Exploring the Environmental Management Systems Practices within a Selected group of Small and Medium Enterprises in Dubai.

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ABSTRACT

Small and Medium-scale enterprises (SMEs) are crucial to Dubai's economy and contribute to around 45% of its GDP. These enterprises account for 51% of the workforce and are classified into micro, small, and medium-sized enterprises. However, SMEs may have negative environmental impacts, as they are responsible for around 60% of carbon dioxide emissions and 70% of pollution. There is limited empirical research on how SMEs use environmental management systems (EMS) and the challenges they face in different economies. The literature lacks studies outlining the implementation strategies of EMS in SMEs in places of significant importance such as Dubai, the UAE, and the rest of the GCC region. This study aims to assess the prevailing status of EMS adoption among some selected SMEs in Dubai, differentiating between those with and without formal EMS implementation while identifying a multitude of obstacles associated with their integration. A cross-sectional quantitative study has been conducted on a sample of SMEs through a survey that was designed to differentiate between the first group of SMEs with an environmental management system and SMEs that have not formally implemented an environmental management system. The study showed that although some SMEs were successful in EMS implementation, there were noticeable discrepancies among those SMEs in relation to handling the implementation of different aspects of EMS. On the other hand, for those SMEs that did not perform the EMS the study found that the smaller and the younger the company the more tendency to ignore the implementation of the SMEs. These categories of SMEs

need more governmental support which can be in the form of increasing the accessibility to knowledge in relation to EMS, proper regulations without creating a financial overburden to those SMEs.

Keywords: Environmental management system, Dubai SMEs, ISO 14001.

Introduction

Small and Medium -scale enterprises (SMEs) are a very important business segment in Dubai and are considered as the backbone of Dubai's economy (Dubai SME, 2019). The SME sector accounts for 51% of the workforce and contributes to around 45% of Dubai's GDP. In Dubai, the categorization of SMEs is regulated by the Dubai SME Organization. Depending on the number of employees, SME organizations can be further classified into micro, small, and medium scall enterprises. Despite the importance of the SMEs in creating new job opportunities and their significant contribution to the economic growth of the emirate, these SMEs may have a negative environmental impact. This negative impact may be overlooked or underestimated under the false assumption that SMEs are small enough to have an adverse environmental impact. Earlier studies showed that SMEs may be responsible for around 60% of all carbon dioxide emissions and 70% of all pollution(Parker et al., 2009) . Globally, there is a little empirical research on how SMEs use the environmental management system (EMS), and there are also limited studies conducted to investigate the drivers that may contribute to the implementation of EMS in SMEs and the challenges that SMES may face in different economies to initiate the EMS within their enterprises(Johnstone, 2020; Sharma & Kumar, 2022). EMS can be defined as an environmental management approach that outlines how establishments can lessen their environmental impact on their surrounding environment(Feng & Wang, 2016) .There is a substantial gap in the existing body of research that examines the implementation of the EMS in SMEs in Dubai, the UAE, and even in the GCC region. Presently, local studies conducted and published in the UAE and regionally on EMS are very few in number and restricted to EMS in certain relatively heavy industries, such as the aluminum industry (Sajwani & Nielsen, 2019), in public and private firms(Waxin et al., 2019), and in companies in the engineering and manufacturing industries in Saudi Arabia(Al-Darrab et al., 2013). Nevertheless, there are no studies conducted on EMS in SMEs locally or regionally.

This study aims to assess the prevailing status of EMS adoption among some selected SMEs in Dubai, differentiating between those with and without formal EMS implementation while identifying obstacles to integration.

Litrature review

There are countless significant theories that revolve around EMS as an integrated system applied to establishments. One theory is the theory of integrated environmental management (IEM), which proposes that convoluted environmental problems can be solved through determining the subsystems inside the key integrated EMS and troubleshooting using models derivative from databases and indices (Margerum & Born, 1995). For example, detecting a problem in the subsystem of Energy Management Systems, which can correspondingly fall underneath the EMS, will aid in settling the issue by using tools generated from existing knowledge databases. Furthermore, IEM suggests that implementors of an EMS must consider both human and environmental systems and take both systems into consideration. Another theory that is intently linked to and correlated with EMS is the strategic management theory (SMT), which states that an establishment's success is fully reliant on its stakeholders' management through satisfying their needs. This theory is typically connected with EMS in firms because the application of an EMS can boost the organization's affiliation with its stakeholders and let it gain benefits through enhanced reputation and image amongst its many stakeholders(González-Benito et al., 2011) . Also, another study claims that, in theory, an EMS is simply about delivering a framework that firms can use to apply the system itself. Yet, auditing is a standalone system that assists in accomplishing an effective EMS(Melnyk et al., 2003) . Additionally, there are other business and management theories that are closely associated with the implementation of an EMS in an organization. For example, business theory proposes that the effective implementation of any policy inside an organization depends on the degree to which the employees are up-to-date on these policies. Therefore, when it comes to applying an EMS in an organization that begins with an environmental policy, employees must be informed about this policy for them to get involved and thrive in its implementation. In addition, the theory of organizational actions (TOA) claims that all activities taken by an organization must match well-established organizational design, which is also necessary for the appropriate implementation of any policy or system, including an EMS(Rivera-Camino, 2001). The business theory is especially reinforced by research that was conducted by Bugdol, Goranczewski and Kadzeilawski which claims that correct communication

is essential to guarantee that employees are properly educated about the corporate environmental policy and objectives and a proper communication is required from the management to satisfy employees' awareness. Also, communication with employees on post-meeting outcomes is always suggested (Bugdol et al., 2021) .

Besides business and management theories that are thoroughly associated with implementing an EMS in an organization, social theories have also remained related and examined in research on EMS. According to the theory of place (TOP), humans are the greatest social living things on Earth that can interrelate with their environment. Therefore, humans can only discover the environment and what an EMS implies by interacting with and being a vital segment of the environment. Similarly, humans–and in the capacity of this study, employees of organizations–can relate to the environment if their employer corporations, where they work daily and spend long hours, have a well-known and employed EMS through which employees interact by realizing holistically what an EMS is and how it can be executed. An employee employed in an organization with an operational EMS who gets involved in the course of its execution and evaluation can acquire more and embrace eco-friendly practices, even on a personal level. Humans are social beings and can learn by doing things and getting involved in them(Dyball & Keen, 2012) . Also, the socio-ecological systems (SES) theory is a theory that analyzes the interrelationship of social and ecological systems in the environment. Consistent with existing research, this theory is reflected as an essential one because the proper understanding of this theory can support environmental managers in increasing their risk readiness. Since the SES theory implements a multi-disciplinary approach, environmental managers can follow this theory to tackle intricate environmental concerns that also incorporate social and ecological properties as well as encompass various stakeholders who can add value and further enrich the organization's risk management matrices(Virapongse et al., 2016) .

In business practices, the environmental responsibility is not limited to big firms or certain sectors. The difference between big firms and small firms is the level of details and sophistication of the EMS a larger firm requires. For medium and smaller firms, different environmental initiatives can be later reframed together into fully fledged EMS. A Latin American study on more than 1000 SMEs showed that implementation of some environmentally friendly practices and initiatives can be linked to the level of knowledge of the employees and the availability of legislation in the country(Vives, 2022) . One of the important factors that can impact the implementation of EMS in SMEs is the tangibility of the sectors. In other words, sectors with

more tangible impacts such as transportation, retail, hospitality, manufacturing, construction, and agriculture, tend to employ more environmental management practices compared to other sectors with less environmental impact, such as services and financial business enterprises. Implementation of EMS may be complicated and overwhelming for SMEs; accordingly, in some countries, EMS can be substituted with an environmental management program (EMP). The EMP is less complicated and does not require auditing, which makes it more practical for SMEs(Cordano et al., 2010)..

Implementing EMS has many benefits for the organization; these may include improving the organization's reputation among its stakeholders, which in turn can bring more customers to the organization, and preserving strong communication with their stakeholders, which eventually leads to gaining more competitive advantages against other competitors(Darnall et al., 2008). Although the application of EMS may incur some financial implications (RT White et al., 2014) for the company, the adoption of EMS can decrease the company's overheads and expenditures through reducing waste generation and other sustainable practices that can reduce the firm's environmental footprint. Implementation of EMS may not be easy, especially for SMEs as it requires proper harmonization of the environmental management system requirements with the organization's value chains as well as the need to balance and fulfill the needs of the relevant stakeholders in the organization (Schylander & Martinuzzi, 2007) . Managing EMS requires personnel who are properly trained to address the possible benefits of EMS with respect to other possible consequences for the organization as well as other financial implications.

EMS is not mentioned explicitly in different UAE environmental laws, yet it is still important to comply with Federal Law No. 24 of 1999 on the protection and development of the environment. Compliance with the law is different from being an environmentally responsible corporation; accordingly, the latest Cabinet Decision No. 2 of the year 2018 on Corporate Social Responsibility stresses the importance of environmental responsibility for corporations and considers environmental responsibility as part of the organization's CSR. Reporting on CSR is mandatory prior to the renewal of the trade license of enterprises regulated by Cabinet Decision No. 2, for the year 2018(UAE, 2018). Apparently, protecting the environment from emissions and other practices is regulated under Law 24, but the mandate to report on corporate social responsibility, including different environmental and sustainability practices, is regulated under CSR Cabinet Decision No. 2.

Conducting EMS requires organizations to identify their environmental aspects. The environmental aspect can be defined as any element of a corporation that can interact with the adjoining environment; this is applicable to any product, service, or operation within any given corporation. The environmental aspect can be positive or negative environmental impact (Ayers, 2010). It worth mentioning that proper identification of the environmental aspects within the organization is at the core of successful EMS within the organization. Furthermore, environmental aspects signify the foundation and perhaps the driver behind the adoption of an EMS in a corporation, specifically in the case of negative environmental aspects(Ociepa-Kubicka et al., 2021). Implementation of environmental management systems for small and medium-scale enterprises may be associated with some challenges, especially financial aspects. This may deter the SMEs from initiating the EMS unless it is mandated by laws or enhanced by stakeholders' pressure. In cases where it is difficult to implement the EMS, especially when it is not mandated by the law, SMEs can adopt voluntary environmental programs (VEPs). VEPs are tools that support corporations in operating environmental policies to conform with local and global environmental mandates. One of the advantages of VEPs is their cost effectiveness as well as their low resource demands, which makes them a more preferred option for SMEs(Shetty & Kumar, 2017). Furthermore, VEPs can be considered a foundation for the full EMS, which has led many governments around the world to offer incentives for organizations that adopt a proactive approach through applying the VEPs to improve their compliance with environmental regulations and commitments. Studies showed that VEPs can critically contribute to the reduction of various types of pollutants that are emitted as a result of organizations' operations (McGuire et al., 2018). In developing countries, firms tend to adopt VEPs in order to ensure smooth trade with responsible global businesses, mainly because responsible global firms prefer to conduct trading transactions with sustainable firms in developing countries within the limits of their sustainable procurement practices, which in turn can be a motivator for those firms to adopt the VEPs(Gamso, 2018).

The second essential component of successful EMS is environmental policy. The environmental policy of the corporation is a written statement that reflects the commitment of the corporation to the environmental responsibility of its activities and stipulates a qualitative method of measurement for those activities. In fact, studies show that there is a direct connection between environmental policy and a firm's environmental reputation(De Miguel De Blas, 2020). There are many frameworks and standards that can be adopted to ensure the implementation of

environmental management systems, such as ISO 1400 standards and the EU eco-management and audit scheme (EMAS). These tools can help organizations evaluate, report, and improve their environmental performance. One of the challenges that may face small and medium enterprises is the high cost and the needed expertise to apply for ISO 1400 and EMAS(Freimann & Walther, 2001).

There is a substantial gap in the existing body of research that examines the implementation of the EMS in SME's in Dubai, the UAE, and even in the GCC region. Presently, local studies conducted and published in the UAE and regionally on EMS are very few in number and restricted to EMS in certain relatively heavy industries, such as the aluminum industry (Sajwani & Nielsen, 2019), in public and private firms(Waxin et al., 2019) , and in companies in the engineering and manufacturing industries in Saudi Arabia(Al-Darrab et al., 2013). Nevertheless, there are no studies conducted on EMS in SME's locally or regionally. Accordingly, this study aims to shed some light on this important segment of businesses in Dubai. There are many theories tried to address the various aspects of environmental management and sustainability such as. Natural-Resource-Based View (NRBV)(McDougall et al., 2019), Stakeholder Theory(Colvin et al., 2020), and Institutional Theory (Grob & Benn, 2014)provide a comprehensive understanding of how the environmental management system can be implemented within different firm. The NRBV theory emphasizes the strategic importance of natural resources, highlighting the need for their efficient use and conservation, thereby aligning with the principles of EMS. Stakeholder Theory, on the other hand, underscores the significance of stakeholder engagement in environmental decision-making processes, a crucial aspect of EMS. Lastly, Institutional Theory helps understand the social influences that shape organizational environmental practices, which is vital in the context of EMS implementation. This aggregation of theories can be positively reflected on the success of the EMS implementation in larger firms. However, in the small and medium firms the implementation of the EMS may be challenged by some other barriers that may limit the applicability of these theories. SMEs tend to see the required documentation associated with EMS as an excessive burden to their business and consider it as a barrier for implementation. Also, SMEs may feel with economic pressure and may lack the formal well stablished organization structure in larger firms(Zorpas, 2010).

Methodology:

A cross-sectional quantitative study has been conducted on a sample of SMEs in the service sector in Dubai. The sample collection followed a non-probability convenience sampling technique where a group of SMEs was contacted, and the participants were selected based on their willingness to participate in the study. Participating SMEs have been requested to respond to an online survey. The survey tool was adopted based on previous studies in the literature (Ammenberg & Hjelm, 2003; Cassells et al., 2011; Cassells & Lewis, 2017; Duralia, 2015; Halila, 2007). The survey questions have been reviewed by a panel of experts in the field prior to distribution. All participating SMEs were informed of the details and objectives of the study, and they have been assured that sensitive information will be kept confidential. As shown in Figure 1, the survey was designed to differentiate between the first group of SMEs with an environmental management system and SMEs that have not formally implemented an environmental management system. For the second group (without a formal EMS), we developed a scoring system to identify the percentage completion of the EMS. A simple score of 20 was given for each component of EMS. For example, if the participating SME has one component of EMS, the score will be 20% completion. The main reason behind developing this innovative scoring system is to help the authors to have a better understanding of the status of EMS implementation among SMEs included in the study. Responses were collected from participating SMEs through the use of an online surveying method.

Result and discussion:

The survey link was shared through the email with a large number of SMEs, followed by one follow-up email. Only 44 participants from various sectors have accepted to participate in this study. The number of participants with EMS in the studied sample was 18 participants, corresponding to 41%. It is worth mentioning that the average and median ages of the companies with EMS were 29 years and 21 years, respectively, while for the companies without EMS, the average and median ages were 11 years and 7 years, respectively. These findings show a good

relationship between the age of the company and its level of environmental responsibility. As shown in Figure 2, there is a direct relationship between the age of the SMEs and the implementation of the EMS, where the SMEs that have not implemented an EMS are generally

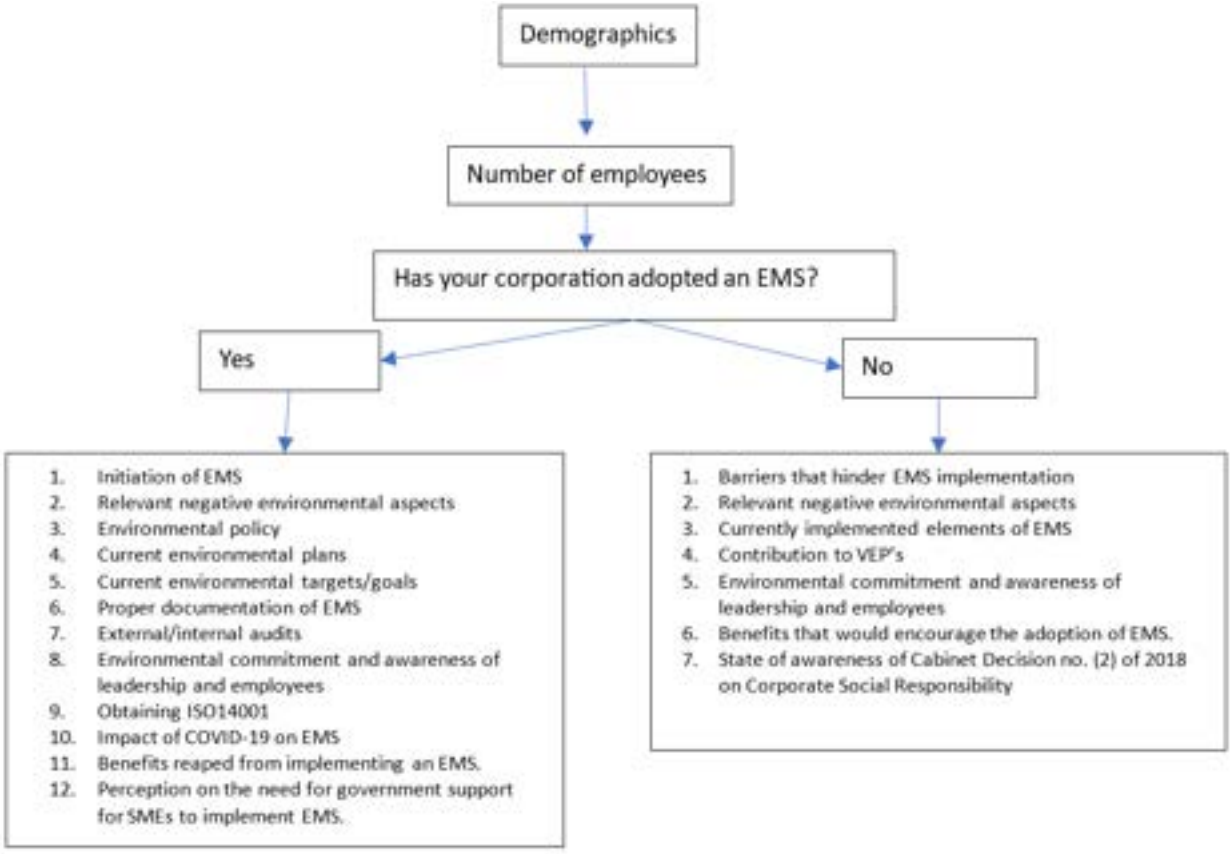

Figure 1: flow diagram of the survey tool

younger than those that have implemented an EMS. This could be due to various reasons, including the focus of the newly started company on profit, market expansion, and competition against rivals.

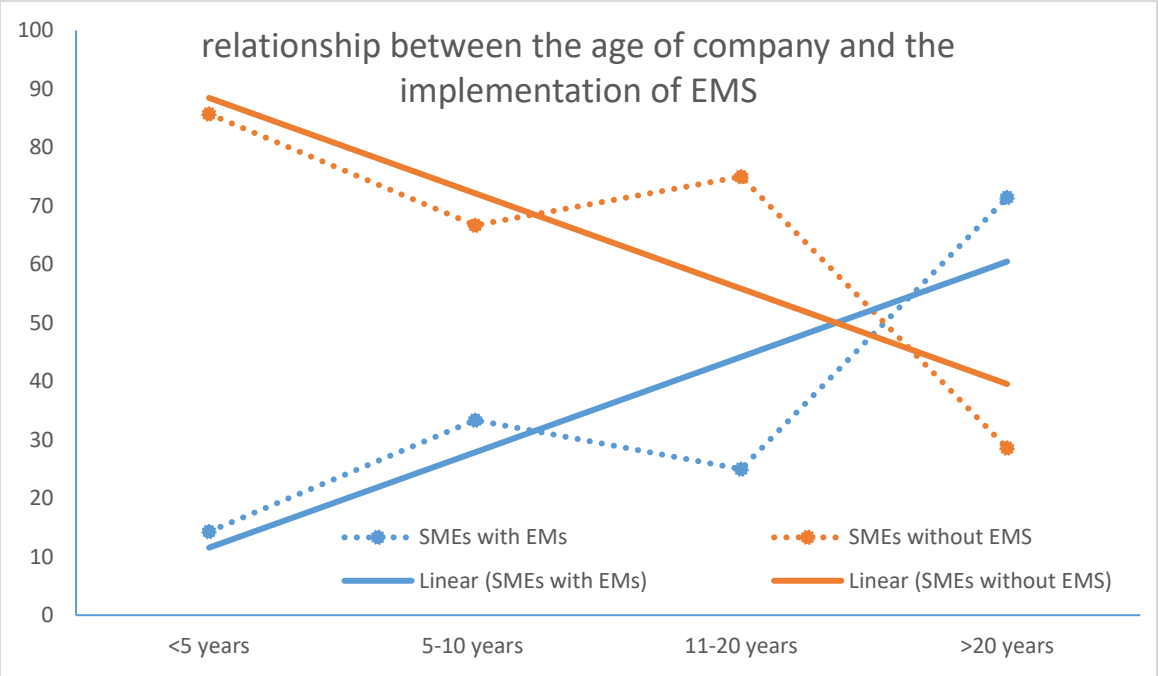

Figure 2: Relationship between the age of company and the implementation of EMS

These findings are consistent with previous studies (Iraldo et al., 2009; Petrová et al., 2021) showing that there is a positive link between the firm's age and its environmental performance and that younger firms are less likely to implement an EMS as compared to older ones. Also, the older the company, the better the environmental performance, as it reflects the amount of planning and resources invested to implement and continuously improve EMS. This has also been confirmed by other studies that linked the age of firms with the voluntary implementation of EMS(Petrová et al., 2021). As shown in Figure 1, the majority of SMEs in the studied sample that have not implemented an EMS are clustered in the age range of less than 10 years. SME's that have implemented an EMS are mostly in the age range of >20 years. These results have been further confirmed by the Chi-Square calculations, which revealed that there is a significant impact of the age of the SMEs on the possibility of EMS implementation ($X2(3, N = 44) = 8.64, p < .05$)) The results obtained showed that 52% of the SMEs in this study are owned by more than one partner, while the remaining 48% are single person owned. Table 2 shows the percentage relationship between the type of ownership and the implementation of EMS. It was found that the Chi-Square revealed that there is no significant impact of ownership type on the implementation of EMS ($X2(1, N = 44) = 0.7842, p < .05$).

Table 1: relationship between the type of the SMEs ownership and the implementation of EMS.

Ownership type	With EMS		Without EMS	
	No of SMEs	percentage	No of SMEs	percentage
Single-owned	10	47.5	11	52.5
Partner-owned	8	34.5	15	65.5

In this study, the implementation of the EMS was tested with respect to the size of the SMEs. Due to the small sample size, the SMEs were classified into small and medium sizes. Actually, the sample included more small enterprises, corresponding to 68% of the total sample. Further differentiation of the small (less than 50 employees) and medium-sized (from 100 to 50 employees) enterprises is shown in Table 2. It was found that a larger fraction of smaller enterprises did not implement EMS, however, medium-sized enterprises showed a higher percentage of EMS implementation. The Chi-Square calculations revealed that there is a significant relationship between the EMS implementation and the size of the enterprise ($X2(1, N = 44) = 4.64, p < .05$). The findings of this study are consistent with previous studies, where there was a positive relationship between the firm's size and the implementation of EMS. This can be explained as the larger the firm, the easier it is to accommodate the costs of the implementation of EMS. This is also because of the relationship between the firm's size and its keenness on exhibiting a better reputation and image. Larger companies are more willing to invest in EMS for them to gain a competitive advantage against rivals that are environmentally responsible companies(Petrová et al., 2021) .

Implementing the EMS may be postponed or ignored due to the many challenges and barriers that may face SMEs. This study tried to explore such barriers. As shown in Figure 3, the reasons hindering SMEs from conducting EMS can be categorized as: EMS is not currently a priority; the second reason is limited financial resources; and the last reason is a lack of expertise to conduct EMS. SMEs that have selected the EMS as long-term goals may be doing so because of limited resources or because their current priority is to focus on profit and business thriving. The second reason may be due to a lack of awareness of the importance of environmental responsibility. It is

Table 2: relationship between SMEs size and the implementation of EMS.

SME size	With EMS		Without EMS	
	No of SMEs	percentage	No of SMEs	percentage
Small	9	47.5	21	52.5
Medium	9	34.5	5	65.5

important to note that the findings of this study agree with previous research. Previous studies in the Gulf region showed that companies are usually limited by the level of competencies, awareness, and EMS expertise of their employees. This can signify the role of the leadership in the company in encouraging or discouraging the implementation of EMS(Waxin et al., 2019). Another study conducted in Norway also supports our findings that suggest that the availability of resources and capabilities within the firm motivates the firm to adopt an EMS. These resources include the availability of allocated budgets, a designated staff in charge of the firm's environmental responsibility, and the management's commitment towards the implementation of EMS(Monkerud & Ytterhus, 2013; Zutshi & Sohal, 2004).

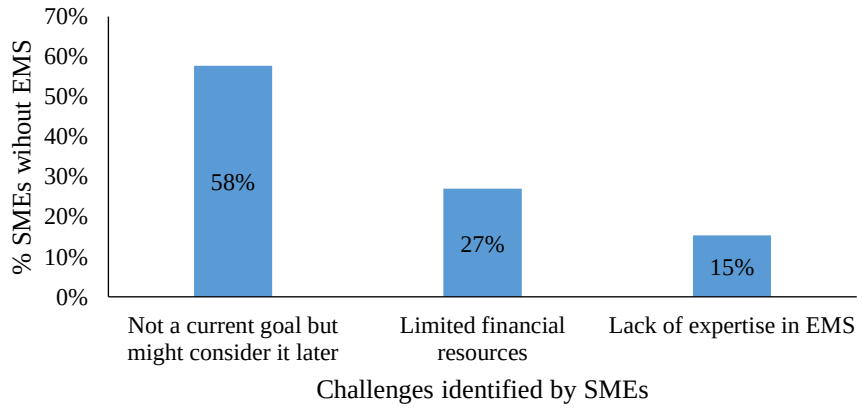

Figure 3: Barriers and Challenges that Hinder the Implementation of EMS (n=15)

All SMEs have been requested to select their possible negative environmental aspects, such as high waste generation, increased energy and water consumption, eco-designed products, and their carbon emissions. As shown in figure 4, the responses received from SMEs with EMS mentioned that their top two negative environmental aspects were waste generation and increased energy and water consumption. On the other hand, for SMEs without EMS, they prioritize their negative environmental aspects, such as increased energy and water consumption and carbon emissions. This discrepancy in ordering the environmental aspects indicates that perceiving the negative environmental impact may vary between the SMEs conducting the EMS and those without EMS. Also, about 8% of SMEs without an environmental management system consider that their firms do not have any negative environmental impact. Since these SME's have not implemented an EMS, they have not conducted systematic measurements of these negative environmental aspects but rather arbitrarily mentioned them based on estimates and limited knowledge.

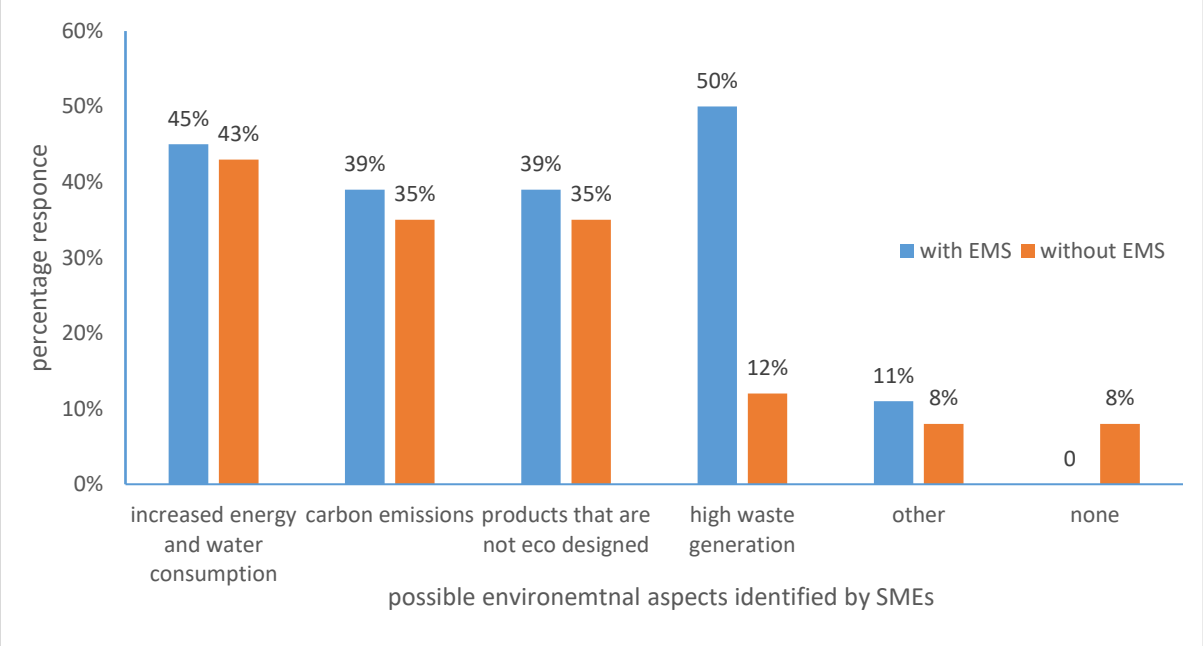

Figure4: Percentage responses of SMEs towards identification of their negative environmental aspects.

The participating SMEs without EMS were asked about the drivers that could possibly encourage them to implement EMS. 50 % of the participants mentioned that they may consider the implementation of EMS if there are governmental requirements for the implementation of the EMS and there is proper support, 35% of responses answered that they may consider EMS for improved compliance with environmental regulations, 8% chose the reason to meet higher

customer expectations; and only 4% selected the better image and reputation of the company. These responses show weak pressure from society and customers on SMEs to adopt EMS. Customer awareness and societal pressure on SMEs can be good drivers for the implementation of EMS (Zutshi & Sohal, 2004). Studies have shown that due to the limited awareness of SMEs on their environmental impact, many SME owners are not willing to enroll in environmental trainings or consider the implementation of EMS unless pressured by external parties, such as consumers, associations, and the government(Cassells & Lewis, 2017; Gadenne et al., 2009). The findings of this study are very important for policymakers and regulators, as almost 85% of SMEs without EMS see that governmental support and compliance with EMS may be the main drivers for the implementation of EMS in their firms. The SMEs group without full EMS has been further asked about some components of EMS to make sure whether they do not have any environmental initiatives or if they have some partial implementation of EMS. The survey asked them if they have one or more of the following parameters: (1) environmental measures at work, (2) annual environmental targets, (3) an annual environmental plan, (4) an environmental audit, and (5) regular revision of environmental goals and targets. The authors used a simple scoring system where each component was given a score of 20, for a total score of 100. Table 3 shows the outcome of the responses received from SMEs without EMS. It was found that 35% did not have any environmental initiatives, and the majority of SMEs scored 20, corresponding to only one component of EMS. Only a small percentage of SMEs had more than one component of the EMS. These findings indicate that with proper awareness, guidance, and support, Dubai-based SMES can improve their environmental responsibility. Considering the lack of expertise and knowledge about EMS, the authors suggest creating an internet-based support tool for SMEs. This tool can serve as a one-stop shop for all SMEs interested in improving their environmental responsibility and reducing their possible negative environmental impact.

Table 3: score of environmental management components for the SMEs without EMS:

Score for Element of EMS	**Percentage**
0	35%
20	42%
40	15%
60	8%

The proposed tool can be implemented through a web-based platform that can be developed to provide smart consulting and advisory services to SME's aiming to develop elements of their currently implemented EMS at affordable costs. The platform can serve as a knowledge base for SME's to find the needed information and to allocate certified environmental consultants and preprepared EMS templates for self-assessments. The tool can integrate the use of artificial intelligence (AI) to provide SMEs with missing components and gaps in their EMS. This web-based platform can provide a simple educational program tailored for SMEs on how to conduct their EMS, supported by a smart chatbot to respond to their inquiries. Figure 5 demonstrates a simplified flow diagram for the suggested web-based digital platform to help SMEs implement EMS and reduce their environmental impact. The platform will allow the SMEs to register and provide all needed information, as well as conduct a quick self-assessment of their environmental performance. The self-assessment process may suggest further action for the SMEs through accessing other supporting tools such as short training courses, asking questions to an AI-supported chatbot, and accessing a knowledge database. The tool can also allow expert and consultant registration to provide support to SMEs when needed. Once the applicants fulfill the requirements for the EMS, they can apply for the certification. This simplified tool can help different SMEs build their capacities, reduce their environmental impacts, and become more responsible at minimal cost. Earlier studies have shown that such platforms can integrate information on EMS and help organizations transform and utilize this information(Moore, 2003). Therefore, the proposed EMS digital platform can play an important role in supporting companies in implementing and advancing their EMS.

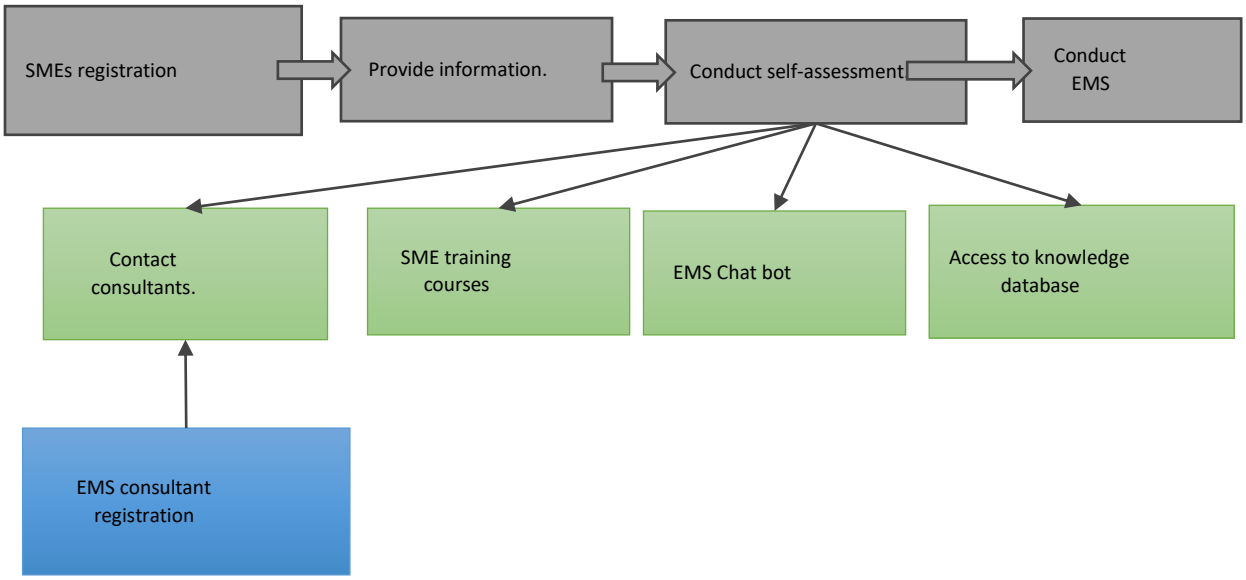

Figure5: Suggested flow diagram for EMS web-based tool for SMEs In Dubai

This study tried to identify some of the EMS practices within SMEs, such as (1) which EMS model has been adopted, (2) frequency of reviewing goals and targets, (3) level of EMS documentation, and (4) frequency of auditing. As shown in Table 5, the study revealed that there are significant discrepancies among SMEs in terms of the above-mentioned parameters. Most of the respondents used ISO 14001 as a framework. This may be due to the credibility and better understanding of ISO 14001 as the most widely used model for implementing EMS. The study revealed that participating SMEs conduct revisions for their environmental targets and goals; however, the revision of these goals does not follow a certain standard duration, where some firms conduct revisions when needed and some firms conduct revisions on a quarterly, semi-annually, or annual basis. Similarly, participating firms showed discrepancies in terms of the frequency of audits. All firms have self-reported that they have a corporate environmental policy. Existing research shows that the availability of an environmental policy is linked to a business's environmental reputation(De Miguel De Blas, 2020). Also, the availability of an environmental policy helps employees who have weak environmental beliefs to become more environmentally active(Raineri & Paillé, 2016) . One of the important outcomes of the EMS is proper documentation. Some participating firms responded that they do not have proper mechanisms for proper

documentation, which resulted in incomplete documentation. These discrepancies in the basic EMS practices among SMEs show that there is a persistent need for governmental intervention through enacting proper regulations and guidelines for the implementation of the EMS. These guidelines and procedures should focus on helping SMEs learn how to conduct a simple EMS that can result in a reduction of their environmental impact.

Table 4: percentage responses of different EMS practices within SMEs

EMS practice	Percentage responses
Adopted EMS Model	67% following ISO 144000 series 28% following PDCA model 28% following the government's strategies and vision initiation of EMS 22% following Rogers' model of innovation decision process 11% other EMS practices
Availability of EMS policy	All participating SMEs have an environmental policy.
Environmental Targets goal revisions	38% whenever needed 23% Quarterly 23% Semi-Annually 15% Annually
EMS documentation	56% fully documents 28% partially documented 17% limited documentation.
EMS Audit Frequency	64% Annually 21% Semi Annually 14% Quarterly

Conclusion:

This study showed that there is a knowledge deficiency among SMEs on the importance and implementation of EMS. In some cases, this has led to the implementation of incomplete EMS voluntarily as a voluntary environmental program. The limited knowledge about EMS has impacted SMEs practices on the implementation of the EMS. Improper implementation can result

in an incomplete environmental management system or inefficient EMS. Based on the findings of this study, there is a limited implementation of the EMS. Even those who implemented EMS, did not follow a unified standard procedure. Developing different governmental approaches in terms of enhancing the awareness of EMS and facilitating the knowledge about the implementation process as well as standardizing the environmental reporting can significantly help the SMEs sector in Dubai to reduce its environmental impact. Special this segment of the business sector constitutes about 51% of Dubai's workforce. The authors believe providing proper care and guidance to those SMEs supported by clear polices, regulation and enforcement can result in significant improvement in the environmental performance among this important sector. Considering the fragile structure of SMEs specially the new enterprises, and inclusion of those stake holders in crafting environmental management policies can lead to better implementation of these policies in future.

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