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Introducing social sustainability aspects in supplier selection: the role of governmental intervention

Ahmed Darwish Al Balushi
Occidental of Oman Inc. P.O. 717, P.C 130, Oman

Athanasios Rentizelas (athanasios.rentizelas@strath.ac.uk)
University of Strathclyde, Design Manufacture and Engineering Management Dpt., 75
Montrose str., G1 1XJ, Glasgow, UK

Ana Beatriz Lopes De Sousa Jabbour
University of Strathclyde, Design Manufacture and Engineering Management Dpt., 75
Montrose str., G1 1XJ, Glasgow, UK

Andrea Tunì
University of Strathclyde, Design Manufacture and Engineering Management Dpt., 75
Montrose str., G1 1XJ, Glasgow, UK

Abstract

This paper aims to understand how governmental intervention can drive organisations to adopt social sustainability aspects in their supplier selection process. The successful case study of the recent introduction of the In-Country-Value program at the Oil and Gas sector of Oman is examined. A survey and interviews with supply chain, contracting and procurement managers were conducted and the primary data was analysed. Governmental intervention was found capable of driving organisations to adopt social sustainability aspects in their supplier selection process, but leads to a ‘cap’ bounded by governmental requirements if the motivation does not come from within the organisations.

Keywords: Social sustainability, supplier selection, governmental intervention

Introduction

Globalisation has led to increased outsourcing practices that enhance the importance of the upstream network within supply chain management, rendering supplier selection a key strategic decision affecting the organisational competitiveness even more than in the past (Dou and Sarkis, 2010; Govindan et al., 2013; Sarkis and Dhavale, 2015). Supplier selection has traditionally been based on economic factors focusing on the purchasing cost, together with other factors such as quality, service, time, reliability and flexibility (Azadi et al., 2015). The inclusion of sustainability aspects in supplier selection is a relatively recent development. 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).

The literature on supplier selection based on sustainability principles has primarily focused on environmental aspects up to now. Most of the articles in this field have focused on assessing suppliers or to prioritise criteria for supplier selection, mainly through adopting mathematical modeling approaches (e.g. Lee et al., 2009; Bai and Sarkis, 2010; Aktin and Gergin, 2016; Banaeian et al., In Press).

Conversely, the social dimension of sustainability has been largely neglected, especially in the supplier selection process (Thornton et al., 2013; Zimmer et al., 2016). There are few articles that approached the social dimension through the ethical perspective, but they have not analysed the processes of supplier selection (e.g. Griffis et al., 2014; Chen and Baddan, 2015). There are also articles that have presented green purchasing as a means to introduce social aspects in public procurement (e.g. McCrudden, 2004; Duo, Sarkis and Bai, 2014) but have not reached the point of proposing mechanisms to support social public procurement. There is also limited evidence of considering social aspects in private sector procurement. This research aims to explore this gap and bring evidence on how governmental strategic plans can stimulate private organisations to pursue social aspects in supply chains, through a particular case study.

The case study involves a national program launched by the Ministry of Oil and Gas of Oman in 2013 to guide companies in the sector to contribute to workforce development and to enhance local sourcing of goods and services. Following this, companies in this sector have adopted procedures to select suppliers through consideration of social aspects too. The Omani government has developed a joint supplier registration system (JSRS) in order to standardise the minimal social requirements that potential suppliers have to comply with in order to be considered able to supply to this sector.

This article presents and discusses evidence from the Omani Oil and Gas sector case on how companies started considering social aspects for selecting suppliers and which mechanisms the Omani government has used. The empirical research was based on a survey with key players of the Omani Oil and Gas supply chain and on interviews with supply chain, contracting and procurement managers of selected companies. Secondary data was also utilised to contextualise the study and to better understand the results. Data was analysed through statistical techniques and content analyses.

The main contributions of this article are: presenting a successful example of how the social dimension of sustainability can be considered in selecting suppliers in a sector, which has a high environmental impact, and to discuss the role of the government and the mechanisms in driving that process and making it a reality.

Case study

Oman is a high-income country. 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) program 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”. The main objectives of ICV are building local human resources capabilities, job creation, products and manufacturing. 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 was initially launched within the public sector organisations’ procurement, but has subsequently expanded to the private sector in various economy sectors. It 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. ICV has a particular focus on external social sustainability aspects, whereas internal aspects, such as employee well-being and health & safety considerations are not explicitly considered.

The mechanism through which ICV is implemented is the Joint Supplier Registration System (JSRS), which 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.

Methodology

Survey

As a first step, a questionnaire was developed and sent to all 18 registered operators in the JSRS system of Oman, who are the main buyers of related equipment and services in the country and were therefore considered the most relevant target population for this study. 11 of them responded to the questionnaire, leading to a 61% response rate. However, the questionnaire was forwarded to other relevant organisations by the initial recipients and led to 3 additional responses: 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.

In total, 40 individual responses from people employed in the contracting, procurement, or supply chain functions of the responding organisations were received. All of the participants’ positions within their organisation were checked for relevance. The 40 questionnaire respondents represented 14 different Oil and Gas organisations in Oman including all three sectors of the industry – upstream, midstream, and downstream, with the mix shown in Figure 1. Although the mix of participants is highly skewed towards the upstream sector, it should be acknowledged that this sector is the most populous in the country in terms of company numbers. Although the company size the

participants were working for varied, the vast majority of them worked for mid- and large-sized organisations (Figure 2). Finally, the participants were asked to provide information on the experience they had in relevant positions. The outcome shows a variety of experience levels, with most participants having less than 10 years of experience, classifying them as junior and middle supply chain management personnel (Figure 3).

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 – Participants classification in Oil and Gas supply chain segments

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

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 – Participant's experience

Interviews

As a follow up from the survey, the most relevant and experienced participants from the 11 JSRS registered operators that responded to the survey were approached for an interview to investigate further the issues of sustainable supplier selection identified by the survey. 5 of them agreed to be interviewed. All interviewees had relevant background with four of them having over 15 years of experience (senior) and one having over 10 years (middle). Due to space limitations interview excerpts are not presented here.

Results and Analysis

Sustainability practices

The first part of the survey was designed to shed light into the sustainability practices and motivation of the organisations, as the wider context of the supplier selection process.

Initially the motivation for adopting sustainability aspects in the organization was explored (Figure 4), in order to understand the influence of governmental intervention in improving the organisational sustainability performance and how this has infiltrated the business strategy.

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.

Interestingly enough 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 intervention and 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.

Why did your company adopt sustainability aspects?			Response Percent	Response Total
1	Part of Corporate Social Responsibility (CSR)		58.82%	20
2	Improve company-brand & reputation		55.88%	19
3	Cost Saving		32.35%	11
4	Regulations governing		29.41%	10
5	Self Initiatives		26.47%	9
6	Other (please specify):		0.00%	0

Figure 4 – Reasons for adopting sustainability aspects in organisation

The participants were also asked which department of the organization is primarily responsible for managing sustainability. An equally high number of respondents identified the supply chain department and all departments. The former indicates the understanding that the supply chain is a major contributor to the sustainability performance of organizations in the sector; the latter shows that many organisations have realized that sustainability cannot be handled by one department in isolation, but should be dealt with from all departments in a collaborative way, to improve the organizational sustainability performance. Other departments were also identified by a smaller number of respondents as primarily responsible for sustainability, namely the Production & Operations, Health Safety & Environment, Sales & Marketing and Admin & HR (Figure 5). However, less than half of the respondents acknowledged that the responsibility does not lie within one department only.








Which department(s) is(are) primarily responsible for sustainability in the company?				
			Response Percent	Response Total
1	Health, Safety & Environment		20.59%	7
2	Administration & Human Resources		11.76%	4
3	Production & Operation		29.41%	10
4	Supply Chain		44.12%	15
5	Sales & Marketing		17.65%	6
6	All		44.12%	15
7	Other (please specify):		5.88%	2

Figure 5 – Departments primarily responsible for managing sustainability in the organisation

The aspects of sustainability actually measured within the organisations were also reported, in order to identify the most critical sustainability aspects in this sector and also to investigate the importance of social aspects compared to environmental ones. Seven out of ten aspects concern the environmental dimension of sustainability (Figure 6). This finding is reasonable, considering 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 & 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 & Gas sector have actually adopted the ICV perspective on interpreting the social sustainability aspect.











Which sustainability aspects did your company measure?				
			Response Percent	Response Total
1	Waste management		58.82%	20
2	Community contribution		55.88%	19
3	Oil Spill reduction		50.00%	17
4	Social Investment		47.06%	16
5	Society training and skills development		44.12%	15
6	Source of materials		41.18%	14
7	Gas flaring reduction		38.24%	13
8	Reduction of air pollution		32.35%	11
9	Transportation		26.47%	9
10	Carbon foot print reduction		14.71%	5
11	Other (please specify):		0.00%	0

Figure 6 – Sustainability aspects considered within the organisation

Supplier selection and sustainability assessment

A further investigation on the tools used to select suppliers and assess sustainability was performed through the survey. In terms of supplier selection, more than half the respondents reported using Total Cost of Ownership (TCO), followed by Risk Efficiency Based Supplier Selection (REBaSS) and Vendor Weights Rating (VWR). In their analytical comments, two respondents mentioned use of ICV in their selection process in conjunction with other tools (Figure 7). Overall, several respondents mentioned use of more than one method/tool in the supplier selection process.

What methods/ tools are used on supplier selection process in your company?			Response Percent	Response Total
1	Total Cost of Ownership (TCO)		52.78%	19
2	Analytic Hierarchy Process (AHP)		16.67%	6
3	Analytic Network Process (ANP)		16.67%	6
4	Vendor Weights rating (VWR)		33.33%	12
5	Risk Efficiency Based Supplier Selection (REBaSS)		36.11%	13
6	Other (please specify):		13.89%	5

Figure 7 – Tools/methods used to select suppliers

A subsequent question was on whether the methods/tools reported were used for all bids. 78% of respondent reported exclusive use of the above methods. However, 22% mentioned other methods, depending on the contract value and urgency. It is therefore apparent that although the above tools/methods are used in most cases, companies are flexible in using direct awards or other methods for smaller or urgent projects.

To understand how the organisational approach on sustainability translates to the upstream supply chain approach adopted and the supplier selection process, the survey included a question on whether environmental and social dimensions of sustainability are actually considered in the supplier selection process. 75% of the respondents acknowledged actually incorporating criteria relating to the environmental, social or both sustainability aspects in the supplier selection process. On the other hand, a significant percentage of 25% of respondents acknowledged that their organisations do not consider any of those sustainability dimensions currently in their supplier selection process.

The relative importance (weighting) of the environmental and social aspects of sustainability in the supplier selection process was also examined for those respondents that acknowledged incorporating one or both these aspects in the process (Figure 8). 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.









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 8 – Weighting of environmental and social sustainability dimensions during supplier selection

Participants were also asked whether their company actually measures the supplier sustainability performance, to have an understanding of how this related to the importance of sustainability during the supplier selection process and whether organizations place more emphasis on the pre-contract or contract performance. 69% of respondents reported measuring the sustainability performance of their suppliers, a result somewhat lower to the proportion of respondents assessing sustainability during the supplier selection process. The main tool used for this purpose was Scorecards, followed by in-house measurement tools (Figure 9). Ultimately it appears that organisations in the sector either do not assess sustainability aspects and performance of suppliers at all, or they do so both during the supplier selection and the contractual time period.






If yes, what tool is used to measure supplier sustainability performance?					
				Response Percent	Response Total
1	Supplier SCORE CARD			50.00%	14
2	Green SCOR Model			14.29%	4
3	In-house measurement tool (please specify in Comments field)			25.00%	7
4	Global Reporting Initiatives (GRI)			10.71%	3
5	Other (please specify):			14.29%	4

Figure 9 – Tools used to measure sustainability performance of suppliers

Interviews

In terms of the criteria for supplier assessment, interviewees agreed 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. Regarding 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.

Several challenges were identified in the process of introducing sustainability aspects in the supplier selection process: the lack of local suppliers, skills and competency; the lack of competitive pricing from local suppliers; the resulting additional cost of compliance to ICV by suppliers; and the additional resources the company must allocate to develop local contractors to international standards. This shows that although

organisations tend to comply with ICV, the challenges that this brings are significant. It is therefore apparent that organisations tend to promote sustainability aspects primarily due to governmental pressure, in contrast to the findings of the survey (Figure 4) where less than a third of the participants reported governmental regulation as a motivation for adopting sustainability aspects in the business.

For 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. It was reported 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 & Gas sector do not tend to go beyond the requirements of the ICV in terms of social sustainability.

Conclusion

The survey highlighted the following 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) motivation for this comes primarily from external stakeholders; c) around half of the respondents stated that they measured sustainability based on community contribution, social investments, and society training and skills development; d) more than half of the respondents give social dimension of the sustainability less than 25% weighting in the supplier selection process and e) the environmental dimension of sustainability appears to be considered to a larger extent than the social.

The interviews pointed out primarily that: a) the requirements of the Omani national programme drive organisations to select suppliers based on sustainability-related criteria, but b) only a few companies move beyond the national programme requirements.

Analysing findings from both survey and interviews as well as contextual information shows that even though some companies of this sector have not been mature enough in adopting principles of sustainability, they have used social criteria to select suppliers. Therefore, the Omani governmental program tends to boost the organisational journey towards social sustainability and in this respect, it has been successful in introducing social sustainability in the Oil and Gas sector supplier selection processes. However, this journey seems to be capped to the requirements of the governmental ICV program as organisations tend to consider compliance to ICV as their contribution to social sustainability and do not go beyond these requirements. Furthermore, all social sustainability aspects considered by organisations and the ICV program refer to external social sustainability aspects, largely neglecting the internal ones; this is another indication that all social sustainability efforts in the sector have been driven by ICV and are limited to the ICV requirements, as they are not driven by the organizational strategy. It can be therefore concluded that governmental intervention can drive organisations to adopt social sustainability aspects in their processes, including the supplier selection process, but the level of adoption will most likely be limited to the governmental requirements, unless social sustainability is transfused into the organizational strategy.

In terms of limitations, the findings of this research are applicable to the specific sector examined and further research would be needed in different sectors and countries to identify whether they could be generalized. As a further research suggestion, it would be valuable to conduct a longitudinal study to track the progress of organisations in the

Oil and Gas sector in Oman in terms of social supplier selection due to the ICV program and to understand further the role of governmental intervention on this, whether the observed 'cap' will continue to exist and whether the governmental intervention will eventually lead to sustainability principles transfusing the organizational strategy.

References

- Aktin, T., & Gergin, Z. (2016). "Mathematical modelling of sustainable procurement strategies: three case studies". *Journal of Cleaner Production*, 113, 767-780.
- 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 & Operational Research*, 54, 274-285.
- 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*.
- Chen, J. Y., & Baddam, S. R. (2015). "The effect of unethical behavior and learning on strategic supplier selection". *International Journal of Production Economics*, 167, 74-87.
- 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* (pp. 567-589). Springer Berlin Heidelberg.
- 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.
- 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.
- Kalyuzhnova, Y., Nygaard, C.A., Omarov, Y. & Saparbayev, A., (2016). *Local content policies in resource-rich countries. Euro-Asian studies*.
- 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.
- McCrudden, C. (2004). *Using public procurement to achieve social outcomes. In Natural Resources Forum* (Vol. 28, No. 4, pp. 257-267). Blackwell Publishing Ltd.
- 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.
- 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>
- Oxford Business Group, (2014), *The Report: Oman 2014*
- 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.
- 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), pp. 66-89.
- Vachon, S. & Mao, Z., (2008). "Linking supply chain strength to sustainable development: a country-level analysis". *Journal of Cleaner Production*. 16, 1552-1560.
- 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.