DRIVERS AND CHALLENGES FOR IMPLEMENTING ISO 14001 ENVIRONMENTAL MANAGEMENT SYSTEMS IN AN EMERGING GULF ARAB COUNTRY.

Authors: Marie-France Waxin, Sandra L. Knuteson*, and Aaron Bartholomew
Contact: American University of Sharjah, PO Box 26666, Sharjah, UAE
*sknuteson@aus.edu, 971-6-515-2433

ABSTRACT

Worldwide, ISO 14001 certification for organizations has become the norm, but the Arab world accounts for an insignificant portion of all the certified organizations. There is a dearth of research on Environmental Management Systems (EMS) in Arab and emerging countries and in public organizations. The objectives of this research are to: 1) examine the key drivers and challenges related to implementation of ISO 14001 certified EMS in the United Arab Emirates, an emerging Arab country, and 2) compare and contrast these drivers and challenges between private and public organizations. We adopt an explorative, qualitative methodology, using semi-structured interviews with environmental managers in 11 organizations (6 private and 5 public) from different industrial sectors. Drivers of EMS certification were mostly similar between private and public organizations, with some differences. Compliance with regulations and standards, and increasing environmental performance were the main drivers for ISO 14001 certification in both private and public organizations. Commitment to sustainability was more important for public organizations. Cost reduction, competitors, leadership commitment and customers' demands were shared drivers, but more stressed by private organizations. Local community and employees' pressures were reported by private organizations only. The challenges to ISO 14001 implementation were similar for private and public organizations. They were: a lack of qualified human resources, practical challenges associated with implementation, a lack of regulations, a lack of support from management, and high costs. Our findings have implications for managers, academics, consultants and policy makers in the UAE and other emerging markets.

KEY WORDS: Environmental Management, Environmental Management System, Drivers, Challenges, ISO 14001, Emerging Countries, Arab Countries.

INTRODUCTION

Environmental Management (EM) is "management of those activities of a firm that have or can have an impact on the environment" (Starkey et al. 1998). Adopting an Environmental Management System (EMS) can improve an organization's environmental performance (Hillary 2004). An EMS is a systematic process to improve environmental performance through a continuous cycle, using the basic "plan-do-check-act" model (Stapleton et al. 2001). ISO 14001 is an international, voluntary EMS, published by the International Organization for Standardization (ISO), an international standard-setting body (Starkey 1998). Introduced in the mid-1990s, ISO 14001 certification has rapidly become the norm for organizations worldwide. Despite claims that ISO 14001 can be readily adapted to different organizational and geographic settings, adoption has been highly variable geographically (Neumayer and Perkins 2004). Certified firms from Arab countries only account for an insignificant proportion of the total certified organizations worldwide (Massoud et al. 2010). Based on a literature review, we identified two research gaps.

First, there is a dearth of research on EM and EMSs in the Arab world specifically, and in developing and small emerging countries in general. Most research on EMS, including research on drivers for EMS adoption and challenges to implementation, comes from Western, developed countries (Hillary 2004; Zutshi and Sohal 2004; Psomas et al. 2011; Heras-Saizarbitoria et al. 2011). Some research has been published on EM issues and greener supply chains in large emerging economies such as China (Zhang et al. 2008), Russia (Thurner and Roud 2016) and India (Govindan et al. 2015). We could not find any academic research on EMS certification in the Middle East North Africa (MENA) region, including the Arabian Gulf countries, however.

Second, there is a lack of research on EMSs in public organizations, and of comparative research on EMS adoption between private and public organizations. Most of the studies on EMSs have been conducted on private sector organizations. This is unfortunate, as the drivers for EMS adoption are likely to be somewhat different between private and public organizations. Private sector organizations may be more concerned with improve profitability and competitiveness, whereas the public sector may be more concerned with societal development and "well-being". As a result, public organizations may be more open to EM initiatives (Walker et al. 2008).

Based on these two research gaps, the objectives of this research are to: 1) examine the key drivers and challenges related to ISO 14001 certification for organizations in the United Arab Emirates (UAE), a small, emerging Gulf Arab country, and 2) compare and contrast these drivers and challenges among private (PRIV) and public (PUB) organizations.

The Gulf and UAE context

Bahrain, Kuwait, Qatar, Oman, Saudi Arabia and the United Arab Emirates make up the Gulf Cooperation Council (GCC). GCC countries have experienced astonishing growth since they started exporting oil in the early 1960's, and have transformed from poor, nomadic societies to rich, modern economies over the last decades (Waxin and Bateman 2016a). Studying EM practices in these countries is important, as their rapid urbanization and industrialization has put tremendous pressures on the environment, including energy demand and associated carbon dioxide emissions (Charfeddine and Khediri 2016). Overall, GCC countries have some of the highest per capita ecological footprints in the world (WWF 2016). In the last two decades, GCC governments have begun to diversify their economies away from a dependence on oil, by industrialization and by creating sophisticated knowledge-based economies (Waxin and Bateman 2016a). GCC states have established competitive government-controlled enterprises that are run like private organizations in oil, gas, manufacturing, banking, insurance, telecommunications, tourism, high-tech industries,

media and other industries as well. Today, GCC countries are facing some of the same challenges as western, developed countries, in terms of how to develop their economies while protecting the environment. This has resulted in increased regulatory efforts that encourage companies to better manage their environmental performance.

The UAE has become the EM leader in the GCC. The UAE is one of the top-ten richest economies, in terms of purchasing power parity and projected GDP per capita. It maintains an open, free market economy with minimal restrictions on free trade and movement of capital. In 2013, only 1/3 of the UAE's GDP came from the oil industry (Charfeddine and Khediri 2016). In 2005, the UAE became one of the first major oil-producing countries to ratify the Kyoto protocol to the UN Convention on Climate Change. The UAE has pledged to reduce carbon dioxide emissions per unit of GDP to 7% below 2009 levels by 2020 (Jammazi and Aloui 2015) and reduce overall emissions 30% by 2030 (Charfeddine and Khediri 2016). In 2010, the UAE launched its UAE Vision 2021 with six national priorities, including the development of sustainable environmental practices and a competitive knowledge-based economy (Vision2021, 2010). In order to curb emissions, the UAE has launched various projects that include the use of more natural gas, nuclear power, solar power and wind power. There are seven Emirates in the UAE, and each one generally develops and enforces their own environmental laws and regulations (MoCCE 2016). Rettab and Ben Brik (2008) found that 27% of the UAE organizations they surveyed had established an EMS, including ISO 14001, but only 10% aimed for certification. Note that these results are from an older study, and the adoption rate in the country is probably much higher now.

The drivers for EMS certification

In general, the drivers for EMS adoption can be categorized as either internal or external (Ben Brik et al. 2013). The main external drivers are regulations, customers, competitors and the local community. The internal drivers for EMS adoption have not been studied as much (Heras-Saizarbitoria et al. 2011). The main internal drivers include improving corporate image, leadership commitment to environmental sustainability, lowering costs and risks and increasing process efficiency.

Compliance with local and international government regulations and industry standards is an important driver for implementing ISO 14001 certification (Zutshi and Sohal 2004; Heras-Saizarbitoria et al. 2011). Regulations are often necessary to compel companies to improve their EM practices and reduce their environmental impact (Porter and Van der Linde 1995). Without enforced regulations, top managers will not enact costly EM practices that they perceive as weakening company competitiveness (Conrad and Morrison 1989; Darnall 2006). Stringent, strictly-enforced regulations are particularly important in emerging and developing economies (Rettab et al. 2009). Regulations in these countries are often weak or absent, and even if present they are poorly enforced, such that existing legislation has very little effect on organizations' environmental practices (Lo et al. 2006). Companies may only comply with regulations when they know they are being monitored (Govindan et al. 2015). Certification is also important for companies with an international presence that have to adhere to regulations in several different jurisdictions (Bansal and Hunter 2003).

Satisfying customers and market demands is another driver for companies to adopt a certified EMS. Some corporate customers require their suppliers to provide them with written

certification of their compliance with all environmental regulations (Delmas and Montiel 2007). Some clients require their vendors to improve their environmental performance and adopt proactive EM practices (Zhu and Sarkis 2004; Lee and Klassen 2008). Chinese manufacturers improve environmental performance if supply chain customers demand it (Zhang et al. 2008). Manufacturing companies in India that fail to practice "green manufacturing" may lose core customers (Govindan et al. 2015). The demand for green products has increased over the years, particularly in Western Europe (Oyewole 2001). Several studies found that market demand was an important driver for improving EM practices in emerging markets as well. Small, private, entrepreneurial companies in Russia improved their manufacturing process and their finished products in order to profit from increased demand for green products (Thurner and Roud 2016). It is important to note, however, that consumer demand for green products can vary a lot by country. In countries where overall environmental awareness is low, or where consumers cannot afford the added cost of "green" products, demand may be low (Zhu et al. 2005; Ben Brik et al. 2013).

Competitors are another driver for EMS certification. Some organizations adopt ISO 14001 early on, in order to differentiate themselves from their competitors and gain an advantage (Bansal and Hunter 2003). Other organizations adopt ISO 14001 later on, to mimic the practices of their competitors and gain legitimacy in their institutional environment (Chan and Makino 2007). This mimetic isomorphism is particularly important in developing countries (Zaheer 1995).

The community, including non-governmental organizations, environmental groups, neighborhood organizations, the media and labor unions may also drive organizations to adopt EMSs by mobilizing public opinion (Neumayer and Perkins 2004; Benn et al. 2009). Dasgupta et al. (2000) found that community pressure could change Chinese firms' environmental practices, because citizen complaints led to more government inspections, which is turn led to better company environmental performance. Zhang et al. (2008) also found that community pressure was a significant driver for Chinese chemical manufacturing firms to improve their environmental performance. The government devised a color-coded rating system for companies, and the results were available to the public. The colors indicated whether the firms were exceeding government regulations, meeting them, or in violation. Public hearings were required for any project that negatively impacted the environment, and citizens were encouraged to lodge environmental complaints against companies to the government.

Improving corporate image is an important driver for ISO 14001 adoption (Bansal and Hunter 2003; Zutshi and Sohal 2004; Psomas et al. 2011) and in several cases this was identified as the most important driver (Heras-Saizarbitoria et al. 2011). Certification sends a clear signal to customers and government agencies that the certified organization is committed to EM (Bansal and Hunter 2003). Bansal and Hunter (2003) found that early adopters of ISO 14001 in the USA became certified in order to improve company image and reinforce their existing environmental strategies rather than dramatically improve their environmental practices.

Leadership and top management's commitment to improve environmental practices is another key driver for EMS certification. The internal desire to become more environmentally proactive was an important driver for ISO 14001 certification in Spanish companies studies by Heras-Saizarbitoria et al. (2011). Companies that were internally-motivated perceived higher benefits and were more satisfied with the certification results The main driver for Greek companies to obtain ISO 14001certification was a commitment by top and middle managers to institute

180 environmentally-friendly policies, and this commitment contributed to fewer difficulties in
181 implementation (Psomas et al. 2011).
182

183 *Lowering cost and risk*, and *increasing process efficiency* are two economic drivers for
184 EMS adoption and certification. EMSs can contribute to lowering costs by identifying ways
185 companies can reduce material use and waste, recycle materials, implement energy and other
186 resource conservation measures and avoid fines and penalties associated with non-compliance
187 (Fryxell and Szeto 2002). Capital markets may react unfavorably to negative environmental news
188 about a company, such as violations, accidents, lawsuits, etc. and may react positively to favorable
189 news about environmental practices (Dasgupta et al. 2000). Heras-Saizarbitoria et al. (2011) found
190 that "improving internal efficiency" was the third most important driver for becoming ISO 14001
191 certified in Spanish companies. In the same vein, Zutshi and Sohal (2004) found that "identifying
192 potential areas for improvement" was an important driver for ISO 14001 certification in Australia
193 and New Zealand.
194

195 **The challenges to becoming EMS certified**
196

197 Challenges to EMS implementation are not as well discussed in the literature as drivers for
198 implementation, and in general there is a need for further research on these challenges (Searcy et
199 al. 2012). The main challenges that have been identified include high costs, lack of qualified human
200 resources, lack of internal support and practical challenges.
201

202 *High costs* of certification include the time and costs associated with preparing
203 documentation and training employees, but also include the costs of internal and external auditors.
204 Zutshi and Sohal (2004) found that costs were the most important barrier to EMS implementation
205 in Australian organizations. Hillary (2004) found that high costs were also barrier to
206 implementation for small and medium sized enterprises in the UK, and that many of these
207 companies were uncertain about the market benefits of becoming certified.
208

209 *Lack of qualified human resources* to implement and maintain the certification can be a
210 serious challenge. Skills and knowledge development is important not only for the initial
211 implementation and adoption of an EMS, but also for its maintenance and continued operation
212 (Castka and Balzarova 2008). Hillary (2004) reviewed the literature on barriers to EMS adoption
213 for small and medium sized enterprises, and found that a lack of human resources was a more
214 important barrier for successful implementation and maintenance of the EMS than a lack of
215 financial resources. Hillary (2004) also found that an *unfavorable company culture*, including
216 *inconsistent support from top management*, hindered successful implementation.
217

218 *Practical, operational challenges* can delay successful implementation. EMS
219 implementation and maintenance is a complex process, that can present multiple practical
220 challenges. Poder (2006) found that Estonian companies struggled with practical challenges during
221 the planning phase of ISO 14001, specifically with the environmental aspect assessment
222 requirement (EAA). This assessment is the most fundamental part of the ISO 14001 planning
223 phase, as companies must identify elements of the organization's activities, products and services
224 that impact the environment. According to Poder (2006), ISO 14001 gives only general principles
225 for EAA; the assessment criteria overall are ill-defined and inadequate, and therefore cannot be

226 systematically adapted (Poder 2006). Psomas et al. (2011) reported that Greek companies
227 experienced only low levels of difficulties implementing ISO 14001, in part because many of them
228 had prior experience with ISO 9001 certification. Their greatest difficulty came during the
229 planning phase in "determining environmental performance issues" which included setting
230 objectives and measurable aims.
231
232 **RESEARCH DESIGN AND METHODOLOGY**
233
234 There is very little research into EM and EMSs in the Arab countries in general, and in the
235 Gulf countries in particular (Al-Damkhi et al. 2008), and our research objectives are exploratory,
236 so we used a qualitative research approach (Miles and Huberman 1994; Yin 1994). We generated
237 data using semi-structured interviews with relevant managers from 6 private (PRIV) and 5 public
238 (PUB) organizations. Comparisons between different organizations allow greater validity in
239 developing insights, and allows for the consideration of context dependency (Yin 1994). Our study
240 adopts an inductive approach (Yin 1994), following some broad initial pre-conceptualization of
241 key themes (Miles and Huberman 1994). Published research using the same qualitative, interview-
242 based approach with a small sample include, for example, Waxin et al. (2018) with 11 interviews/
243 organizations, and Walker et al. (2008), with 11 interviews/ 7 organizations.
244
245 **Data collection**
246
247 Our level of analysis is a company plant. To enhance external validity, we used theoretical
248 sampling in our selection approach (Yin 1994). We targeted UAE organizations of private and
249 public ownership, from different industrial sectors, and from different sizes (from 12 to 100 000+
250 employees), to provide variation in our sample (Eisenhardt 1989). Choosing very different
251 companies to survey may produce contrasting results but for predictable reasons, resulting in
252 theoretical replication (Yin 1994). Each organization had to satisfy the following criteria: a) a
253 minimum of 7 years of operations in the UAE market, b) EM was included in the strategic
254 objectives of the organization and c) ISO 14001 certification and a budget dedicated to EM. All
255 participants requested anonymity for themselves and their organizations, so we report only basic
256 information about the participating organizations in Table 1.
257 We conducted face-to face, semi-structured interviews with the managers in charge of the
258 EM program in each of the 11 organizations. Face-to-face interviews provide a greater degree of
259 social interaction between the participants (Easterby-Smith & Lowe 1991). Each interview lasted
260 for 1.5 - 3 hours. The interviews included open-ended questions. A probing technique was used to
261 gain as much in-depth information as possible, and to increase the likelihood of discovering new
262 issues relevant to the UAE, beyond those identified by previous studies conducted in other
263 countries. Key questions included, as examples "what are the major drivers to EMS certification
264 in your organization?", "what are the major challenges or difficulties encountered by your
265 organization during EMS certification?"
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Table 1. General information on sample organizations

Organization	Industry	# of employees	Job title of interviewees (1)	Nationality of interviewees (2)
PUB1	Oil and gas	100000 +	Sustainability manager	UAE
PUB2	Manufacturing	1380	QHSE manager	Indian
PUB3	Water and electricity	2000	Sustainability manager	African
PUB4	Manufacturing	3000	EMS manager	UAE
PUB5	Manufacturing	4200	Sustainability manager	African
PRIV1	Logistics	36000	EMS manager	UAE
PRIV2	Biotechnology	3000	EMS manager	Pakistan
PRIV3	Engineering and construction	20000	Env. advisor	Indian
PRIV4	Manufacturing	18000	Env. manager	Middle East
PRIV5	Manufacturing	12	Director	Indian
PRIV6	Waste management	300	Env manager	African

(1) Titles of exact positions of interviewees have been modified to protect their anonymity

(2) In some cases, precise nationality is not given to ensure confidentiality of the respondents

Data Analysis

After transcription, each interview was individually coded by each of the two first authors using open coding, and then they both discussed the coding results to ensure consistency. Coding was considered complete when a consensus on each construct was reached. We used the computer assisted qualitative data analysis software (CAQDAS) program, NVivo10, to analyze the data collected from the interviews. We implemented both within-case and cross-case analyses (Miles and Huberman 1994).

FINDINGS AND DISCUSSION

In the following sections, findings are discussed in the context of existing literature, and summarized in tables 2 and 3. Similarities and differences between the private and public organizations are highlighted. Direct quotes from some of the participants help to illustrate our major findings.

Drivers of ISO 14001 Certification

We found six categories of drivers to EMS certification, many were similar for both private and public organizations, but we also identified some differences (Table 2).

1. *Compliance with local and international governmental regulations and industry standards*. All but two private organizations mentioned these as important drivers, and those two companies had already achieved compliance before ISO 14001 certification. Government regulations are unlikely to drive further improvement in environmental practices if minimum compliance has already been met (Zhang et al. 2008). For organizations that had developed business relationships with the UAE federal government or with the government of individual Emirates, it was very important to comply with all UAE environmental regulations to get contracts. By adopting ISO 14001 standards, companies send a strong signal to political actors that they are aware of, and complying with government regulations (Ben Brik et al. 2013). This may benefit the companies' business by increasing government trust, facilitating access to government-regulated resources and gaining government contracts (Darnall 2006).

The legal and industry-related EM requirements of international export markets also drove UAE organizations to achieve certification, as most of the organizations in our sample competed in the global arena. Exporting firms must meet the EM requirements of the targeted international market in order to be competitive, and these requirements can be particularly strict in developed markets like the US and Europe (Ben Brik et al. 2013).

> *"Local and international laws are among the key drivers of our certification"* (PUB2)
> *"Industry standards and codes motivated us , respecting them is a condition to remain competitive"* (PRIV4)

2. *Increasing environmental performance* was a common driver for both PRIV and PUB, and this was associated with a *commitment to sustainability* in the case of all the PUB and a minority of PRIV. ISO 14001 certification helped the companies find and implement ways to improve their environmental performance in various ways, including decreasing water, air and soil pollution, reducing all kinds of waste, increasing recycling rate and increasing resource-use efficiency (energy, material) . This is consistent with previous findings (Morrow and Rondenelli 2002; Potoski and Prakash 2005). Improved environmental performance and commitment to sustainability have been identified as important drivers in other studies (Zutshi and Sohal 2004; Psomas et al. 2011; Heras-Saizarbitoria et al. 2011). Commitment to sustainability and improved environmental performance may improve coprorate image, and help the company become a preferred partner, supplyer and employer (Heikkurrinen 2010).

> *"ISO certification is one way to demonstrate our willingness to continuously identify and improve on environmental performance issues and our long term commitment to sustainability. We want to show that we pursue the goal of no harm to people and the community. We want to prevent oil and chemical spills and, if they do occur, be able to clean them up in a timely and environmentally friendly manner"* (PUB1)
> *"Our desire to seriously reduce our environmental impacts was one of our key motivators to implement ISO14001. We need to be more energy efficienct, reduce waste and scrap to better protect the environment"* (PUB2)

3. *Competitors.* Several PRIV were motivated to become certified either before their competitors, in order to gain an advantage, or to imitate their competitors' practices and "not be left behind". Rettab and Ben Brik (2008) also found similar results for Dubai companies establishing a green supply chain. It might be that the PUB of our sample were assured of important

contracts with the government or were in a leadership position in their respective market, and so were less sensitive to competitors' influence.

> *"Competitor behavior and market considerations were strong motivators"* (PRIV6)
> *"We wanted to raise awareness and get certified before the competitor could take the advantage"* (PRIV5)

4. *Reducing the costs of non-compliance and wasted resources.* These economic drivers were mostly important for private organizations, including a small one, but were also important for two public ones. Our respondents mentioned that costly fines, liability costs and increased insurance costs were consequences of non-compliance. ISO 14001 certification requires companies to identify all of the environmental regulations that affect them, and this can ultimately lead to reduced government fines and penalties (Bansal and Hunter, 2003).

Private organisations, including the two smallest ones, also mentionned that *reducing the cost of wasted resources* was a key driver, perceived as the economic, positive side of improving environmental performance.

> *"We need to reduce the cost of non-compliance…fines and penalties"* (PRIV1)
> *"We are motivated to save on environmental and sustainability related costs, and also reducing waste costs"* (PRIV4)

5. *Leadership and senior management's commitment* was a driver for ISO 14001 certification for only a minority of the PRIV and PUB of our sample. Most of our respondents were aware of the positive role that leadership's commitment could have on the organisation's EM initiatives, but only three of them actually mentioned this factor as a driver. In fact, some respondents complained about the weak involvement of senior management in their certification process. This contrasts with the results of prior studies in developed countries, in which senior management commitment to EMSs was a major driver of ISO14001 certification (Psomas et al. 2011, Heras-Saizarbitoria et al. 2011).

> *"Senior management enthusiasm was an important driver, that gave us the impetus"* (PUB2)

6. *Customers, local community, and employees* were weaker drivers for ISO 14001 certification in our study. Customers have been mentioned as drivers by a minority of both PRIV and PUB. In fact, some respondents commented that their employees and local customers generally lacked awareness of environmental issues, and would not know enough about most environmental issues to push for change in a company. Well-educated, richer, professional UAE residents may prefer to buy "green' products in the UAE, and may be willing to pay more for them, but this is certainly not the case for the many low-skilled workers that live in the country (Ben Brik et al. 2013). Only three respondents from PRIV mentioned the local community, and only one PRIV repondent mentioned the employees as drivers. These results highlight the general lack of of awareness and knowledge about environmental issues in the UAE (Ben Brik et al. 2013).

> *"We would like to avoid public relations and media attention related to environmental problems"* (PRIV6)

389
390
391 Table 2. Drivers for ISO 14001 certification among private and public organisations.
392

Drivers	Public	Private	Similarities and differences
1.Regulations and standards	All 5	PRIV1, 4, 5, 6	**Similar.** Local and international regulations and standards
2.Environmental performance and commitment to sustainability	PUB 1, 2, 4, 5	PRIV1, 2, 3, 6	**Similar with some differences.** Increasing environmental performance was reported by most PRIV and PUB. (Decreasing pollution, increasing recycling, reducing waste), **Different:** All PUB but only 2 PRIV specifically mentioned their commitment to sustainability.
3.Competitors	PUB 2	PRIV1, 3, 4, 6	**Similar with some differences.** This driver was stressed more by PRIV. Improving competiveness, reducing competitors' advantages.
4.Cost reduction	PUB 1, 4	PRIV1, 2, 3, 4, 5	**Similar with some differences**. **Similar.** Reducing costs of non – compliance was shared **Different**. PRIV also reported reducing costs of wasted resources.
5.Leadership and senior management's commitment	PUB 2	PRIV 1,3, 5	**Similar.**
6. Community. 6a.Customers' demands	PUB 4	PRIV 3, 6	**Similar.**
6b.Local community's pressures		PRIV 2, 5, 6	**Different**. This driver was only mentioned by PRIV.
6c.Employees' pressures		PRIV 2	**Different.** This driver was only mentioned by PRIV.

393

394
395 **Challenges to ISO 14001 certification**
396
397   We found five categories of challenges related to ISO 14001 certification, that were
398 broadly shared among PRIV and PUB (table3).
399
400   1. *Human resources challenges* were the most frequently mentioned challenges, and both
401 PRIV and PUB faced similar difficulties. The first challenge was a crucial lack of internal human
402 resources competencies in EMS, both in qualitative and quantitative terms. Respondents cited a
403 lack of education, knowledge, skills, experience and training related to EMS, and a "painful lack
404 of specialised staff". The second challenge was the lack of awareness among employees, in
405 general, and among the employees involved with implementing the EMS, in particular. The third
406 challenge was a general lack of commitment demonstrated by the employees involved in the

certification process. It is important to note that the largest organizations we surveyed did not mention a human resource challenge, and these organizations felt that they had acquired and developed well-educated and well trained specialists in EMS.

> *"Lack of manpower in resolving environmental management and sustainability related issues"*(PRIV5).
> *"Lack of know-how of existing environmental manpower on project sites"* (PRIV4)
> *"Aligning commitment of all lower people to focus on corrective actions is a major challenge, and implementation at a large industrial scale requires training and awareness"* (PUB4)
> *"For many people, they don't act as an everyday practice, only during audits because of a lack of awareness and understanding of the process"* (PUB3)

A lack of knowledge amongst employees was the biggest obstacle to establishing a green supply chain approach in Rettab and Ben Brik (2008)'s study of Dubai firms. Our results highlight the importance of raising awareness of EM issues, and of enhancing education and training in EMS for successful implementation of ISO 14001.

2. *Practical challenges.* Both PRIV and PUB mentioned practical implementation challenges and difficulties related to each step in the certification process: design, implementation, identification of key performance indicators, monitoring, collection of accurate data, correction of inefficiencies and reporting. Maintaining certification was problematic as well. Some respondents commented that the lack of internal competence and experience in EMS contributed to a very complex and difficult certification process.

> *"We went through many implementation mistakes including: 'incorrect root cause analysis, a quick fix approach, poor follow up, actions not effective, no corrective action …because of lack of internal competence and self-discipline"* (PUB2)
> *"Finding appropriate instrumentation and maintenance of the EMS is challenging us"* (PUB5)

We found that senior management was not a key driver for ISO 14001 certification in most companies, and that employees frequently lacked knowledge, experience and environmental awareness, so it is not surprising that many companies encountered serious practical challenges with the certification process. The smallest firm in our sample mentioned a lack of help and guidance for EMS implementation in smaller businesses. Hillary (2004) also noted a lack of quality guidance and information, especially for the environmental aspect assessment phase of ISO14001 certification. Hillary (2004) found that small and medium-sized enterprises are ill-informed about EMS and could benefit from guidance that was specially tailored to smaller companies.

> *"The government organizes some information platforms, but they are not conducive for small and medium organizations"* (PRIV5)

It is important to note that even with the assurance of total anonymity, all of the organizations we interviewed were reluctant to discuss or communicate any detailed information

452 related to the nature of the practical challenges they faced. Companies may be reluctant to disclose
453 potentially "incriminating evidence" to environmental auditors (White et al. 2014), and they would
454 certainly be reluctant to give this type of information to external researchers.
455
456   3.*Regulatory challenges* were another important barrier to both PRIV and PUB, but
457 especially PRIV. Both PRIV and PUB complained about 1) the lack of government regulations,
458 2) the lack of clarity in these regulations, and 3) the lack of monitoring, government enforcement
459 and "interaction" with the government.
460
461   *"Lack of clear framework from regulations or unified rule between Emirates, and poor*
462   *enforcement from regulatory authorities"* (PUB2)
463   *"Absence of specific legal requirements"* (PRIV3)
464   *"Gaps or overlaps in requirements as a result of different regulators enforcing*
465   *environmental management and sustainability in our Emirate"* (PRIV5)
466   *"No cost implications in the case of non-compliance"* (PRIV4)
467
468   Our results are similar to the findings of other studies. Government officials often prioritize
469 economic growth over environmental protection in developing economies, so environmental
470 regulations and their enforcement may be a low priority (Ben Brik et al. 2013). Formal regulations
471 are often absent or inadequate in emerging countries, and even when regulations are present, they
472 are not very stringent, and compliance is often not monitored (Mellahi 2007). The capacity of the
473 state to monitor corporate behavior and enforce regulations is critical for the success of any
474 environmental regulations (Campbell 2007). Lo et al. (2006) cite inadequate enforcement capacity
475 as the key reason for firms' non-compliance with environmental regulations in emerging and
476 developing countries.
477
478   4. *Managerial challenges* were important for both PRIV and PUB, but slightly more
479 important for private companies. We found two different managerial challenges. The first one
480 relates to the *lack of support and cooperation* from managers and employees involved in the EMS
481 implementation, which can hinder successful implementation (Hillary 2004). Sometimes the top
482 leadership initiated the process and wanted certification, but lower-level managers did not
483 cooperate, or even resisted. Other studies have found that employees' resistance to organizational
484 change and their perception that the transformation is unnecessary can be important barriers to
485 ISO 14001 certification (Zutshi et al. 2008; Cassells et al. 2012).
486
487   *"Poor support from key stakeholders"* (PUB2)
488   *"Lack of commitment of the managers and employees involved in certification process"*
489   (PRIV2)
490   *"Lack of dedication, ownership and support of managers"* (PRIV3)
491
492 The second managerial challenge related to *inefficient change management processes*.
493 Respondents commented that ISO 14001 certification is a major, challenging project that requires
494 effective change management and communication processes. Cassels et al. (2012) also found that
495 efficient organizational change management is essential for EMS adoption and implementation.
496

497   5. *High cost of the process* was an important challenge for PRIV. Our respondents
498 mentioned the lack of time and the costly economic burden that ISO 14001 certification placed
499 upon them. This includes the time and cost of preparing documentation, training employees and
500 dealing with internal and external auditors. The two smallest private organizations questioned
501 whether certification was beneficial to them based, in part, on these high implementation costs.
502 Only two public organizations mentioned the cost challenge. Zutshi and Sohal (2004) found that
503 high costs were the most important barriers to ISO 14001 certification, and while high costs were
504 important to some of the companies we surveyed, the most important barriers that we identified
505 were not cost related.

506

507   *"Too many growth projects, the resources are spread thin and less priority is given to EM*
508   *issues"* (PUB2)
509   *"High capital costs without any incentives. There is no weightage or advantage in*
510   *competitive evaluation process"* (PRIV5)
511   *"Very high cost of making EM systems work and to follow our consultants. ..bringing in*
512   *special environmental specialists or consultants costs us too much"* (PRIV6)

513

514   6. *Context (UAE) specific challenges.* A few public organizations mentioned challenges
515 that were industry- and UAE-specific, including the extreme heat and humidity. Another public
516 organization also mentioned its multi-cultural workforce as a challenge to effective
517 communication, which is typical of all UAE companies (Waxin and Bateman 2016 a, b).

518

519 *"Limitations of technology, working better in lower temperatures"* (PUB4)
520 *"Humidity is high, leading to more toxic emissions"* (PUB5)
521 *"So many different nationalities among our employees makes it difficult to communicate*
522 *efficiently"* (PUB3)

523
524

525 Table 3. Challenges to ISO 14001 certification among private and public organisations.

526

Challenges	Public	Private	Similarities and differences
1.Human resources	PUB 2,3,4,5	PRIV 2,3,4,5, 6	**Similar.** Lack of employees' competence, education, skills, experience, but also awareness and commitment
2.Practical Implementation	PUB 1,2,3,4,5	PRIV 3,4, 5, 6	**Similar.** Complexity of the process, practical challenges
3.Regulation	PUB 2,4	PRIV 3,4,5,6	**Similar, but stressed more by PRIV.** Lack of government regulations, clarity, monitoring and enforcement. Lack of interactions with the government. Lack of help for private SME.
4.Managerial	PUB 2,3,5	PRIV 2,3,4,5	**Similar.** Lack of management support, lack of efficient change management processes

5.High cost	PUB 2, 3	PRIV 3,4,5	**Similar.** High cost, lack of budget and time, low perceived return on investment
6.UAE Specific	PUB 3,4,5		Industry and UAE related environmental challenges. Heat, humidity, multicultural workforce.

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CONTRIBUTIONS AND IMPLICATIONS

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We used an exploratory, qualitative, interview-based approach to examine the drivers and challenges related to ISO 14001 certification, in both PRIV and PUB in the under-studied context of a small, Arab emerging country. To our knowledge, this research is the first one on drivers and challenges to SMS certification conducted in the GCC region, and as such contributes to expanding the scope of understanding of the EMS processes at a global level, and in a non-western context. This paper also contributes to a growing body of work concerned with explaining the uneven diffusion of ISO 14001 at the global level. Finally, this paper also humbly addressed the lack of research on EMS in public organizations.

We found six categories of internal and external drivers for EMS certification in UAE PRIV and PUB. These were broadly shared among PRIV and PUB, but with some different emphasis. Compliance with regulations and standards and increasing environmental performance were the main drivers for both PRIV and PUB. Commitment to sustainability was an important driver for PUB whereas cost reduction and competitors' behavior were more important drivers for PRIV. Leadership commitment and customers' demands were weak but shared drivers among PRIB and PUB. Finally, local community and employees' pressures were the weakest drivers, only reported by a few PRIV. These drivers have been identified in the literature before, but some important drivers in developed countries were not as important, or minor in our research, such as leadership commitment and the local community.

We found mostly common challenges to certification among PRIV and PUB. In our sample, most of the challenges are internal challenges. Human resource-related challenges were very important for both PRIV and PUB. Both types of organizations had difficulties with employees' lack of competency, low awareness and poor commitment to the process. Practical challenges related to ISO 14001 certification, the lack of government regulations and monitoring, the lack of support from management and inefficient change management processes, were also important and common challenges faced by most organizations. The costs-related challenge was common but more stressed by some PRIV. Some of these challenges, like the acute lack of internal competencies, the practical implementation challenges and the lack of governmental regulations and monitoring may be more important to emerging countries. Cost of implementation was identified as an important challenge in several previous studies, but it was not that important in ours.

Our findings have implications for managers, academics, consultants and policy makers in EMS. To policymakers, we recommend a holistic approach in designing, communicating, implementing and monitoring regulations and policies that effectively promote environmental protection in both PRIV and PUB. Policymakers should put more emphasis on raising awareness of EM issues and the benefits of adopting certified EMSs. They should also provide initiatives to help organizations better develop the capabilities to become certified. This is especially important for small firms that often lack financial resources and innovative

technologies, and must rely on government-supported assistance to enable them to implement EMSs.

The implementation of EMS programs in organizations requires expertise, support, effective change management and communication processes. Environmental managers should formulate a strong environmental policy with clear objectives, and get the commitment of leadership, top and middle management and of employees involved in the process. Clear communication about the benefits and the process to all employees involved should facilitate certification and maintenance of the EMS.

Our results highlight a crucial need to improve education and training in EM issues in the UAE, and emerging or developing countries in general. There are insufficient UAE educational programs in EM, as very few universities in this region offer EM courses environmentally-related degrees at the BSc, MSc or PhD level (Van Lavieren et al. 2011). Although a review of the programs accredited by the UAE Commission for Academic Accreditation (UAE CAA, 2013) in higher education showed an increase in environmental and sustainability related classes, which supports the UAE Vision 2021, only one MSc in environmental management was accredited prior to 2013. It is important for the emerging countries to improve environmental education to achieve better EM, and both universities and private consultants that offer professional training in this field could play a role in this improvement. Those individuals who have the opportunity to study EM at the university level, and who have the motivation and capacities to become professional leaders "change champions" have unprecedented opportunities to actively contribute to EMS implementation and certification at the organizational level, and to protect the environment in the UAE and other emerging countries.

Limitations and future avenues of research

Our study has some limitations that we need to acknowledge. First, this research adopted an exploratory, qualitative, interview-based approach, focused on a single Arab emerging economy, and on a small sample of ISO 14001 certified organizations. Our sample organizations reflect a sub-set of UAE organizations with well-established EMS programs, and public organizations in our sample were state-owned organizations run like private businesses. Moreover, our study only focused on drivers and challenges. Another limitation of our study is the lack of scholarly literature dealing with EMSs in Arab and emerging countries, resulting in lack of context in the discussion section of our paper.

Future research could examine key objectives, benefits, key success factors and the outcomes of EMS certification, in the UAE and in other emerging countries, using quantitative approaches. Future research could also further examine the similarities and differences between private and public sector EM and EMS practices, and study EMS in public service organizations. Finally, future research could focus on how newly-developed sustainability and environmental protection measures and education strategies in the GCC have influenced companies' EMSs and their ability to improve environmental performance.

ETHICAL APPROVAL

All procedures performed in studies involving human participants were in accordance with the ethical standards of the Internal Review Board of the American University of Sharjah and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

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