Sullivan, 2015). Consequently, the impact of the supply chain on the sustainability of a focal company has become critical: The World Business Council for Sustainable Development and the World Resource Institute (2009) concluded that companies in the supply chain beyond the focal firm are responsible for up to 80% of the overall supply chain environmental impact. According to the British Standards Institution (2015), a third of the fastest-growing exporters are based in countries rated as high or severe risk for human rights or environmental violations. Thus, the social and ethical risks originating from the supply chain should be addressed by scholars as well as organisations, since it is usually the

focal companies that have to bear the consequences of sustainability related scandals, irrespective of whether the origin of the problem was upstream in the supply chain beyond the immediate control of the focal company. Despite this fact, Yawar and Seuring (2017) have stated that the integration of social issues in managing supply chains has up to now remained little analysed, and, therefore it is an existing research gap. The same authors have suggested that supplier development is a means of tackling social risks in supply chains. Consequently, sustainable procurement is paramount in that respect.

The theme of sustainable procurement has become so crucial for organisations lately that ISO (International Organization for Standardization) has been developing the ISO 20400 standard, which will provide guidelines for organisations to integrate sustainability aspects into procurement processes (ISO 2016). However, green and especially social issues in the supplier selection process, which is a component of procurement processes, deserves further investigation from both an analytical and empirical perspective (Wetzstein et al. 2016; Appolloni et al. 2014).

The literature on green purchasing (or procurement) has reported enablers (e.g. Tsireme et al. 2012; Apolloni et al. 2014; Igarashi et al. 2015; Shen et al. 2016, Wong et al. 2016), barriers (e.g. Dou et al. 2014; Appolloni et al. 2014), and decision making models (e.g. Lee et al. 2009; Bai and Sarkis 2010; Brandenburg and Rebs 2015; Aktin and Gergin 2016; Jindal and Sangwan 2016; Kaur and Singh 2016; Rezaei et al. 2017; Banaeian et al. In Press) on the introduction of environmental criteria to the supplier selection process in various sectors. In general, the findings of the articles which addressed that theme highlighted especially that environmental legislation and regulation have a strong influence in the adoption of green supplier selection processes.

Conversely, there is less evidence available on social purchasing compared to green purchasing. Even when looking into sectors that are currently at the forefront of social purchasing practices due to past failings and scandals, such as the fashion and apparel industry, empirical evidence has shown that although social criteria are applied in supplier controlling, in practice they are not important in the final supplier selection process (Winter and Lash 2016). Furthermore, there is no consensus on whether a relationship exists between governmental regulations and socially responsible purchasing. Some authors have not identified such a relationship (Ehrgott et al. 2011) whereas others concluded that governmental regulation might actually be a barrier to socially responsible activities (Carter and Jennings, 2004).

Appolloni et al. (2014), Zorzini et al. (2015) and Wetzstein et al. (2016) have suggested that the theme of supplier selection should be investigated through a theoretical lens in order to

understand purchasing organisational behaviours based on contextual factors, such as stakeholder/institutional pressures, type of country, or industrial features. To reinforce the necessity of applying a theoretical lens to study the theme of sustainable procurement, Johnsen, Miemczyk and Howard (2017) have found that a large proportion of the papers reviewed by them through a systematic literature review, rely on no or limited theoretical background. A similar finding was noted by Quarshie, Salmi, and Leuschner (2017), who theoretically investigated the synergy between social responsibility and supply chain management.

It is therefore noticed that the research stream of sustainable supplier selection is still in its infancy (Wetzstein et al. 2016); the social dimension of the sustainability has been largely neglected in the discussion on supplier selection (Zimmer et al. 2016), especially in developing countries (Feng, Zhu, and Lai, 2017; Mani et al., 2016; Zorzini et al., 2015); there is a lack of analysis to the field of social sustainable procurement through a theoretical lens (Johnsen, Miemczyk and Howard, 2017; Quarshie, Salmi, and Leuschner, 2017); and there has been no consensus on the role of government in driving social sustainability across organisations (Ehrgott et al. 2011; Carter and Jennings, 2004). Therefore, in response to these research gaps, this research aims to bring evidence on how strategic plans of a government can drive organisations to incorporate social sustainability aspects in their supply chains. This article presents a successful case of how the social dimension of sustainability has been considered for selecting suppliers in the sector of Oil and Gas in Oman and discusses the role of and the mechanisms applied by the Government through those strategic plans.

A survey and interviews with purchasing, procurement and supply chain managers of the major Oil and Gas organisations which operate in Oman were conducted in order to gather data. The institutional theory was deployed to analyse the results of the research. The novel contributions of this article are:

- An analysis of the socially responsible supplier selection theme through the institutional theory lens, which has not been found in the literature;
- Providing empirical evidence on pertinence of social aspects in supplier selection based on the specificities of the Oil and Gas sector and the context of a developing country, Oman;
- A discussion of the effectiveness of coercive pressure to drive organisations towards integrating social sustainability aspects into the supplier selection process for the case study.

2. Literature Review

2.1 Supplier Selection based on Sustainability Dimensions

As a side effect of globalisation, increasing outsourcing practices by organisations boosted the importance of the upstream network within supply chain management, thus making supplier selection a key strategic decision affecting the organisational competitiveness even more than in the past (Azadnia et al. 2015; Dou and Sarkis 2010; Govindan et al. 2013; Sarkis and Dhavale 2015). Selection of suppliers has traditionally been based on economic factors in order to minimise the cost of purchasing. Other factors related to the economic dimension have also been considered among the set of decision criteria, including quality, service, time, reliability and flexibility (Azadi et al. 2015). The inclusion of sustainability concerns followed in time.

Organisations have shown increased interest in assessing the sustainability performance of their suppliers including both environmental and social aspects, since in many cases they were ultimately directly impacted by major scandals originating from inappropriate code of conduct of their suppliers (Miemczyk et al. 2012; Vachon and Mao 2008). As a result, consideration of sustainable supplier selection became a crucial task to minimise the purchasing risk, as organisations are considered responsible for the behaviour of their suppliers by public opinion and legislation (Foerstl et al. 2010; Govindan et al. 2013). Additionally, various stakeholders, such as non-governmental organisations (NGOs) and local communities, are prominent in calling for transparency and adequate reporting about the activities of companies and can cause serious damage to their image and reputation (Gerbens-Leenes et al. 2003). The mounting pressures from stakeholders combined with stricter regulations and the crucial role of sustainability and upstream network for the strategic success of supply chains led to the development of the sustainable supply chain management and sustainable supplier selection concepts. The latter can be defined as an expansion of the supplier selection process to incorporate environmental and social criteria when selecting suppliers (Azadnia et al. 2015).

However, the shift towards sustainability in the supplier selection process has predominantly been limited to the inclusion of environmental criteria along with the traditional economic criteria, whereas social aspects have been largely neglected (Azadnia et al. 2015; Dai and Blackhurst 2012; Govindan et al. 2013; Hutchins and Sutherland 2008). In a similar vein, Thornton et al. (2013) acknowledge that “the issue of supplier selection based on social responsibility and sustainability has yet to be fully explored”. This finding was also confirmed by Gimenez and Tachizawa (2012) in their review specifically targeting sustainable supplier selection, where they argue that the gap on adoption of social aspects in supplier selection process is caused by the novelty of social aspects compared to environmental aspects, which are at a more advanced research stage.

There are some examples in the literature where social criteria were included as part of the sustainable supplier selection process (Amindoust et al. 2012; Aydin Keskin et al. 2010; Azadi et al. 2015; Azadnia et al. 2015; Bai and Sarkis 2010; Dai and Blackhurst 2012; Dou and Sarkis 2010; Govindan et al. 2013; Kannan et al. 2015; Kuo et al. 2010; Sarkis and Dhavale 2015; Tseng et al. 2013). Although many variations of social sustainability criteria adopted can be found in the literature, a comprehensive list of the most widely adopted criteria are summarised in Winter and Lash (2016) and presented in Table 1.

It is interesting to note that the majority of authors in social sustainability assessment of suppliers adopt two main categories of criteria. The “internal social criteria” category refers to the behaviour of a company towards its workforce as employees and human beings, focusing on employment practices and the health and safety considerations for the employees. The “external social criteria” category focuses on the responsibility of the company towards external to the organisation stakeholders, including the local communities, contractual and other stakeholders.

A somewhat different classification of criteria is according to the four categories of the Organisation for Economic Cooperation and Development (OECD). The first and second categories, namely “Human Rights” and “Labour Practices and Decent Work Conditions”, adopt an internal perspective referring to the behaviour of a company towards its workforce and are linked to the “internal social criteria” category of social metrics of Table 1. The categories “Society” and “Product responsibility” adopt an external perspective, stressing the social performance of suppliers with respect to the contractual stakeholders and the wider community and are linked to the “external social criteria” category of social metrics in supplier selection of Table 1.

<Insert Table 1>

It should be noted that once a supplier is selected, there needs to be a regular process of assessment of the supplier to measure the sustainability performance and ensure the performance is the desired one. Several tools have been proposed in the literature and are currently used by organisations to perform the supplier assessment process, such as supplier sustainability scorecards, the SCOR model (APICS, 2015) sustainability indices and frameworks developed by independent organisations, such as the GRI (GRI 2017) and the CIPS sustainability index (CIPS 2015), to name a few. This work focuses primarily on the supplier

selection as a distinct process and therefore the supplier assessment process that follows during the post-contract phase will not be further analysed.

Ultimately it can be concluded by the above discussion that there is a currently a gap in incorporating social sustainability in the supplier selection process.

2.2 Influence of Institutional Pressures on Selection of Suppliers

The institutional theory states that organisations operate in an environment (organisational field) that is regulated and it demands, by pressure, conformance to social and legal requirements (DiMaggio and Powell 1983). As a result, the organisations adapt processes, structures and practices in order to accomplish legitimacy of their actions with the environment (Hsu et al. 2014). The process of adaptation of the organisations tends to follow patterns of behaviour (responses), once they are under the same environment, that reduces heterogeneity between different organisations, to be compatible to the demands from the environment. Isomorphism is the result of reduction of heterogeneity between organisations (Kondra and Hinings 1998).

There are three types of isomorphism, coercive, mimetic, and normative (DiMaggio and Powell 1983). Coercive isomorphism occurs through pressures from institutions, laws, rules and regulations, which force organisations to comply with them in order to have legitimacy to operate in the environment. Mimetic isomorphism is the process in which organisations imitate practices, services and processes of competitors, either well established or first movers, in order to pursue similar standards of responses to the environment. Normative isomorphism means adequacy of organisations to “professionalisation” of their sectors (DiMaggio and Powell p. 152, 1983; Sarkis et al. 2011). Grob and Benn (2014) stated that the isomorphism can explain how and why sustainable procurement initiatives can be spread across supply chains. They highlighted regulation as the prominent means of coercive isomorphism to boost sustainable procurement adoption.

There is a wide understanding that government, customers and society somehow influence organisations to green their processes. As a consequence, supplier selection processes tend to incorporate green aspects as criteria for choosing suppliers. Specifically, the context of a country is an important variable for understanding the influence of institutional pressures on adoption of sustainable practices, such as green supplier selection (Adebanjo et al. 2013; Zimmer et al. 2016, Shen et al. 2016). There are two consequences in countries where the regulatory pressure is high to force organisations to take into consideration sustainable practices: (a) organisations focus on adapting internal processes and products and do not pay

attention to suppliers because of scarcity of resources, or (b) the profile of sustainable practices that organisations adopt is focused on compliance rather than innovation (Sancha et al. 2015). In addition, Hoejmoose and Adrien-Kirby (2012) stressed that external pressures are initial drivers of socially and environmentally responsible procurement; nevertheless, internal resources, skills and support are crucial to move from compliance practices to innovative ones.

In contrast to the environmental dimension, the social dimension of the sustainability has been largely neglected in the discussion on managing supply chains (Yawar and Seuring (2017), and in particular on supplier selection (Zimmer et al. 2016). The institutional theory can also explain corporate social responsibility initiatives of organisations. According to Campbell (2007) the existence of regulations tends to influence the organisational actions for social responsibility initiatives. In a similar vein, Eriksson and Svensson (2015) identified ‘outside pressure’ as one of the key elements affecting social responsibility in supply chains. However, Baden et al. (2009) warned that high pressure by buyers into suppliers in order to meet social requirements could generate a ‘ceiling effect’, which means suppliers will primarily consider just basic sustainability aspects and requirements to be eligible to supply the buyers.

There is evidence that the relationship between governmental regulations and socially responsible purchasing is not completely clear. For instance, Carter and Jennings (2004) analysed drivers of social purchasing in the US and they discovered that governmental regulation might be a barrier to socially responsible activities. Ehrgott et al. (2011) did not identify a relationship between governmental pressure and social requirements in the supplier selection process. They justified this finding with the argument that suppliers would be easily swapped if they don’t respond to regulatory demands. Therefore, there has been no consensus on the role of government in driving social sustainability across organisations. A reason for the lack of consensus mentioned is the absence of use of a theoretical lens to understand and analyse the topic of sustainable procurement and social responsibility in supply chains (Johnsen, Miemczyk and Howard, 2017; Quarshie, Salmi, and Leuschner, 2017).

Matten and Moon (2008) and Griggs et al. (2014) stated that the geographic and geopolitical contexts where organisations operate shape the organisations’ perception of social responsibility, and there is very limited research which analysed social sustainability in supply chains in developing countries (Feng, Zhu, and Lai, 2017; Mani et al., 2016; Zorzini et al., 2015).

In summary, three main research gaps in the field of sustainable procurement were identified: (a) the social dimension of the sustainability has been largely neglected in the discussion on supplier selection (Zimmer et al. 2016), (b) especially in the context of developing

countries (Feng, Zhu, and Lai, 2017; Mani et al., 2016; Zorzini et al., 2015); and (c) there is a lack of analysis to the field of socially sustainable procurement through a theoretical lens (Johnsen, Miemczyk and Howard, 2017; Quarshie, Salmi, and Leuschner, 2017); which explains the absence of consensus on the role of government in driving social sustainability across organisations (Ehrgott et al. 2011; Carter and Jennings, 2004).

Therefore, in this work the relationship between governmental regulations and socially responsible supplier selection will be analysed through the specific context in order to understand how the social dimension of the sustainability has been considered for selecting suppliers in the sector of Oil and Gas in Oman and to discuss the role of and the mechanisms applied by the Government through its strategic plans.

3. Research Method

3.1 The Oil and Gas Sector in Oman

Oman is a high-income country with a relatively small population of 3.83 million in 2013 (Oxford Business Group 2014). Crude oil production and refining, as well as Natural Gas and Liquefied Natural Gas production are among the most important industries in Oman in terms of economic contribution: the hydrocarbons sector was contributing around 47.2% of the GDP in 2014 (Oxford business group n.d.).

In 2013, the Omani government launched the In-Country Value (ICV) programme in the Oil and Gas sector. The ICV strategy emphasises on how much a project benefits the local economy, including giving preference to Omani-operated SMEs for subcontracting. It is officially defined as “the total spend retained in country that benefits business development, contributes to human capability development, and stimulates productivity in Oman’s economy”, with the following seven main elements (MOG, 2013):

- Investments in Fixed Assets
- Omanisation in the work force
- Training of Omanis
- Local sourcing of goods
- Local sourcing of subcontracted services
- Development of national suppliers
- National, Training and R&D institutions

The main objectives of ICV are building local human resources capabilities, job creation, products and manufacturing. Under the ICV, firms bidding for energy contracts in

Oman are required to submit a plan where they detail the measures they intend to implement to boost local content in their activities, from procurement of goods and materials through to support services, construction and ancillary activities. The higher the local input level, the more favourable a competitive tender bid will be viewed (Kalyuzhnova et al. 2016). The ICV initiative aims to change mindsets in local businesses so that they look for goods and services in the sultanate before importing from abroad (Oxford Business Group 2014).

The ICV initiative has been widely adopted by the Oil and Gas sector that has made it a priority to look proactively for opportunities to secure goods and services from local small and medium-sized enterprises (SMEs). In some cases, companies even provide SMEs with additional training and support to ensure the quality of their products (Oxford Business Group, 2014). This initiative has also recently expanded into other segments of the economy, after implementing it in the Oil and Gas sector (Kalyuzhnova et al. 2016). From the analysis on ICV it is clear that the focus of this initiative is primarily on “external” social sustainability aspects, having little consideration of the “internal” aspects, such as employee well-being and health & safety considerations.

The Joint Supplier Registration System (JSRS) is a database for all suppliers that provide services to Oman’s Oil and Gas companies, both national and international. It forms a common pool of suppliers that operators can have access to in order to identify the appropriate suppliers for their needs. The system is part of the ICV initiative, as it allows monitoring the suppliers’ ICV performance.

3.2 Survey

A questionnaire was developed and sent to all 18 registered operators in the JSRS system of Oman. These 18 registered operators are the main buyers of related equipment and services in the country and are therefore the most relevant target population for this study. Out of these operators 11 responded to the questionnaire, leading to a 61% response rate.

The questionnaire was forwarded to other relevant organisations by the initial recipients and led to additional responses from 3 more organisations within the sector. These organisations are also registered with JSRS and are major suppliers in the sector. This means that they have a large supplier base and therefore their responses are relevant to the research, despite the fact that they are not operators.

In total, 40 individual responses from people employed in the contracting, procurement, or supply chain functions of the responding organisations were received. The 40 questionnaire respondents representing 14 different O&G organisations in Oman included all three sectors of

the industry – upstream, midstream, and downstream. Of the 40 participants, 70% were working for the upstream sector, 17.5% for the midstream, and the remaining 12.5% for the downstream. Figure 1 shows the results for the different sectors.




Which part of the Oil & Gas sector is the company active in?				
			Response Percent	Response Total
1	Upstream (Exploration, Drilling & Production)		70.00%	28
2	Midstream (Processing, Storage, Shipping)		17.50%	7
3	Downstream (Refining, Marketing, Distributions)		12.50%	5

Figure 1: Company classification in Oil and Gas supply chain segments

The size of the companies that the participants belonged to varied based on the number of employees. The majority of respondents work for mid-sized and large organisations, leading to the assumption that these companies would have solid procedures and policies in place regarding the sustainability aspect. Figure 2 shows the company sizes based on employee numbers.





What is the size of the company based on the number of employees?				
			Response Percent	Response Total
1	Below 100 employees		5.00%	2
2	101-500 employees		32.50%	13
3	501-1000 employees		15.00%	6
4	Above 1000 employees		47.50%	19

Figure 2: Company sizes

Lastly the questions of “*What is your position in the company?*” and “*How many years of experience do you have in this position?*” were asked to ensure that all participants work within the contracting, procurement or supply chain function and that the data provided is valid for interpretation and analysis. The responses show that all participants are currently working in supply chain-related functions. The years of experience vary among the participants, with the majority having less than 10 years’ experience, which would categorise them as junior and middle supply chain personnel. Figure 3 shows the result for the participants’ years of experience.

It should be noted that most participants requested to remain anonymous, as well as not to present information that could identify them. For this reason, the names of organisations and the names of individual respondents are not presented in this work.





How many years of experience do you have in this position?				
			Response Percent	Response Total
1	Below 5 years		30.00%	12
2	5-10 years		35.00%	14
3	10-15 years		22.50%	9
4	Above 15 years		12.50%	5

Figure 3: Participants experience level

3.3 Interviews

Following-up from the questionnaire, the researchers approached the most relevant and experienced participants from the 11 JSRS registered operators that responded to the survey with the aim to delve further into the issues of sustainable supplier selection identified by the survey. Five of them agreed to be interviewed. In Table 2, the position, level of experience and background of each interviewee is provided to justify their relevance for selection. Due to their request to remain anonymous, their names and the respective company names are not presented in this work.

<Insert Table 2>

4. Results

4.1 Results from the Survey

The first survey question (Fig. 4) was aimed at exploring the motivation for adopting sustainability aspects in the organisation, in order to understand the role of governmental coercive pressure in improving the organisational sustainability performance.

The majority of the respondents indicated that sustainability was part of their Corporate Social Responsibility, followed closely by the aspiration to improve the company's brand and reputation. Considered together, it is evident that the way the public and other stakeholders perceive the organisations' attitude towards sustainability is a primary concern in the sector.

It is also interesting to note that cost savings was mentioned as a motivating factor by almost a third of the respondents, indicating the recognition that adopting sustainability

practices can also lead to cost efficiencies in a win-win situation, and not only to trade-offs between the economic and the social or environmental dimensions.

Regulations and subsequently the related governmental coercive pressure were identified as the second to last motivating factor, still accounting for a significant percentage of the respondents (almost 30%). This finding is quite interesting, considering the fact that companies operating within this sector have to comply with the ICV guidelines, regarding the social aspects of sustainability, and are also subject to stringent environmental regulations. Self-initiatives driven from within the organisation were the least mentioned motivation factor, leading to the conclusion that the sector is primarily driven by motivation factors stemming from external stakeholders when adopting sustainability practices.

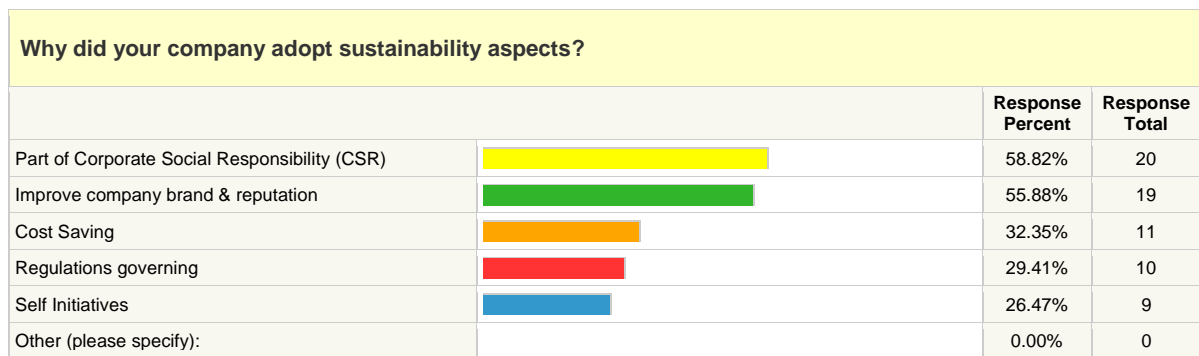


Figure 4: Motivation for adopting sustainability aspects in business

The survey also explored in detail which aspects of sustainability are actually measured within the organisations (Fig. 5). The rationale for this question was to identify the most critical sustainability aspects in this sector and also to investigate the importance of social aspects compared to environmental ones.

It is interesting to note that seven out of ten aspects concern the environmental dimension of sustainability, which is expected, due to the polluting nature of the industry and the significant environmental impact of both operations and potential accidents. Some of the most frequently mentioned environmental aspects are actually industry-specific, such as the waste management, oil spill reduction and gas flaring. However, all three social sustainability aspects identified (community contribution; social investments; society training and skills development) are among the top five in number of responses. This fact indicates the increasing importance of social sustainability in this sector where traditionally the focus has been on environmental sustainability and is a first indicator of the impact of the ICV initiative on the Omani Oil and Gas approach towards the social aspects of sustainability. It is also interesting to note that all social sustainability aspects reported by participants refer to the “external” social

sustainability, which appears to be in line with the ICV focus on “external” aspects of social sustainability. This is an additional indicator that the companies in the Omani Oil and Gas sector have adopted the ICV perspective on interpreting the social sustainability aspect.

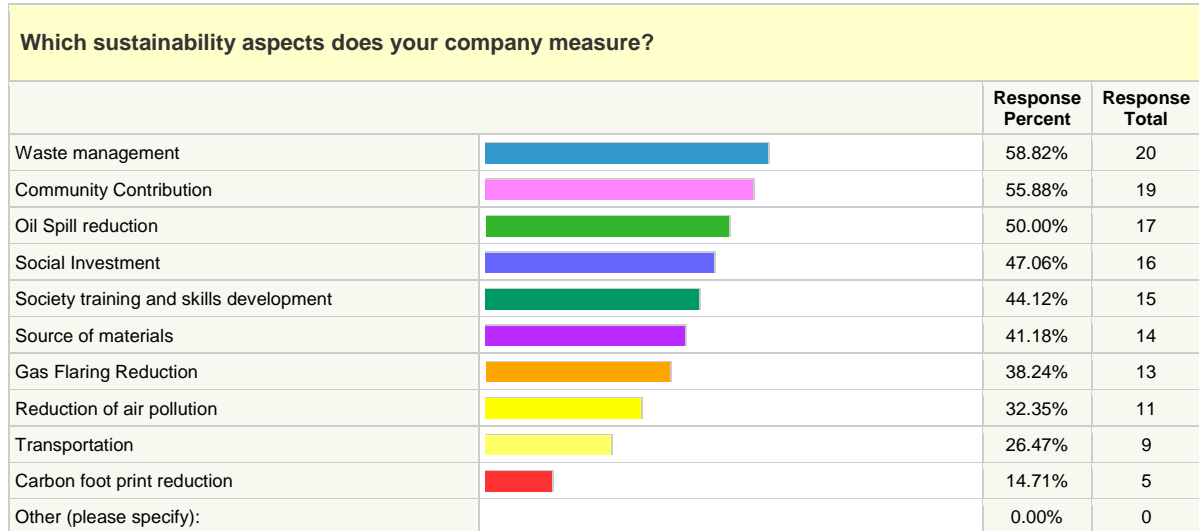






Figure 5: Aspects of sustainability effectively considered

Moving from the organisational approach on sustainability to how this translates to the upstream supply chain approach adopted and the supplier selection process, the survey identified that 75% of the respondents acknowledged actually incorporating criteria relating to the environmental, social or both sustainability aspects in the supplier selection process.

The survey went further in investigating the relative importance (weighting) of the environmental and social aspects of sustainability in the supplier selection process, for the respondents that acknowledged incorporating one or both these aspects in the process. It was found that the social aspect of sustainability tends to be allocated a lower weighting than the environmental in the supplier selection process, with the majority of respondents (60%) acknowledging a weighting of less than 25%. As a measure for comparison, the environmental aspect received a weighting of less than 25% from around 40% of the respondents. According to Beske and Seuring (2014), Sustainable Supply Chain Management (SSCM) organisations treat all three dimensions as equally important, whereas conventional Supply Chain Management (SCM) organisations tend to focus strongly on the economic dimension. The survey findings show that the majority of respondents allocate less than one third weighting on the social sustainability, indicating that the majority of this sector does not comply yet with the definition of SSCM, although some respondents did allocate a high weighting to the environmental and social sustainability aspects.

Environmental			Response Percent	Response Total
1	1-25%		40.7%	11
2	26-50%		29.6%	8
3	51-75%		18.5%	5
4	76-100%		11.1%	3





Social			Response Percent	Response Total
1	1-25%		60.0%	15
2	26-50%		12.0%	3
3	51-75%		16.0%	4
4	76-100%		12.0%	3

Figure 6: Weighting of sustainability dimensions considered in the supplier selection process

4.2 Results from Interviews

<Insert Table 3>

Table 3 provides an in-depth view on the supplier selection process and how sustainability is considered within this process. In terms of the criteria for supplier assessment, it was identified that regulatory requirements should be met by all potential suppliers, both in terms of environmental and Health & Safety, as well as registration to the JSRS.

When analysing the social sustainability aspects considered during the selection process, three out of five respondents explicitly identified ICV as the means to evidence the social sustainability aspects. In these cases, a maximum of 10% weighting at the supplier evaluation process was allocated to the social sustainability aspects.

In this respect, several challenges were identified in the process of introducing sustainability aspects in the supplier selection process from the responses of interviewees in Table T1:

1. The limited availability of local suppliers and lack of skills and competency locally
2. The lack of competitive pricing from local suppliers
3. The additional cost of compliance to ICV by suppliers, which is not welcomed
4. The additional resources the company must allocate to develop local contractors to international standards

For the organisations that already have an established method of considering sustainability assessment during the supplier performance measurement process, a further discussion on how this is performed was made. The findings are presented in Table 4:

<Insert Table 4>

The interviews revealed that the social aspect of sustainability performance of suppliers is measured via the ICV-related compliance and KPI's. It can also be deduced that the companies of the Omani Oil and Gas sector do not tend to go beyond the requirements of the ICV in terms of social sustainability. It should be mentioned that the two organisations currently not measuring the sustainability performance of their suppliers, revealed that they plan to implement such measurements in the near future.

5. Discussion

Understanding the context in which organisations of the Oil and Gas sector operate in Oman is fundamental for addressing socially responsible supplier selection in this sector. This sector is of tremendous strategic importance to the Omani economy and it has specificities such as volatility of the prices, high demand of highly skilled employees that are not usually found locally, existence of an international supplier base and high pressure from society to improve sustainability performance. In the light of this, the Omani government launched the ICV programme in order to develop the local supply chain and skills and to direct part of the wealth generated by this sector back to the Omani society.

The ICV programme is grounded on enhancing Omani national and local goods and services, and in developing local assets, skills and suppliers associated with the Oil and Gas sector in Oman. Organisations wanting to operate in the Oil and Gas sector in Oman have to prove conformance to elements of ICV, including evaluation in detail of the percentage of local spending in assets, training and good and services.

The survey highlighted three main results: a) the majority of respondents replied that the reason for adopting sustainability aspects in their organisations is that they consider it as part of their corporate social responsibility; b) around half of the respondents stated that they measured sustainability based on community contribution, social investments, and society training and skills development; and c) more than half of the respondents give social dimension of the sustainability less than 25% weighting in the supplier selection process.

McKinsey (2014) identified that drivers for pursuing sustainability are aligned with business goals, mission or values, organisational reputation, and cost cutting from the point of view of top managers around the world. However, their findings on drivers are not aligned with the sample of the research that replied that sustainability is addressed because it is part of their corporate social responsibility. This can be a result of the adaptations that the organisations of the sample have developed in order to conform to the ICV programme. It can be a consequence of the coercive isomorphism (DiMaggio and Powell, 1983). The organisations of the sample measure the social sustainability mainly by using social indicators that are related to ICV elements. This result seems to be a consequence of the regulated environment in which the sample operates due to the fact that the ICV elements have been used to ground how organisations assess their performance.

Coercive isomorphism supports the understanding of the behaviour of these organisations. Social aspects are found to be considered in the supplier selection process of the organisations of the sample. However, the consideration of these aspects was not high in terms of weighting, thus leading to the conclusion that social aspects are required by suppliers because the organisations need to legitimatise themselves to the environment by complying with the ICV requirements. This effect was discussed by Baden et al. (2009) as the ‘ceiling effect’, when suppliers primarily consider basic social aspects to be eligible to supply. Under the ‘ceiling effect’, either organisations or suppliers will tend to pursue achieving the minimal social requirements to be able to operate in this sector.

In complement to the findings of the survey, the interviews pointed out that (a) the requirements of ICV drive organisations to select suppliers based on sustainability-related criteria. The terms underlined in Table 3 indicate that ICV and JSRS are the mechanisms to direct the socially responsible supplier selection. Grob and Benn (2014) stated that the isomorphism can explain how and why sustainable procurement initiatives can be spread across supply chains and regulation is the prominent means of coercive isomorphism to boost sustainable procurement adoption. Our research findings confirm the argument of these authors. It is interesting to note that although the interview findings clearly point towards ICV requirements, as a form of governmental pressure, as the main driver for socially responsible supplier selection, in the survey results governmental regulations was the second from last motivation factor for implementing sustainability factors. This leads to the conclusion that the ICV requirements have been transfused in the Corporate Social Responsibility strategies of organisations and many practitioners do not regard them as governmental pressure or regulations any more.

An additional finding of the interviews is that (b) only few companies actually go beyond the ICV requirements to assess suppliers. The terms underlined in Table 4 indicate that organisations interviewed assess suppliers mainly based on ICV requirements. The findings from the interviews confirm the view of Baden et al. (2009) on the ‘ceiling effect’, which can explain the restricted use of social indicators to assess suppliers on those directly linked to the ICV requirements.

The ICV programme is an attempt of the Omani government to maintain the vitality of its Oil and Gas sector, which faces international challenges, and registration in the JSRS and compliance with the ICV requirements are mandatory for the organisations which operate in the Omani Oil and Gas sector. Following the requirements of the ICV has led to an adaptation of the supplier selection process of the organisations in that sector. These organisations have been considering social aspects when selecting suppliers and this has benefits and drawbacks: (a) it is possible to prioritise social demands of the Omani society for instance to boost the local economy and to enhance qualification and skills of local employees in the Oil and Gas sector; whereas on the other hand (b) the ‘ceiling effect’ has occurred (Baden et al., 2009) due to the fact that sustainability principles haven’t been well integrated to the business goals of the organisations and to the suppliers of the sector. Additionally, it can be argued that organisational culture of the studied companies hasn’t been driven by sustainability issues, because according to Marshall et al. (2015) companies with a social sustainability culture are more likely to engage in both compliance and advanced social sustainability practices. To support this argument further, the survey highlighted that self-initiatives driven from within the organisation were the least mentioned motivation factor for adopting sustainability aspects.

Furthermore, the fact that ICV primarily addresses external perspective criteria to assess social performance of suppliers (related to society) impacts on how organisations and suppliers understand social sustainability. According to the survey, organisations are primarily driven by motivation factors stemming from external stakeholders when adopting sustainability practices, so the internal perspective of social performance (human rights, labour practices and decent work conditions) tends to be less emphasised upon. As a result, the level of progress on social sustainability in this sector appears to be capped because both ICV and self-initiatives of the organisations aren't focused on embedding social sustainability in the business goals and organisational culture. As a result of this, the organisations and suppliers tend to adopt compliance practices rather than innovative (Sancha et al. 2015). This finding is aligned with the argument of Beske and Seuring (2014) that only companies with sustainability as a core

value appear to take the extra effort of transforming their SC, or at least parts of it, into a sustainable supply chain.

6. Conclusions

This research aimed to bring evidence on how strategic plans of a government can drive organisations to pursue social aspects in supply chains. A survey and interviews with purchasing, procurement and supply chain managers of the main Oil and Gas companies operating in Oman were conducted in order to gather primary data.

The Oil and Gas sector is of major strategic importance to the Omani economy. Therefore, the government has attempted to regulate the sector in order to force organisations operating in it to legitimise their actions by proving the level of social investments in their supply chain, a fact that has consequences in the socially responsible supplier selection process. The ICV requirements and the JSRS system are the mechanisms to realise this.

The strategic plans of the Omani government were found to be important to motivate organisations of the Oil and Gas sector to consider social aspects of sustainability in their operations, and in particular in the supplier selection process. However, it was verified that the ICV elements act as ceiling criteria due to the fact that the self-initiative of the organisations of the sector to adopt sustainability aspects is low. Consequently, it can be said that coercive pressure isn't enough to develop social sustainability in organisations beyond a minimum requirement imposed if the self-initiative of organisations doesn't exist too, and it can lead to compliance practices rather than innovative ones. Therefore, the absence of embedded culture towards sustainability can explain the compliance approach towards social sustainability performance in the Oil and Gas supply chain in Oman, because embedded culture has influence on the development trajectory of the supply networks (Wu and Pullman, 2015).

6.1 Academic Contributions

This article adds a different perspective to the relationship between governmental regulations and socially responsible purchasing (Carter and Jennings 2004; Ehr Gott et al. 2011). Coercive isomorphism can promote social sustainability in an economic sector and government regulations and programmes are important means for achieving this.

Therefore, this article contributes to academia by addressing the gaps highlighted by Appolloni et al. (2014), Zorzini et al. (2015) and Wetzstein et al. (2016) which are to investigate the theme of supplier selection through a theoretical lens, based on contextual factors, institutional pressures, type of country, or industrial features. In this paper, the institutional

theory lens has been adopted for the first time for the supplier selection process in a developing country, offering new academic insights. It also brings evidence on the effect of institutional pressure on adopting social sustainability practices during the supplier selection process in a particular sector, the Oil and Gas sector of Oman. This evidence directly supports the ‘ceiling effect’ proposed by Baden et al. (2009) for the particular sector. The findings of this work can also be used for benchmarking purposes with other sectors or other developing countries, allowing researchers to perform cross-sectional studies and to be able to identify the impact of contextual factors, such as the type of country or industry, on the social sustainability practices during the supplier selection process, under coercive pressure.

6.2 Practical Contributions

The findings of this research are of value to practitioners too. It is found that it is important that sustainability principles are well integrated to the business goals of the organisations in order to achieve continuous improvement of the social sustainability in the organisation even when they are under pressure from stakeholders, especially the government. Organisations which have culture embedded towards sustainability will have a higher propensity to adopt social sustainability. Therefore, organisations should first focus on creating the appropriate organisational culture before embarking on a continuous sustainability improvement journey, if they want to achieve enhanced social sustainability performance rather than merely legitimising themselves for operation in the market. Continuously improving the sustainability performance should be the ultimate aim of organisations, as the term ‘sustainability’ does not imply a cap or target level. Otherwise, organisations will tend to experience the ‘ceiling effect’ that limits the sustainability performance to the minimum target set through institutional pressure.

Policy makers can learn from the findings of this research that taking ‘coercive pressure’ measures can be an effective way to quickly enforce an industrial sector to adopt social sustainability in their processes, but it will eventually lead to a cap, or ‘ceiling’, on the sustainability performance of the organisations, that will coincide with the minimum requirements set by the policymakers. As a consequence of that, policymakers in Oman and elsewhere should be aware that the creation of an appropriate cultural context is also important to promote sustainability practices beyond those requirements rather than focusing solely on formalised commercial rules. This is aligned with the argument of Hoejmose and Adrien-Kirby (2012), that external pressures are just initial drivers of socially and environmentally responsible procurement, and a way to move forward is to develop internal resources, skills and

support. Policy makers should also be aware of the implications of externally imposing social sustainability aspects, as this can have a temporary negative impact on the conditions and cost of operation in the sector, as was highlighted in the case study in terms of difficulty to find appropriately qualified and skilled suppliers locally, time required to train local staff, higher prices, cost of compliance and resource requirements to support this process.

6.3 Future Research and Limitations

Based on the results of the article, it would be interesting to investigate whether the combination of coercive pressure from government and self-initiative from organisations can indeed guide them to continuously improved socially sustainable practices and to overcome the ceiling effect, which was highlighted in this article. Quantitative research, for instance, should test the moderation effect of national culture and organisational culture on the relationship between coercive pressure from government and adoption of advanced socially sustainable practices. Additionally, it would be worthy to identify and to analyse which organisational capabilities will need to be developed to support the self-initiative of organisations to overcome the ceiling effect. This research could be repeated three years ahead as a longitudinal study in order to check and compare the progress that organisations of the sector have had in terms of internal and external social performance and to analyse further the benefits of coercive isomorphism in promoting social sustainability.

The research has limitations that are inherent in an exploratory research. For instance, it isn't possible to generalise the findings of the research to other sectors; the sample of interviewees could have been larger; and the descriptive statistics analyses of the survey applied aren't able to provide causal relationships of the responses of the research.

References

- Adebanjo, D., Teh, P. L., Ahmed, P. (2016). The impact of external pressure and sustainable management practices on manufacturing performance and environmental outcomes. *International Journal of Operations & Production Management*, 36 (9), 995-1013.
- Aktin, T., Gergin, Z. (2016). Mathematical modelling of sustainable procurement strategies: three case studies. *Journal of Cleaner Production*, 113, 767-780.
- Amindoust, A., Ahmed, S., Saghafinia, A., Bahreininejad, A. (2012). Sustainable supplier selection: A ranking model based on fuzzy inference system. *Applied Soft Computing*, 12, 1668–1677.
- Amos, N.; Sullivan, R. (2015). Managing social standards in global supply chains: risk identification and mapping. Available at: <https://blogs.thomsonreuters.com/answerson/global-supply-chain-risk-identification-mapping/> (Accessed 11/08/2017)
- APICS (2015). APICS supply chain council. Available at: <http://www.apics.org/sites/apics-supply-chain-council> (Accessed 16 April 2016).

- Appolloni, A., Sun, H., Jia, F., Li, X. (2014). Green Procurement in the private sector: a state of the art review between 1996 and 2013. *Journal of Cleaner Production*, 85, 122-133.
- Aydin Keskin, G., Ilhan, S., Özkan, C. (2010). The Fuzzy ART algorithm: A categorization method for supplier evaluation and selection. *Expert Systems with Applications*, 37, 1235–1240.
- Azadi, M., Jafarian, M., Farzipoor Saen, R., Mirhedayatian, S.M. (2015). A new fuzzy DEA model for evaluation of efficiency and effectiveness of suppliers in sustainable supply chain management context. *Computers & Operations Research*, 54, 274–285.
- Azadnia, A.H., Saman, M.Z.M., Wong, K.Y. (2015). Sustainable supplier selection and order lot-sizing: an integrated multi-objective decision-making process. *International Journal of Production Research*, 53, 383–408.
- Baden, D. A., Harwood, I. A., Woodward, D. G. (2009). The effect of buyer pressure on suppliers in SMEs to demonstrate CSR practices: an added incentive or counterproductive? *European Management Journal*, 27 (6), 429-441.
- Bai, C., Sarkis, J. (2010). Integrating sustainability into supplier selection with grey system and rough set methodologies. *International Journal of Production Economics*, 124 (1), 252-264.
- Banaeian, N., Mobli, H., Fahimnia, B., Nielsen, I. E., Omid, M. (In Press). Green supplier selection using fuzzy group decision making methods: A case study from the agri-food industry. *Computers & Operations Research*.
- Beske, P., Seuring, S. (2014). Putting sustainability into supply chain management. *Supply Chain Management: An International Journal*, 19 (3), 322 – 331
- Brandenburg, M., Rebs, T. (2015). Sustainable supply chain management: a modeling perspective. *Annals of Operations Research*, 229(1), 213-252.
- British Standards Institution (2015). BSI Global Supply Chain Intelligence report reveals global business impact of security, human rights and environmental violations. Available at: <http://www.prnewswire.com/news-releases/bsi-global-supply-chain-intelligence-report-reveals-global-business-impact-of-security-human-rights-and-environmental-violations-300068965.html> (accessed 11/08/2017)
- Campbell, J. L. (2007). Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. *Academy of Management Review*, 32 (3), 946-967.
- Carter, C. R., Jennings, M. M. (2004). The role of purchasing in corporate social responsibility: a structural equation analysis. *Journal of Business Logistics*, 25 (1), 145-186.
- CIPS (2015). CIPS sustainability index. Available at: <https://www.cips.org/en-GB/cips-for-business/supply-assurance/cips-sustainability-index/> (accessed 7/2017)
- Dai, J., Blackhurst, J. (2012). A four-phase AHP–QFD approach for supplier assessment: a sustainability perspective. *International Journal of Production Research*, 50, 5474–5490.
- DiMaggio, P., Powell, W. W. (1983). The iron cage revisited: Collective rationality and institutional isomorphism in organizational fields. *American Sociological Review*, 48 (2), 147-160.
- Dou, Y., Sarkis, J. (2010). A joint location and outsourcing sustainability analysis for a strategic offshoring decision. *International Journal of Production Research*, 48, 567–592.

- Dou, Y., Sarkis, J., Bai, C. (2014). Government green procurement: a Fuzzy-DEMATEL analysis of barriers”, in *Supply chain management under fuzziness*. Springer, Berlin Heidelberg, pp. 567-589.
- Ehrgott, M., Reimann, F., Kaufmann, L., Carter, C. R. (2011). Social sustainability in selecting emerging economy suppliers. *Journal of Business Ethics*, 98 (1), 99-119.
- Eriksson, D., Svensson, G. (2015). Elements affecting social responsibility in supply chains. *Supply Chain Management: An International Journal*, 20 (5), 561 – 566.
- Feng, Y., Zhu, Q., & Lai, K. H. (2017). Corporate social responsibility for supply chain management: A literature review and bibliometric analysis. *Journal of Cleaner Production*, 158, 296-307.
- Foerstl, K., Reuter, C., Hartmann, E., Blome, C. (2010). Managing supplier sustainability risks in a dynamically changing environment - Sustainable supplier management in the chemical industry. *Journal of Purchasing & Supply Management*, 16, 118–130.
- Gerbens-Leenes, P.W., Moll, H.C., Schoot Uiterkamp, J.M. (2003). Design and development of a measuring method for environmental sustainability in food production systems. *Ecological Economics*, 46, 231–248
- Gimenez, C., Tachizawa, E.M. (2012). Extending sustainability to suppliers: a systematic literature review. *Supply Chain Management: An International Journal*, 17, 531–543.
- GRI (2017). Official website, Available at: <https://www.globalreporting.org/Pages/default.aspx> (accessed 7/2017)
- Griffis, S. E., Autry, C. W., Thornton, L. M., Brik, A. B. (2014). Assessing antecedents of socially responsible supplier selection in three global supply chain contexts. *Decision Sciences*, 45 (6), 1187-1215.
- Govindan, K., Khodaverdi, R., Jafarian, A. (2013). A fuzzy multi criteria approach for measuring sustainability performance of a supplier based on triple bottom line approach. *Journal of Cleaner Production*, 47, 345–354
- Grob, S., Benn, S. (2014). Conceptualising the adoption of sustainable procurement: an institutional theory perspective. *Australasian Journal of Environmental Management*, 21 (1), 11-21.
- Hoejmose, S. U., Adrien-Kirby, A. J. (2012). Socially and environmentally responsible procurement: A literature review and future research agenda of a managerial issue in the 21st century. *Journal of Purchasing and Supply Management*, 18 (4), 232-242.
- Hsu, P. F., Hu, P. J. H., Wei, C. P., Huang, J. W. (2014). Green Purchasing by MNC Subsidiaries: The Role of Local Tailoring in the Presence of Institutional Duality. *Decision Sciences*, 45 (4), 647-682.
- Hutchins, M.J., Sutherland, J.W. (2008). An exploration of measures of social sustainability and their application to supply chain decisions. *Journal of Cleaner Production*, 16, 1688–1698
- ISO (2016), “First International Standard for sustainable procurement nears publication”, available at: http://www.iso.org/iso/home/news_index/news_archive/news.htm?refid=Ref2105 (accessed 10 November 2016)
- Igarashi, M., de Boer, L., Michelsen, O. (2015). Investigating the anatomy of supplier selection in green public procurement. *Journal of Cleaner Production*, 108, 442-450.

- Jindal, A., Sangwan, K.S. (2016). Multi-objective fuzzy mathematical modelling of closed-loop supply chain considering economical and environmental factors. *Annals of Operations Research*, pp. 1-26. Article in Press.
- Johnsen, T. E., Miemczyk, J., & Howard, M. (2017). A systematic literature review of sustainable purchasing and supply research: Theoretical perspectives and opportunities for IMP-based research. *Industrial Marketing Management*, 61, 130-143.
- Kalyuzhnova, Y., Nygaard, C.A., Omarov, Y., Saparbayev, A. (2016). Local content policies in resource-rich countries. *Euro-Asian studies*.
- Kannan, D., Govindan, K., Rajendran, S. (2015). Fuzzy axiomatic design approach based green supplier selection: A case study from Singapore. *Journal of Cleaner Production*, 96, 194–208.
- Kaur, H., Singh, S.P. (2016). Sustainable procurement and logistics for disaster resilient supply chain. *Annals of Operations Research*, pp. 1-46. Article in Press.
- Kondra, A. Z., Hinings, C. R. (1998). Organizational diversity and change in institutional theory. *Organization Studies*, 19 (5), 743-767.
- Kuo, R.J., Wang, Y.C., Tien, F.C. (2010). Integration of artificial neural network and MADA methods for green supplier selection. *Journal of Cleaner Production*, 18, 1161–1170.
- Lee, A. H., Kang, H. Y., Hsu, C. F., Hung, H. C. (2009). A green supplier selection model for high-tech industry. *Expert Systems with Applications*, 36 (4), 7917-7927.
- Mani, V., Gunasekaran, A., Papadopoulos, T., Hazen, B., & Dubey, R. (2016). Supply chain social sustainability for developing nations: Evidence from India. *Resources, Conservation and Recycling*, 111, 42-52.
- Marshall, D., McCarthy, L., McGrath, P., & Claudy, M. (2015). Going above and beyond: how sustainability culture and entrepreneurial orientation drive social sustainability supply chain practice adoption. *Supply Chain Management: An International Journal*, 20(4), 434-454.
- Matten, D., Moon, J. (2008). “Implicit” and “explicit” CSR: a conceptual framework for a comparative understanding of corporate social responsibility. *Academy of Management Review*, 33 (2), 404-424.
- McKinsey. (2014). Sustainability’s strategic worth: McKinsey Global Survey results, available at: <http://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/sustainabilitys-strategic-worth-mckinsey-global-survey-results> (accessed 1 December 2016).
- Miemczyk, J., Johnsen, T.E., Macquet, M. (2012). Sustainable purchasing and supply management: a structured literature review of definitions and measures at the dyad, chain and network levels. *Supply Chain Management: An International Journal*, 17, 478–496.
- MOG – Ministry of Oil and Gas (2013). Standardisation of ICV requirements in contracting & procurement Oman oil & Gas sector suppliers engagement session. Available at: <http://www.incountrypvalueoman.net/getattachment/201de0ad-a3a8-4c06-bfbb-82209858a056/Standardisation-of-ICV-Requirements-in-C-P>
- Oxford Business Group, 2014, The Report: Oman 2014
- Oxford Business Group, n.d., Oman diversifies economy as oil revenues shrink <https://www.oxfordbusinessgroup.com/overview/renewed-efforts-oil-revenues-shrink-government-seeking-further-diversify-economy-boost-employment>

- Quarshie, A. M., Salmi, A., & Leuschner, R. (2016). Sustainability and corporate social responsibility in supply chains: The state of research in supply chain management and business ethics journals. *Journal of Purchasing and Supply Management*, 22(2), 82-97.
- Rezaei, J., Kadziński, M., Vana, C., Tavasszy, L. (2017). Embedding carbon impact assessment in multi-criteria supplier segmentation using ELECTRE TRI-rC. *Annals of Operations Research*, pp. 1-23. Article in Press.
- Sancha, C., Longoni, A., Giménez, C. (2015). Sustainable supplier development practices: Drivers and enablers in a global context. *Journal of Purchasing and Supply Management*, 21 (2), 95-102.
- Sarkis, J., Dhavale, D.G. (2015). Supplier selection for sustainable operations: A triple-bottom-line approach using a Bayesian framework. *International Journal of Production Economics*, 166, 177–191.
- Sarkis, J., Zhu, Q., Lai, K. H. (2011). An organizational theoretic review of green supply chain management literature. *International Journal of Production Economics*, 130 (1), 1-15.
- Shen, L., Zhang, Z., Zhang, X. (2016). Key factors affecting green procurement in real estate development: a China study. *Journal of Cleaner Production*, in press.
- Thornton, L.M., Autry, C.W., Gligor, D.M., Brik, A.B. (2013). Does socially responsible supplier selection pay off for customer firms? A cross-cultural comparison. *Journal of Supply Chain Management*, 49 (3), 66-89.
- Tseng, M.-L., Tan, K.-H., Lim, M., Lin, R.-J., Geng, Y. (2013). Benchmarking eco-efficiency in green supply chain practices in uncertainty. *Production Planning and Control*, 24(12), 728-740, pp. 1–12.
- Tsireme, A. I., Nikolaou, E. I., Georgantzis, N., Tsagarakis, K. P. (2012). The influence of environmental policy on the decisions of managers to adopt G-SCM practices. *Clean Technologies and Environmental Policy*, 14 (5), 953-964.
- Vachon, S., Mao, Z. (2008). Linking supply chain strength to sustainable development: a country-level analysis. *Journal of Cleaner Production*, 16, 1552–1560.
- Wetzstein, A., Hartmann, E., Benton Jr, W. C., Hohenstein, N. O. (2016). A systematic assessment of supplier selection literature—State-of-the-art and future scope. *International Journal of Production Economics*, 182, 304-323.
- Winter, S., Lasch, R. (2016). Environmental and social criteria in supplier evaluation – Lessons from the fashion and apparel industry. *Journal of Cleaner Production*, 139, 175-190.
- Wong, J. K. W., San Chan, J. K., Wadu, M. J. (2016). Facilitating effective green procurement in construction projects: An empirical study of the enablers. *Journal of Cleaner Production*, 135, 859-871.
- World Business Council for Sustainable Development (WBCSD) and World Resources Institute (WRI) (2009). *The Greenhouse Gas Protocol Initiative: Scope 3 Accounting and Reporting Standard*. Geneva, Switzerland.
- Wu, Z., & Pullman, M. E. (2015). Cultural embeddedness in supply networks. *Journal of Operations Management*, 37, 45-58.
- Yawar, S. A., & Seuring, S. (2017). Management of social issues in supply chains: a literature review exploring social issues, actions and performance outcomes. *Journal of Business Ethics*, 141(3), 621-643.

Zimmer, K., Fröhling, M., Schultmann, F. (2016). Sustainable supplier management—a review of models supporting sustainable supplier selection, monitoring and development. *International Journal of Production Research*, 54 (5), 1412-1442.

Zorzini, M., Hendry, L. C., Huq, F. A., Stevenson, M. (2015). Socially responsible sourcing: reviewing the literature and its use of theory. *International Journal of Operations & Production Management*, 35 (1), 60-109.