The Impact of institutional and Contingent Factors on Adopting Environmental Management Accounting Systems: The Case of Manufacturing Companies in Libya

Abstract

Purpose

Environmental management accounting (EMA) has received increasing interests since 2000 and is now regarded as an effective tool to deal with environmental issues and economic performance of companies and countries. This study examines impacts of institutional pressures on the adoption of EMA by manufacturing companies operating in Libya. The study examines how such adoption is impacted by four contingent factors, namely: company size, company age, Environmental Management System (EMS) adoption and business type.

Design/methodology/approach

Data was collected from a sample of medium and large-sized manufacturing companies operating in Libya by means of a questionnaire survey. Institutional pressure and contingency factors were tested against the level of EMA adoption via multiple regression analysis and moderator multiple regression.

Findings

The results indicate that the relationship between coercive pressures and EMA adoption varies as a function of company size. This result indicates that when companies face pressures, the way they respond depends on specific circumstances and characteristics of the company such as company size.

Originality/value

The key contribution of this study to the body of the knowledge comes from being able to combine contingency and new institutional sociology (NIS) perspective of the Institutional Theory to create a complementary perspective. This was achieved by examining the moderating effect of the four contingent variables on the relationship between institutional pillars and EMA adoption in manufacturing companies in Libya.

Keywords

Environmental Management Accounting, Contingency Theory, New Institutional Sociology, Libya, Management Accounting

1. Introduction

The worldwide growth in environmental awareness is leading stakeholders to recognize that the dominant model of industrialization, economic growth, and development is exceeding the natural biological limits of what the planet can bear (Blewitt, 2015). In order to be truly sustainable it is crucial to ensure that future generations are left no worse off than present generations (Barbier and Burgess, 2015). Due to the growth of interest in environmental protection, demands for environmental data about companies' practices have increased. This has resulted in a growing need for accounting to play a role in enabling organizations to assess their environmental impact and performance on the one hand and to disclose the required environmental related data on the other hand (Jalaludin et al., 2011; Abdo and Aldrugi, 2012). Such needs have laid the groundwork for the emergence of environmental management accounting. Environmental management accounting is an inclusive field of accounting, but also represents a broader term that relates to the provision of relevant information, related to firm-

level environmental performance, to internal and external stakeholders (Ferreira et al., 2010; Ismail et al., 2014).

In contrast to research in the context of environmental disclosure, studies have pointed to a gap that exists in the accounting literature in terms of theoretical research focusing on the application of environmental accounting as a tool for internal decision-making (Joshi, 2001; Chanegrih, 2008; Abdel-Maksoud et al., 2010; Jalaludin et al., 2011; Derchi et al., 2013; Ismail et al., 2014; Jamil et al., 2015; Mokhtar et al., 2016; and Wang et al. 2018; Zandi and Lee, 2019; Siskawati et al., 2019; Iredele et al., 2019; Ferdous et al., 2019). More recently, research based on theoretical interpretations about the key factors that drive companies to adopt EMA practices have emerged. Notable among these studies are; Frost and Wilmshurst (2000); Qian and Burritt (2009) & (2011); Jalaludin et al. (2011); Christ and Burritt (2013); Jamil et al. (2015); Qian et al., (2015) Mokhtar et al. (2016); Wang et al. (2018); Zandi and Lee (2019); Siskawati et al. (2019); Iredele et al. (2019); Ferdous et al. (2019). Reviewing these studies reveals that the contingency theory and new institutional sociology (NIS) perspective of the institutional theory have traditionally dominated EMA literature. Studies that employed institutional theory to explore why companies are willing to adopt environmental management accounting practices assumes that the three institutional mechanisms - coercive pressures, mimetic pressures and normative pressures – do influence the adoption of EMA practices (Hussain and Gunasekaran, 2002; Hussain and Hoque, 2002; Arnaboldi and Lapsley, 2003; Qian and Burritt, 2011; Jalaludin et al., 2011; Jamil et al., 2015; Qian et al., 2015; Wang et al., 2018; Zandi and Lee, 2019; Siskawati et al., 2019; Iredele et al., 2019; Ferdous et al., 2019). However, none of these studies offers a conclusive evidence as to whether institutional pillars influence the level of EMA adoption; instead, they show contrasting results.

Whilst a number of researchers found positive and significant effects of institutional pressures on EMA adoption (e.g. Jalaludin et al., 2011), others indicated that the effects were insignificant (e.g. Jamil et al., 2015) or even negative (e.g. Qian et al., 2015; and Wang et al., 2018). A likely explanation of this contradiction was offered by Qian et al. (2011) who suggested that while organisations may face environmentally induced institutional pressure to address environmental issues, the manner in which they respond is likely to be shaped by the specific circumstances faced by, and characteristics of, each individual organisation. Therefore, investigating the moderating effects of other contingent factors (e.g. company size, company age, EMS[1] adoption and business type) may help to explain the conflict among previous studies that employed institutional theory.

The industrial sector is a substantial economic resource for Libya, yet it is also considered to be the most polluting sector (Nassar et al., 2017). Given this, it is imperative that industries pay particular attention to environmental issues. Given that Libya's economy is now in a period of transition, companies are moving from a planned economy, where institutional environments may have more influence, to a free market economy, where strategic priorities may be more appropriate in explaining EMA adoption. Furthermore, being a top-down management society, national decisions are mainly influenced by political power that lacks complete democratic

[1] According to the British Standard Institution (1994), an environmental management system (EMS) is "the organizational structure, responsibility, practices, procedures, processes and resources for determining and implementing environmental policies" (cited in Gray and Bebbington, 2001, p. 87).

functioning; therefore, institutional pressure could be motivated by political, rather than social and economics, drivers. Such setting offers a suitable base for a typical developing country, that is rich of oil and gas resources, to study the impact of institutional pressure on adopting the emerging concept of EMA. As far as the authors are aware, there is currently no single study conducted in the context of Libya that focuses on adopting EMA in the industrial sector in particular. Accordingly, this study aims to examine the moderating effect of four contingent factors that are referred to by the literature (company size, company age, EMS adoption and business type) on the relationship between institutional pressures from one side and EMA adoption and practices from the other. In order to explore the combined effects of institutional pressures and contingent factors on EMA adoption this study develops a conceptual model that aims to examine the moderating effect of contingent factors on the relationship between NIS factors and the level of EMA adoption.

In order to address the research aims, two research questions are raised: first "What is the role of institutional pillars in the adoption of EMA by manufacturing companies operating in Libya?" and second "What is the effect of contingent factors on the relationship between institutional pillars and EMA adoption by manufacturing companies operating in Libya?"

The need for this research is justified by its contributions to the literature and practice in four ways. First, the research offers important contribution beyond what is already known in the practice of EMA in the Libyan context, more specifically in relation to the factors that influence the adoption and implementation process of EMA. Secondly, it also portrays the role of institutional theory in EMA research. More importantly the study was able to combine contingency and NIS theory to create a complementary perspective to explain the relationship between the variables in question. Thirdly, as contribution to practice, the study highlights that while organisations may face institutional pressure to address environmental issues, the manner in which they respond to such pressure is likely to be shaped by their size. In essence, it revealed the importance of firm's size in addressing institutional pressure. Lastly, the study highlights to the relevant policymakers and business societies the need to activate competition among manufacturing companies that operate in Libya, which would likely enhance environmental and sustainable practices by these businesses.

The rest of this manuscript is organised as follows. The next section reviews the relevant literature and discusses the development of the study hypotheses, followed by discussion of the research method in Section 3. Subsequently, the results are presented in Section 4, section 5 offers a discussion of the results and section 6 concludes the study.

2. Literature Review

2.1 Environmental Management Accounting in Context

EMA was developed in order to help managers make decisions that aid and improve corporate environmental performance (Christ and Burritt, 2013).[1] EMA is a technique that generates, analyses, and uses both financial and non-financial information to improve the environmental and economic performance of a company, thereby contributing towards a sustainable business (Ferreira et al., 2010). EMA is an increasingly important phenomenon used by companies to

[1] Alternative, but consistent, terminologies to EMA are Eco-Management Accounting (ECOMA), Green Management Accounting and Environment-related Management Accounting.

achieve a variety of benefits. IFAC (2005) notes that organizations using EMA are likely to conduct more extensive research and design activities to produce environmentally-friendly products and develop techniques that are less harmful to the environment. The use of EMA typically benefits organizations by providing them with different information for decision-making (Burrit et al., 2002; and Adms and Zutshi, 2004). Such information may reveal hidden opportunities, such as better waste management processes, reduced energy and material consumption or opportunities for material recycling (Christ and Burritt, 2013) and reduce their pollution levels, which is likely to produce future cost savings and minimise future environmental liabilities (Ferreira et al., 2010).

Physical EMA concerns information about the flow of energy, water, materials and waste; it focuses on the environmental impact of a business (in physical units) such as the total amount of fresh water consumed, the volume of wastes generated, and the amount of materials or energy consumed (Burritt et al., 2002; and IFAC, 2005). Monetary environmental information relates to environmental costs and earnings, such as the amount a company pays to consume natural resources (e.g. water, energy) and materials, and other costs incurred in controlling or preventing environmental damages. This also includes costs for clean-up and waste treatments, sales of scrap and waste and recycling subsidies (Burrit et al., 2002; Tsui, 2014; and Mokhtar et al., 2016).

EMA offers some indirect benefits to corporations. For example, Adams and Zutshi (2004) suggest that improved corporate image and better relations with stakeholders, enhanced staff retention and the minimisation of regulatory attention are some of the benefits that comes with implementing EMA. According to Ferreira et al. (2010), the improvement in organizational reputation can arise from good citizenship behaviour and from offering environmentally friendly products. By providing information on social and environmental issues, organizations may also reduce the risks of consumer boycotts and enable stakeholders to assess their environmental performance by providing them with opportunities to understand the way the organizations conducts its activities (Ferreira et al., 2010). Furthermore, EMA adoption is likely to result in the enhancement of competitive advantage (Dunk, 2007; and Setthasakko, 2010).

2.2 Adoption of Environmental Management Accounting

The development of business environment and advancement and complexity in technology increase the need for management accounting information that meets needs of the competitive world. In essence, contemporary management accounting practices such as EMA emerged to complement the development in modern business (Kalifa, et al., 2020). The insights from previous studies with respect to the spread of modern management accounting practices such as EMA in different countries and industries is not consistent and coherent (Kalifa, et al., 2020). Although naby companies continue to rely more on traditional management accounting practices, still others deploy modern practices of management accounting (MA) such as EMA (Hutaibat and Alhatabat, 2019; Kalifa, et al., 2020; Shahzadi et al., 2018). In Egypt for instance, despite the large application of tradition MA practices, it was found that there is significant

progress in the application of modern practices such as EMA (Hussein, 2018; Kalifa, et al., 2020). Likewise, application of EMA has led to positive impacts on financial efficiency and environmental efficiency among Vietnamese Construction Material Industry (Le, Nguyen, & Phan, 2019). It was also found that coercive, mimetic, and normative pressures have significant influence in the implementation of EMA, and eventually enhances the environmental performance of firms in Pakistan (Chaudhry & Amir, 2020). In Brazil, the use of EMA techniques was found to contribute differently to each stage of innovation in water and energy reduction (da Rosa, Lunkes, & Mendes, 2020).

Specifically, in Libya, ccompanies operating in manufacturing sector have been considered as major sources of environmental concerns through various forms of pollutions (Nassar et al., 2017). The major polluting companies within the industrial sector are the firms operating in oil and gas industry (Darwesh & Hamdy, 2019). For instance, communities in eastern Libyan towns such as Jikharra, Awjila, and Jalu which housed about 30,000 people is exposed to sever air and water pollutions resulting from the operations of oil and gas companies (Darwesh & Hamdy, 2019). The environmental damages caused by the operation of these companies is not limited to the environment but also to agriculture and health concerns of the residents as it caused many diseases such as cancer and severe eye inflammation (Darwesh & Hamdy, 2019). Eventually, promotion of EMA would be a potential solution to these environmental problems as companies can manage it environmental performance through an effective EMA adoption.

2.3 Literature Gap and Summary

Much of the studies on EMA deployed Institutional theory, (see Qian and Burritt (2011); Jalaludin et al. (2011); Berrone et al. (2013); Colwell and Joshi (2013); Jamil et al. (2015); Qian et al., (2015); Wang et al. (2018); Zandi and Lee (2019); Siskawati et al. (2019); Iredele et al. (2019); Ferdous et al. (2019)). Based on their finding, there has been no conclusive evidence that only institutional pillars are the major determinants of EMA adoption. In fact, Qian and Burritt (2011) suggest the integration of contingency and institutional theories together in addressing impacts of contingent factors on other variables. This suggestion was followed by Wang et al. (2018). While integrating the two perspectives, Wang et al. (2018) only considered two contingencies; perceived benefit and senior management support as moderating variables, leaving other contingent factors such company size and company age unattended. Though, later Iredele et al. (2019) deployed institutional and organisational factors in their study, but the analysis was conducted separately, thereby not comprehensively addressing the suggestion of Qian and Burritt (2011). Table 1 below offers a summary of the key studies and theoretical perspectives and analysis .

[Table 1: Insert Here]

The current study differs from prior literature in three ways. Firstly, most of the earlier studies such as Qian and Burritt (2011); Jalaludin et al. (2011); Berrone et al. (2013); Colwell and Joshi (2013); Jamil et al. (2015); Qian et al., (2015); Zandi and Lee (2019); Siskawati et al. (2019); Ferdous et al. (2019); Chaudhry and Amir (2020) considered only the direct effect of

institutional factors. The current study considers the moderating effect of contingency factors. Secondly, whilst these studies consider only institutional factors, their theoretical perspectives is mostly limited to institutional theory. This study, follows the suggestion of Qian and Burritt (2011) and integrate institutional and contingency theories. Thirdly, although other studies considers not only institutional factors but also contingency (Wang et al., 2018) and organizational (Iredele et al., 2019) theories, however, the study of Wang et al. (2018) only study the moderating effect of two contingency variables; perceived benefit and senior management support. Differently, the current study considers the moderating effect of other contingency variables including company size and company age. Also, different from Iredele et al. (2019) who studied the influence of institutional and organizational factors separately, the current study integrate institutional and contingency factors through moderation analysis.

2.3 Theoretical Framework and Hypotheses Developing

Contingency theory has been the dominant underpinning of much of the management accounting research (Bouma and Van Den Veen, 2002). According to Otley (1980, p.413):

> "The contingency approach to management accounting is based on the premise that there is no universally appropriate accounting system which applies equally to all organisations in all circumstances. Rather, it is suggested that particular features of an appropriate accounting system will depend upon the specific circumstances in which an organisation finds itself".

The contingency theory approach to management accounting assumes that the applicability of practices is contingent on the situational factors faced by each organization (Otley, 1980; Garrison, et al., 2006). Thus, in order to design effective management accounting control, and/or environmental, systems, it is necessary to uncover the circumstances that allows such practices to be adopted and implemented. One possible question is why contingency theory has been chosen as one of the most commonly applied theoretical approaches in management accounting research? While this is an important question, however, there are equally several rationales for selecting contingency theory. Firstly, the contingency perspective is used in empirical research to identify the determinants for the selection and effectiveness of organizational forms (Bouma and van der Veen 2002). In other word, contingency theory provides an explanation of why management accounting systems vary between firms operating in different countries and within the same country as well. Since, there is enormous diversity among organisations, the variation in their management accounting systems is contingent upon a firm's external and internal characteristics (Kattan et al. 2007). Thus, the way to implement a management accounting technique is probably dependent upon the contingencies of the organisation in which the implementation has to take place. Secondly, contingency theory is selected because much of the work based on the adoption of management accounting refers to this theory (Christ and Burritt, 2013), and because it is used to analyse the relationship between variables at firm-level and macro-context level and in management accounting. Lastly, the rapid technological development and instability and environmental uncertainty surrounding the organisation in recent years has led to increase the interest of applying the conditional approach in designing management accounting information systems. Therefore, this theory is used in this study to explain the results of our analysis.

Changing an existing management accounting system requires new evidences that support the benefits of a new system and some forces to enforce the change. The decision to change an accounting system could depend on sociological or psychological factors which would offer 'institutional' explanations (Chang, 2007). The new institutional sociology theory (NIS) emerged in the 1970s and 1980s via pioneering researchers such as Meyer and Rowan (1977) and DiMaggio and Powell (1983). NIS considers an organization's behaviour in relation to forces derived from wider society. It focuses on the context of organizations in terms of the influences of external factors on their structures and practices. NIS assumes that when an organisation adopts a particular accounting system, it must be driven by pressure coming from the external environment (Moll et al., 2006). Moreover, NIS assumes that organisations emerged from, rooted in, and linked to broader social environments, which comprise cognitive, normative and cultural systems of rational networks, rules and beliefs (Boukr, 2018). In this respect, NIS provides a useful framework for understanding the socio-economic, political and legal influences on both countries and organizations and their strategic responses to those influences. Within the NIS, institutions are treated as largely exogenous to the firms themselves. It deals with the institutions that shape organizational structures in the organizational environment, and, in addition, offers the benefit of analysing research phenomena at a macro level (Bouma and van der Veen 2002; Qian and Burritt, 2011; Jalaludin et al., 2011; Qian et al., 2015; and Wang et al., 2018).

Since the decision to change an accounting system could depend on sociological or psychological factors, NIS theory has been suggested as providing useful insights in understanding EMA adoption (Bouma and van der Veen 2002; Ball 2005; Ball and Craig 2010; and Qian et al., 2015). Therefore, this study adopts NIS as a second typology of explanatory tool for the results. This theory should help in explaining any underpinning forces or psychological factors that are needed to adopt EMA system by manufacturing companies in Libya. This study chooses to examine the adoption of EMA from an institutional perspective for two reasons. Firstly, the relationship between EMA and institutional pillars is still inconclusive. Secondly, there is a growing view in current environmental research that green actions and activities adopted by business organisations are for the purpose of obtaining congruency with social rules and norms, and to improve environmental sustainability in the social and organisational field (Boons and Strannegard 2000; and Huei-Chun and Deegan, 2008). Thus, it is reasonable to speculate that a firm is more likely to adopt EMA due to the wide concern and the consensus about environmental problems for the whole society (Brammer et al., 2012; and Wang et al., 2018)

However, given the diverge economic, political and social environment organisations operate within, no one-fits-all explanation can be made regarding adoption of certain accounting regulation, standard or practice. Therefore, Malmi (1999) and Volberda et al. (2012) indicates that contingency and institutional theories are complementary and interrelated explanations of firm performance. Furthermore, Gupta et al. (1994), contend that using both contingency and institutional theory together to test the influence of institutional forces on work unit performance yields better results than using one of two theories individually. Similarly, Clark and Soulsby (1995) report that the two theories complemented each other and improved the insights gained related to organizational change among former enterprises in the Czech Republic. To this extent, Qian and Burritt (2011) state that there is no commonly used theoretical perspective on

managerial motivations for or barriers to EMA adoption by organizations. However, as EMA is regarded as a new managerial tool, Bouma and Van Den Veen (2002) and Qian and Burritt (2011) both suggested that contingency theory and institutional theory could be useful for understanding the drivers behind adopting, or not adopting EMA. This perspective gives rise to this study which aims to use the contingency and NIS theories in explaining factors underpin adopting, or otherwise, of EMA by manufacturing companies operating in Libya.

2.2.1 New Institutional Sociology Theory in Context

The new institutional sociology theory (NIS) perspective is widely adopted in explaining organizational behaviour especially environment friendly behaviours, such as firm's energy saving behaviour, firm's ecological responsiveness behaviour, and firm's environmental management practices (Wang et al. 2018). NIS assumes that organizations adopt certain structures and practices because they are required to do so by external institutions not because they are the rational choice (Moll et al., 2006; Jalaludin et al., 2011). External institutions include governmental agencies, accounting and other professional bodies, societies and other organizations (Jalaludin et al., 2011).

A key element of the NIS framework is the isomorphic concept. As organisations are structured by phenomena in their environments, organisations tend to adopt formal structures and procedures common in their environment, and by adopting these structures and procedures they become isomorphic (Meyer and Rowan, 1977; DiMaggio and Powell, 1983; Jalaludin et al., 2011; and Ali and Rizwan, 2013). DiMaggio and Powell (1983) break the processes that lead to institutional isomorphism into three different mechanisms of pressure: coercive, normative and mimetic pressures, all of which have roles in the institutional environment and contribute in explaining why organizations adopt similar practices.

Coercive isomorphism occurs in response to external pressures (both formal and informal) exerted by institutions upon which organizations dependent for resources or support, and also by the cultural expectations of the society where they operate (DiMaggio and Powell 1983). Among the sources of coercive isomorphism are government policy, regulations and supplier relationships (Moll et al., 2006). *Normative isomorphism* arises from professionalism practices and pressure on organisation to align with the customary professional practices and standards. Normative pressure may originate from one, or both, of two sources. Firstly, through formal education, provided by universities and professional training institutions, and which plays a central role in developing organizational norms among managers and their staff. Secondly, the growth and influence of professional networks that allows new practices to be adopted rapidly across and between organizations. *Mimetic pressure* occurs when organizations are uncertain about their environment so they copy certain practices from similar or superior organizations which are considered to be legitimate or successful in their field (Moll et al., 2006). We return to these three pillars later on when we discuss our hypothesis.

Huei-Chun and Deegan (2008) explores and synthesises the development of EMA and the possible motivations for EMA from the perspective of institutional theory. They consider that the possible development of EMA was in relation to three pillars: regulatory, normative and cognitive institutions. By empiric-work, Qian and Burritt (2011) seem to be the first to connect NIS with the adoption of EMA. Their study examined the state of EMA practice and explored possible explanations and motivations for the use of environmental management accounting

information for waste management in local government in the state of New South Wales, Australia. Although they did not apply NIS explicitly, they found that pressures from different environmental regulatory bodies, environmental expectations from local communities, and pressures from peer councils all motivated local governments to adopt EMA practices.

Jalaludin et al. (2011) adopted an NIS framework to examine the relationship between institutional pressure and EMA adoption in Malaysian manufacturing firms. Overall, the study provides some empirical evidence of the influence of coercive isomorphism and normative pressures on the level of EMA adoption. However, only an insignificant relation between mimetic processes and EMA adoption was found. Jamil et al. (2015) also adopted NIS theory to investigate factors influenced the adoption of EMA in Malaysian manufacturing SMEs. Like Qian and Burritt (2011) and Jalaludin et al. (2011), they found that coercive pressure had a positive significant influence on EMA adoption, but that the relation between mimetic processes and EMA adoption was insignificant. In contrast, they found that normative pressures do not affect adoption of EMA practices significantly. This finding contradicts those of Qian and Burritt (2011) and Jalaludin et al. (2011), which found a significant relationship between normative processes and EMA practices. Iredele et al. (2019) examine the influence of institutional and organisational factors on the level of EMA practice among selected Nigerian and South African firms. They found significant relationship between institutional pillars (coercive isomorphism, normative pressures and mimetic processes) and EMA adoption whether in Nigerian or in South African firms. This finding contradicts those of and Jalaludin et al. (2011), Jamil et al. (2015) and Wang et al. (2018), which found that mimetic processes do not affect adoption of EMA. Recently, Zandi and Lee (2019) examine the relationship between customer influence and regulatory pressure on EMA system in the Indonesian manufacturing industry. The results revealed that customer influence and regulatory pressure have a positive and significant contributor in enhancing EMA system. In the same context, Siskawati et al. (2019) found that the adoption of EMA is associated with government regulations. In Australian water supply industry, Ferdous et al. (2019) examine the adoption of EMA from an institutional theory perspective. Like Zandi and Lee (2019) and Siskawati et al. (2019), they found that the emergence of a government regulator and community expectations are the key drivers for the adoption and emergence of EMA.

As has been noted before, the majority of these studies were undertaken in the context of developed or newly industrialised countries, and as such, their findings may not be applicable in the context of a developing country such as Libya. Therefore, this study is tasked with identifying the institutional pillars that may drive the adoption of EMA practices in manufacturing firms operating in Libya. With this objective in mind, the next section discusses the influence of institutional isomorphism on EMA adoption, through the three mechanisms: coercive, normative, and mimetic, and describe the development of the hypotheses that will be tested later.

2.2.1.1 Coercive Pressures

According to the NIS concept of coercive isomorphism, organisations adopt particular internal structures and processes as a consequence of coercive pressures. Prior studies have identified various sources of coercive pressures, such as environmental laws and penalties, government institutions (Huei-Chun and Deegan, 2008; Jalaludin et al., 2011; Qian et al., 2015; Wang et al.

2018; Zandi and Lee, 2019; and Ferdous et al., 2019) , shareholders, media, environmental NGOs, local communities, financial institutions, customers and labour unions (Jalaludin et al., 2011; Jamil et al., 2015; Zandi and Lee, 2019; Siskawati et al., 2019; and Ferdous et al., 2019).

There is a strong, though unconfirmed, presumption that EMA is a necessary foundation and support for quality environmental management, as it provides the basis for adaptive behaviour in the face of changing circumstances (Huei-Chun and Deegan, 2008). When these parties are interested in environmental issues, pressure will be exercised on companies to improve their environmental performance. In order to respond to such pressure, an environmental management system (EMS) is required to guide such improvement (Frost and Seamer, 2002); however, without coercive pressure, companies are probably less likely to adopt EMA (Chang, 2007; and Jamil et al., 2015).

Prior management studies on organizations have linked the adoption of contemporary management accounting practices, such as activity-based costing (ABC) (Arnaboldi and Lapsley, 2003) and non-financial performance measurement (Hussain and Gunasekaran, 2002; and Hussain and Hoque, 2002), to coercive pressure. In regard to EMA research, Qian and Burritt (2011), Jamil et al. (2015); Wang et al. (2018); Zandi and Lee (2019); Siskawati et al. (2019); and Iredele et al. (2019) have also found that coercive pressure has a positive significant influence on EMA adoption.

In general, EMA may be adopted by companies in order to reduce the coercive pressure they face and to enhance and sustain their environmental performance, thus their legitimacy. Given this, in order to test the extent to which coercive pressure influences EMA adoption we hypothesise that:

H1: *Coercive pressure positively influences the level of EMA adoption by manufacturing companies operating in Libya.*

2.2.1.2 Normative Pressure

Normative pressure emerges from two aspects of professionalization. The first comes from formal education and legitimacy derived from a cognitive base produced by specialized universities (DiMaggio and Powell, 1983). This source includes academic institutions, accounting research, training, books and journals, conferences and scientific seminars, accounting body and unions (Boker, 2018). The second comes from the growth and elaboration of professional networks that span organizations and which facilitate the diffusion of new practice. These two sources of normative pressures are particularly important in the development of organisational standards and practices among professional managers and their employees (DiMaggio and Powell, 1983).

The literature indicates that normative pressure occurs when professionals operating in organisations are subject to pressures to conform to a set of norms and rules developed by universities and professional training organisations (Zubi, 2011). According to Wang et al. (2018) such professional organisations may persuade companies to make changes and adopt new practices to conform to norms or rules and avoid being locked out societies. Otherwise, their reputation would be damaged, and they may suffer break down in their supply chain (Wang et al., 2018). Implementation of EMA, as a new management tool, may benefit from the exercise of

normative pressures. This assumption was empirically supported by findings of Jalaludin et al. (2011), Wang et al. (2018) and Iredele et al. (2019) who found that normative pressure in terms of training and accounting body membership significantly affected EMA adoption. To the contrary, Jamil et al. (2015) reported that normative pressures do not influence EMA practices in Malaysian SMEs.

Building on the above argument, when normative sources are focused on environmental issues a company's environmental practices are likely to be influenced. Accordingly, we hypothesis:

H2: *Normative pressure positively influences EMA adoption by manufacturing companies operating in Libya.*

2.2.1.3 Mimetic Pressure:

When organisational tools are not fully understood, objectives are ambiguous, and when the environment generates symbolic uncertainties, an organisation might copy the internal structures and/or procedures adopted by other organisations which are seen as more successful (DiMaggio and Powell, 1983; and Vailatti et al., 2017). Through mimetic processes, an organisation remodels itself by adopting internal structures and/or procedures that are considered legitimate by other organisations in its field (Zubi, 2001; Jalaludin et al., 2011). In relation to EMA, mimetic pressure may occur when an organisation perceives that adopting EMA practices will contribute to improving its environmental performance, enhance and assures its legitimacy and thus achieving its objectives more efficiently. Moreover, according to Wang et al. (2018, p.236):

> "As the implementation of EMA is costly and the financial return is uncertain, it is crucial to learn from successful rivals. If the rivals benefit from the implementation of EMA, firms will imitate the successful rivals under imitative pressures".

Except for Iredele et al. (2019), the empirical studies in the context of EMA, such as Jalaludin et al. (2011); Jamil et al. (2015); and Wang et al. (2018) have all found an insignificant relation between mimetic processes and EMA adoption. However, regardless these results, it is still difficult to deny the theoretical basis for the influence of mimetic processes on EMA adoption. Companies seeking legitimacy within their operating environments tend to try to reduce the level of uncertainty faced by copying certain practices of other companies (Jalaludin et al., 2011). Therefore, it is worth investigating the impact of mimetic process of adopting EMA by manufacturing companies operating in Libya. Thus, we hypothesis:

H3: *Mimetic pressure positively influences EMA adoption by manufacturing companies operating in Libya.*

2.2.2 Impact of Contingent Factors and Institutional Pillars on Adopting EMA

Due to lack of conclusive evidence that institutional pillars have been determinate in the level of EMA adoptionresearchers extended their investigation to include contingency factors that impact the adoption of EMA. In this context, Wang et al. (2018) adopted the suggestion, made by Qian and Burritt (2011), to use contingency and institutional perspectives together to understand factors supports the adoption of EMA. Specifically, they investigated the moderating effects of perceived benefit and senior management support on the relationship between institutional pillars and EMA and found that both factors positively moderated the relationships between coercive pressure, normative pressure, and the implementation of EMA. However, their study

was confined to the manufacturing sector in China and they focused on just two contingent factors: senior management support and perceived benefit into the institutional theory framework. Iredele et al. (2019) also examine the influence of institutional and organisational factors on the level of EMA practice among selected Nigerian and South African firms. However, in their study the influence of institutional and organisational factors on EMA adoption were examined individually. We extend Wang et al,'s study to a North African country setting and we use more contingent factors in our study, these are: company size, company age, EMS adoption and business type. These contingent factors are discussed here and related hypothesis are constructed.

2.2.2.1. Company Size

First, company size has been identified as a key factor in explaining the adoption level of EMA practices (Frost and Seamer, 2002; Christ and Burritt, 2013). Company size may affect company responses to institutional pressures through two channels. *Firstly*, EMA is viewed as a sophisticated management accounting practice and considerable amounts of resources are required to facilitate its adoption; thus it may only be affordable by larger companies. *Secondly*, large companies tend to receive more scrutiny from society regarding their environmental performance (Qian et al., 2011); therefore they are in the public eyes. Mokhtar et al. (2016, p.4) summarise this position, suggesting that "the larger the company, the more activities they carry out and the greater the impact they have on the environment". Given this, it might be assumed that the relationship between institutional variables and EMA adoption is moderated by company size; therefore, we hypothesis:

H4: *Company size positively moderates the relationships between (a) coercive, (b) normative, and (c) mimetic pressures and the level of EMA adoption by manufacturing companies operating in Libya.*

2.2.2.2. Company Age

Second, a number of previous studies on environmental and managerial accounting indicate that company age is an important factor in influencing the adoption of environmental practices, including EMA (e.g. Hossain and Reaz, 2007; Aldrugi, 2013; Bhattacharyya, 2014; and Abdillahi and Manini, 2017). Company age may moderate company responses to institutional pressures. This may be through one or more of three channels. *Firstly*, EMA is viewed as a sophisticated management accounting tool that requires advanced information systems, sophisticated communication strategies and specialized staff; these are likely to be more available within mature companies (Courtis, 2004; Sehar et al., 2013). *Secondly*, older companies are more experienced and are therefore more likely to have the required quality and quantity of environmental information (Akhtaruddin, 2005). *Thirdly*, companies that have been operating for a long time may receive more scrutiny from society regarding their environmental performance than new companies. Therefore, we hypothesis:

H5: *Company age positively moderates the relationships between (a) coercive, (b) normative, and (c) mimetic pressure and the level of EMA adoption by manufacturing companies operating in Libya.*

2.2.2.3. Adoption of an Environmental Management System (EMS)

Third, EMA is a set of accounting tools that aim to quantify environmental information, seeking, ultimately, to measure environmental performance and enhance reporting (Huei-Chun and Deegan, 2008). Although EMS and EMA constitute two different entities, aspects of EMS, such as business strategic planning, costs/benefits analysis of environmental improvement, and environmental performance reporting, require quantifying environmental information, which is provided by EMA. Meanwhile, EMA practices require an informative basis which can be provided by EMS (Frost and Seamer, 2002; and Qian et al., 2011). This means that the adoption of EMS might be a prerequisite for EMA adoption. Therefore, we hypothesis:

H6: *EMS adoption positively moderates the relationships between (a) coercive, (b) normative, and (c) mimetic pressures and the level of EMA adoption by manufacturing companies operating in Libya.*

2.2.2.4. Business Type

Fourth, since it has been argued that companies operating in environmentally-sensitive industries are more likely to engage with environmental accounting activities, including EMA (Frost and Wilmshurst, 2000; Christ and Burritt, 2013; Mokhtar et al., 2016), it can also be expected that under the influence of institutional pressures, companies operating in environmentally-sensitive industries are more likely to adopt EMA. Therefore, we hypothesis:

H7: *Business type positively moderates the relationships between (a) coercive, (b) normative, and (c) mimetic pressure and the level of EMA adoption by manufacturing companies operating in Libya.*

On the basis of the above argument, we offer in Figure 1 a diagrammatical illustration of the hypothetical relationship between the four contingent factors, the three institutional pressures and the dependent variable of this study, i.e. the practice of EMA:

[Figure 1: Insert Here]

3. Research Design

This study is descriptive, exploratory and explanatory in nature, it adopts a quantitative research approach based on a survey method as a data collection tool.

3.1 Research Population

The damaging environmental impact of manufacturing companies is recognised in Libyan environmental law (General People's Congress [Parliament], 2003). It is imperative that these companies pay particular attention to environmental issues. Medium and large companies are expected to have well-designed accounting systems in general and management accounting systems in particular, while small companies may rely on informal systems in lieu of sophisticated management accounting systems such as EMA (Szychta, 2002; Leftesi, 2008; and Boukr, 2018). Therefore, the research population is confined to medium and large manufacturing companies in Libya with small companies being excluded from the scope of this study. To this end, this study considers 97 medium and large manufacturing companies operating in Libya. The list of companies compiled was extracted from the Documentation and Information Centre of Industries and Economics in Misurata and the National Oil Corporation. However, from this

population, and in line with Krejcie & Morgan's (1970) sample size selection, our sample consists of 76 usable manufacturing companies operating in Libya.

3.2 Research Method

In order to answer the research questions and test the hypothesis, an on-line questionnaire survey was developed and administered to collect data from the 76 sampled manufacturing companies operating in Libya. Respondents to our questionnaire hold positions of financial directors, financial managers, senior management accountants, or senior cost accountants. The questionnaire was originally constructed and written in English. However, since our respondents are native Arabic speakers, and English is not an official language in Libya the questionnaire was translated into Arabic. The Arabic version of the questionnaire for the current study was piloted and pre-tested with ten respondents; five of which are academics who all work as lecturers in the department of accounting at the University of Benghazi in Libya, while the other five respondents are managers and employees who work in accounting departments in different industrial companies in the manufacturing sectors in Libya. These ten pilot questionnaires were not part of our analysed data.

In order to measure the extent of EMA adoption (dependent variable), this study embraced a list of 13 EMA practices (see Table 2). These items were adopted from lists developed by Ferreira et al. (2010), Christ and Burritt (2013) and Burritt et al. (2002). Respondents were asked to indicate the extent of adoption based on a 5 Likert scale rating from 1= Does not do at all to 5= Does to a very great extent. This was then coded as follows: (1= Does not do at all; 2= Does to some extent; 3= Does to a moderate extent; 4= Does to a great extent; 5= Does to a very great extent).

[Table 2: Insert Here]

The last section of the questionnaire contains 23 items that covered the three institutional pillars namely; coercive, mimetic and normative (see Table 3). These items were developed mainly from Qian and Burritt (2011); Jalaludin et al. (2011); Jamil et al. (2015) and Wang et al. (2018), in addition to other studies that had considered the same issue, notably Leftesi (2008) and Boukr (2018). Institutional items were measured on a five-point Likert scale ranging from 1 to 5, where 1 represents strongly disagree and 5 represents strongly agree.

[Table 3: Insert Here]

4. Data Analysis and Results

4.1 Response Rate

The process of distributing questionnaires to manufacturing companies using an on-line questionnaire started on 15th Nov 2018 and lasted for 3 months. Of the 76 questionnaires distributed to manufacturing companies in Libya, 60 questionnaires were returned, of those, 9 questionnaires were deemed unusable. Therefore, the number of usable responses received through the on-line questionnaire and other methods totalled 51 for a response rate of 67%. Whilst this seems a small survey, the response rate we obtained is higher than the rate of similar

studies, for example (Ferreira et al., 2010; Lee, 2011; Jalaludin et al., 2011; Christ and Burritt, 2013; Ismail et al., 2014; Jamil et al., 2015; and Mokhtar et al., 2016); and such rate is considered satisfactory by Saunders et al. (2009); and Sekaran and Bougie (2016).

4.2 Characteristics of Responding Companies

Characteristics of the responding companies are presented in Table 4. Of the 51 companies responded to our questionnaires, 26 of these companies (50.9%) are medium sized, and 25 companies (49.1%) are large. Regarding the company age[1], 21 companies were deemed new while 30 were as old. 49% (25) of responding companies already had an EMS, while 51% (26) do not. Of the 51 responding companies, 17 (33.3%) are in environmentally less sensitive industries[2] and 34 (66.7%) are in sensitive industries. The demographic information of the respondents revealed that 41.2% (21), occupied financial manager positions, followed by financial accountants with 23.5% (12), then assistant financial managers who represented 17.6% (9) of respondents. Cost accountants represented 9.8% (5), and the least represented position was managerial accountant, at just 7.8% (4) of all respondents.

[Table 4: Insert Here]

4.3 Reliability and Validity Analysis

In order to ascertain the content validity requirements in this research Principal Component Analysis (PCA) was used. PCA is a common statistical technique that is used in management accounting research in general and in EMA studies in particular (Leftesi, 2008; Jalaludin et al., 2011; Christ and Burritt, 2013; Mokhtar et al., 2016; and Wang et al. 2018). PCA reduces the original set of variables into smaller sets of combined variables, notably EMA variables and institutional pillars influencing the presence of EMA practices. It is also used to find out whether the items which were used in the questionnaire lead to any patterns of dimensions and whether they confirmed the dependent contingent factors and independent institutional pillars specified in the research framework. Therefore, PCA was used to reduce the original set of variables into smaller sets of combined variables. This is followed by Cronbach's Alpha Test which used to assess the reliability of distributed questionnaire for the current study.

An initial PCA with varimax rotation was performed on the 13 items (see Table 1) in the EMA scale. The initial PCA showed a high Kaiser-Meyer-Olkin (KMO) value and supported the retention of a single component containing all thirteen items. However, factor loadings for EMA8 was less than 0.4, so, based on the factor loading criteria items (Leftesi, 2008; Jalaludin et al., 2011; Christ and Burritt, 2013; and Mokhtar et al., 2016), item 8 (EMA8) was eliminated. The PCA was repeated with the other remaining 12 EMA items. Only one component was identified as the construct measuring of EMA practices. Table 5 summarise the results of the PCA and Cronbach's a test for EMA variable.

[1] The respondent companies have been classified into two groups: 'new' (less than 12 years, and 'old' (more than 12 years).

[2] The determination of which industries were environmentally sensitive was based on previous studies (see Frost and Wilmshurst, 2000; and Christ and Burritt, 2013). The literature does provide a degree of consensus which led to the following being included in the 'more environmentally sensitive' group: Mining and resources; chemicals; oil, gas and consumable fuels; and utilities. Other industries were classified as less environmentally sensitive.

[Table 5: Insert Here]

Furthermore, an initial PCA with varimax rotation was performed on the 23 items (see Table 3) in the scale of institutional pillars influencing the presence of EMA. The initial PCA showed an excellent KMO value and yielded three components with Eigenvalues > 1. However, the factor loadings result showed that three items, CP8, CP12 and MP1, did not load on the expected factors and thus these items were eliminated. The PCA was then repeated with the remaining 20 institutional items. Three components were identified as constructs that measure institutional pressure, i.e. coercive, normative and mimetic pressure. Table 6 summarises the results of the PCA and Cronbach's a test for institutional variables. The Cronbach's reliability estimates indicate acceptable scores for all variables

The factors that emerged from running the factor analysis of institutional items were: coercive pressure, normative pressure and mimetic pressure. The results regarding components influencing EMA practices are consistent with the view of institutional theory. Thus, it is clear that these factors are, to a large extent, consistent with the theoretical framework that was developed earlier for this study. As such, there was sufficient evidence of reasonable fit between the research framework and the data and the measure was accepted for use in further analysis.

[Table 6: Insert Here]

4.4 Descriptive Statistics of Variables

Table 7 shows an overall score 2.07 (from a theoretical range of 1 to 5) which reflects the relatively low adoption level of EMA, as perceived by the responding companies. This finding suggests that the responding companies have not adopted EMA to a reasonably large extent. In the light of this result, it is unlikely that environmental performance of manufacturing companies operating in Libya will be improved at this level of adoption.

[Table 7: Insert Here]

Table 7 shows that the respondents consider coercive pressure as the greatest source of institutional burden they faced. However, the mean score of coercive pressure (3.1824) suggests that respondents believed they faced only a moderate level of institutional pressure for environmental performance and EMA adoption. It was found that the highest level of coercive pressures come from environmental law and the desire to avoid paying fines, followed by shareholder pressure, and pressure from their local communities (mean = 3.35). These are followed by pressure from government institutions, from environmental NGOs, from the head office and from other financial institutions. Meanwhile, the coercive factors with the lowest mean scores were: customer pressure, pressure from labour unions and from the media.

Similarly, they believed that they faced a moderate level of normative pressure (with a mean score 3.0784**)**. For them, the highest level of normative pressure came from training, conferences and scientific seminars, and books and journals. Accounting research in developed countries and in Libya were ranked fourth and fifth. The normative factors that received the lowest mean scores were academic institutions and accounting bodies. However, respondents also felt that they faced a relatively low level of institutional pressure about environmental performance and EMA adoption even when uncertainty arose; this is reflected by a mean score for mimetic

pressure of 2.77. The highest level of mimetic pressure was related to competitor companies. The second highest factor was leaders in the industry, and the third multinational companies.

4.5 Normality, Multi-collinearity and Linearity Assessments

The assumption of normality is inspected using two methods. The first examined normality through a normal probability plot (P-P Plot), and the second examined normality by evaluating the skewness and kurtosis. Based on the normal probability plot graph, the normality assumptions were not violated. Furthermore, the skewness and kurtosis value of EMA variables was found to be in the acceptable range 0.681 and 0.504 respectively. Therefore, based on Skewness and Kurtosis outputs it can be stated that the normality condition of the variables is met.

This study uses two common tests to assess multi-collinearity. Firstly, a correlation matrix of all independent variables was conducted. Secondly, multi-collinearity was assessed by employing tolerance and variance inflation factor (VIF) test. The assessment shows there is no violation of multi-collinearity, since there is no correlation above 0.90 among the independent variables, all VIF values are less than 5, and tolerance values exceeded 0.20.

With regard to the linearity assessment, the test was conducted through ANOVA test of linearity. In this study, all interactions between the independent variables (contingent factors?) and dependent variable (institutional pillars?) had significant values greater than .05. Thus, there is linearity in the relationship between the dependent variable of EMA and the independent variables. Therefore, the data satisfied the linearity assumption of multiple regressions.

4.6 Regression Analysis:

In this study, 7 research hypotheses related to institutional pillars and a combination of the contingency factors and institutional pillars were developed**.** In order to investigate if there are links between the contingent factors and the institutional pillars multiple and moderate regression analyses were carried out. In order to test the research hypotheses we tested the relationship between the EMA variable and institutional pillars, and contingent variables. A moderator analysis is used to determine whether the relationship between the EMA variable and institutional pillars is moderated by the value of a contingent variable. In this study, one multiple regression model was built to find the main effects of the three institutional pillars on EMA adoption (Model 1). In addition, 4 moderator models were built, and every model examined separately to find the effect of each contingent factor on the relationship between institutional pressures and EMA adoption (Models 2, 3, 4 and 5), these are discussed next.

4.6.1 Multiple Regressions Analysis:

In order to find the effect of institutional pillars: coercive pressure, normative pressure and mimetic pressure, on EMA variable the model used by Jalaludin et al. (2011), Jamil et al. (2015), and Wang et al. (2018) was applied in this study, with some modification to fit the descriptions and nature of this study; these modifications involve adding relevant items to each institutional pillar. The relationship between institutional pillars and EMA adoption is modelled as follows (Model 1):

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where:

Y = level of EMA adoption in the manufacturing companies operating in Libya; β_0 = is the intercept; β_1 = the effect of X_1 on Y; β_2 = the effect of X_2 on Y; β_3 = the effect of X_3 on Y; X_1 = coercive pressure; X_2 = normative pressure; X_3 = mimetic pressure; and *e* = is a residual term.

Table 8shows the quality of the prediction of the dependent variable included in Model 1. As can be seen, the *R* value for this model is 0.548, which implies that there is a good correlation between the dependent and the independent variables. The table also shows that the value of adjusted R^2 is 0.256; this indicates that the independent variables that are included in the model explain 25.6% of the total variance of the current adoption of EMA. Thus, the remaining 74.4% of the variation of EMA adoption cannot be explained by the contingent factors and might be accounted for by other variables that are not included in this research. In addition, Durbin-Watson[1] for Model 1 was found to be 1.975 which is within the required range of 1 to 3. This indicates that no autocorrelation was found among residuals, which means the data collected in this study shows no inter-item correlation.

[Table 8: Insert Here]

Table 8 presents the results of the coefficients for the model and Table 9 shows the ANOVA analysis of the model variance. Overall, Model 1 was found to be significant at .01 level (Sig = .001) with F-ratio = 6.736. Accordingly, the model is significant enough to explain the relationship between the dependent and the independent variables. Therefore, it can be concluded that Model 1 is suitably positioned for predicting the adoption level of EMA.

[Table 9: Insert Here]

As shown in Table 10, the results indicate that coercive pressure (β = .552, $p < 0.01$) is positively and significantly associated with EMA implementation. However, the normative pressure (β = -.045) and mimetic pressure (β = .125) are not significantly associated with EMA implementation. Accordingly, coercive pressure is the only institutional pillar that has a significant positive relationship with EMA adoption by manufacturing companies operating in Libya. Given these result, hypothesis 1 which concerns the influence of coercive pressure provides an acceptable basis for explaining the extent to which manufacturing companies in Libya carry out EMA practices. This findings support hypothesis H1, and it is hereby accepted. Our analysis depicts than coercive pressure leads to adoption of EMA and thus enhancement of environmental performance by manufacturing companies operating in Libya. Hypothesis 2 and 3, which focuses on the influence of normative and mimetic pressure on adoption of EMA, does not provide an acceptable basis for explaining the extent to which manufacturing companies in Libya carry out EMA practices. Accordingly, hypotheses 2 and were rejected.

[Table 10: Insert Here]

4.6.2 Moderating Multiple Regressions (MMR):

[1] The Durbin Watson (DW) statistic is a test to detect autocorrelation (homoscedasticity) in the residuals. A value within the range of 1 to 3 means that there is no autocorrelation detected in the sample, and therefore no inter-item correlation (Nair and Nian, 2017).

In order to establish the effect of the four contingent factors (company size, company age, EMS adoption and business type) on the relationship between institutional pillars and the level of adoption of EMA in manufacturing companies operating in Libya, the model proposed by Aguinis (1995) and used by Wang et al. (2018) was applied in this study, with some modification to include the four contingent factors. Four models were developed, with EMA as a dependent variable, coercive, normative, and mimetic pressure as independent variables, and each contingent factor as a moderate variable. The moderating effects of each contingent factor on the relationship between institutional pillars and EMA adoption can be modelled separately as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + Z\,(\beta_4 X_1 + \beta_5 X_2 + \beta_6 X_3 + \beta_7) + e$$

Where:

Y = level of EMA adoption in the manufacturing companies operating in Libya; β_0 = is the intercept; β_1 = the effect of X_1 on Y; β_2 = the effect of X_2 on Y; β_3 = the effect of X_3 on Y; β_4 = the effect of X_1Z on Y; β_5 = the effect of X_2Z on Y; β_6 = the effect of X_3Z on Y; β_7 = the effect of Z on Y; X_1 = coercive pressure; X_2 = normative pressure; X_3 = mimetic pressure; Z = the moderating variable; and *e* = is a residual term.

An extra step for moderating multiple analyses is to compare the adjusted R^2 of the original relationship with the adjusted R^2 change with the moderator factor. If the F-change is significant ($p < 0.05$), this mean that the form of the relation between two variables depends on the value of a moderating variable.

[Table 11: Insert Here]

As shown in Table 11, the results indicated that the F-change of Model 2 was found to be strongly significant ($p < 0.01$). This means that Model 3 is significant enough to explain the effect of the moderating factors (company size) on the relationship between the dependent variable and independent variables. As F-change of Model 2 is statistically significant, this indicates that company size has the potential to significantly moderate the relationship between institutional pillars and the level of EMA adoption by manufacturing companies operating in Libya. While for Models 3, 4 and 5, the results showed that the F-change of these models was not strongly significant with a p-value is above 0.05. This mean that these models were not significant enough to explain the effect of some moderating factors (company age, EMS adoption and business type) on the relationship between the dependent variable (EMA) and the independent variables (institutional pillars). Accordingly, hypotheses 5, 6 and 7 were rejected.

Additional analysis for model 2 to examine the effect of company size on the relationship between each institutional pillar and EMA adoption has been conducted. The results of the coefficients for Model 2 showed that the moderating effect of company size on the relationship between coercive pressure and EMA adoption is positive and significant, with a beta value of 0.481 and p-value < 0.01 (see Table 12). According to these findings, it can be concluded coercive pressure impacts the extent to which manufacturing companies operating in Libya carry out EMA practices, and that this relationship is moderated by company size. The relationship between coercive pressure and EMA adoption varies as a function of the value of company size.

Thus, hypothesis 4a is supported. However, the moderating effect of company size on the relationships between normative and mimetic pressure and EMA adoption are negative and positive respectively but not significant as p-value was above 0.05. Thus, hypothesis 4b and 4c were not supported. A likely explanation of these results is that the original relationships between normative and mimetic pressure and EMA adoption were also not significant.

[Table 12: Insert Here]

5. Discussion

This study explores the effects of institutional pressures on EMA adoption. Our analysis reveals that among institutional factors only coercive pressure was statistically significant and had a positive impact on EMA adoption by manufacturing companies operating in Libya. This result suggests that manufacturing companies operating in Libya had faced coercive pressures from different sources concerning environmental related issues and this had pushed them to adopt EMA as a way of reducing these pressures. Within the mean of coercive pressure of this study, environmental law had the largest influence on EMA adoption; this suggests that coercive pressure that comes from government regulations could exert a stronger influence on EMA adoption than other sources of coercive pressure. This could be explained by the fact that the existing environmental laws in Libya oblige companies to improve their environmental performance. In addition, the law impose penalties and fines on companies, whether public or private, national or foreign, who pollute the environment. This result is consistent with previous studies such as Qian and Burritt (2011), Jalaludin et al. (2011); Jamil et al. (2015); Qian et al. (2015); Wang et al. (2018); Zandi and Lee (2019); Siskawati et al. (2019); Ferdous et al. (2019); and Iredele et al. (2019) who all have found that coercive pressure has a positive significant influence on EMA adoption.

The findings also indicate that normative pressure is not significantly associated with EMA adoption among manufacturing companies operating in Libya. A likely explanation is that there is still no faculty in any Libyan university that offers courses related to accounting and the environment in their accounting curricula, except as an option on a Master's programme. Also, there is a lack of connection between educational institutes and other economic and business enterprises; this disconnection does not enable sufficient normative pressure to be exerted on companies in Libya (OECD, 2016). As a result, students who graduate from Libyan universities, whether undergraduates or postgraduates are unlikely to have developed any norms or rules about EMA practices (Saleh, 2004; Aldrugi 2013; and Mohamed, 2014). Equally, the main accounting body in Libya, the Libyan Accountants and Auditors Association (LAAA) is characterized by weak performance underpinned by weak political backup, absence of the criteria required to organize the practice of the profession, and a lack of effort in scientific accounting research and training courses (Bakar and Russell, 2003; Saleh, 2004; Shareia, 2010; and Mohamed, 2014). Therefore, the LAAA is not expected to change attitudes in the short to medium term, especially with regard to the issues of environmental accounting and environmental management accounting. The lack of influence, political backup and connections of educational and professional institutes on businesses in Libya result in weak, or no, normative impact on adopting EMA by manufacturing companies operating in Libya (see Alnafati Zars, 2015). A further reason could be traced back to the complexity of EMA, the lack of appropriate

guidance, and difficulties in measuring and allocating environmental costs. The lack of guidance on EMA leads to difficulties in collecting, identifying and evaluating environmental-related data effectively, even within the leading companies; thus the adoption of EMA may still be out of reach for some companies. The result of this study with regard to normative pillars is consistent with Jamil et al. (2015), who found that normative pressure does not contribute significantly to the adoption of EMA by small and medium manufacturing companies in Malaysia. However, a different result was reported by Wang et al. (2018), in China, Jalaludin et al. (2011), in Malaysia and Iredele et al. (2019), in Nigeria and South Africa.

Additionally, the results indicate that mimetic pressure does not influence EMA adoption among manufacturing companies operating in Libya. One possible explanation is that the benefits of EMA adoption only outweighs the cost in the long term, thus adoption may still not be attractive for many companies, such an opinion was confirmed by Wang et al. (2018). Furthermore, it has been reported that competition among manufacturing companies in Libya lacks existence (Triki, 2017). This issue explains the lack of mimetic pressure on adopting EMA by manufacturing companies in Libya. Another possible reason is that the uncertainty that arises in relation to management accounting practices may be reduced by other reliable references, such as a consultant's advice. The availability of such references will reduce the need to imitate another company's management accounting practices, including EMA (Jalaludin et al., 2011). A further reason could be traced back to the lack of communication between companies in the same field could impede mimetic processes (Triki, 2017). Lastly, although companies might imitate management accounting practices that are well known, this is not the case with EMA, as EMA is still at a primary stage. Hence, companies may not find it appropriate to imitate EMA practices as only a limited number of companies have successfully adopted EMA (Wang et al., 2018). The finding of this study in respect of the relationship between mimetic pressure and EMA is consistent with previous studies related to EMA. For example, Jalaludin et al. (2011), Jamil et al. (2015), and Wang et al. (2018) all examined the mimetic argument and found that there was an insignificant relationship between mimetic processes and EMA adoption. Although this prediction was developed from the perspective of NIS, there was no evidence in this study to support the argument that, in situations of uncertainty, companies adopt EMA as a way to reduce their environmental impact. However, this conclusion supports (Qian et al., 2011) the adoption of certain management accounting tools and measures depends to a large extent on the individual company's circumstances. Therefore, this study provides no empirical support for the influence of mimetic pressures on EMA adoption level among manufacturing companies operating in Libya.

Furthermore, this study found that the moderating effect of company size on the relationships between coercive pressure and EMA adoption to be positive and significant. This is because large companies find it easier to adopt EMA as they have greater access to the required resources in terms of investments, human resources, and techniques. Hence, when facing coercive pressure exerted by government, stakeholders, and other powerful sources, large companies are more likely to respond by adopting EMA in order to maintain good relationships, to gain legitimacy and to enhance their reputation. According to these findings, it can be concluded that there is a positive relationship between coercive pressure and the extent to which manufacturing companies operating in Libya carry out EMA practices, and that this relationship is moderated by company size. Conversely, the moderating effect of company size on the relationships

between normative and mimetic pressure and EMA adoption are positive and negative respectively, but not significant. Accordingly, it can be concluded that company size does not moderate the relationships between normative and mimetic pressure and the level of EMA adoption by manufacturing companies operating in Libya. Our analysis indicates that company age, EMA adoption and business type do not moderate the relationship between institutional pillars and level of EMA adoption in manufacturing companies operating in Libya. Wang et al. (2018) found that the effects of institutional pressures on the adoption of EMA must be viewed in light of the level of senior management support or perceived benefit. This study provides additional dimension to Wang el al. (2018) by showing that the effects of coercive pressures on the adoption of EMA must be viewed in light of company size.

From a theoretical perspective there was sufficient evidence for one of the contingent variables to suggest organisational context does play a significant role in determining the effect of institutional pillars on companies that choose to adopt EMA practices. These findings are consistent with the idea of combing institutional theory and contingency theory, which suggests that companies may face sources of environmentally induced institutional pressure to address environmental issues, the manner in which they respond to such pressure is likely to be shaped by the specific circumstances faced by individual companies (Qian et al., 2011). Hence, the findings support the extension of combining institutional theory pillars and contingency theory into the field of organizational change as previously suggested by Carroll (1993); Gupta et al. (1994); Clark and Soulsby (1995); Bouma and van der Veen (2002); and Qian et al. (2011).

6. Conclusions

This study sought to investigate the influence of determinant factors on the level of EMA adoption in manufacturing companies operating in Libya. We examined the relationships among institutional pressures, four contingent factors (company size, company age, EMS adoption, business type) from one side and EMA adoption from the other. Data were collected from a sample of medium and large-sized manufacturing companies operating in Libya. Our results indicated that coercive pressure is the only institutional pillar that has a significant positive impact on EMA adoption by manufacturing companies operating in Libya. This means that the level of EMA implementation by manufacturing companies operating in Libya is influenced by coercive pressure that comes from sources such as environmental laws, shareholder pressure, and pressure from local communities. Furthermore, the only significant effect of a moderating contingent factor that influences the adoption of EMA by manufacturing companies operating in Libya is company size.

6.1 Implications of the study

This study presents four implications in terms of context, theory, practice and policy. Contextually, the study contributes to knowledge related to management accounting (MA), particularly the adoption of environmental management accounting (EMA) in the Libyan context, and to the factors that influence the adoption and implementation process of EMA. This study contributes to the literature on the role of institutional theory in EMA research. Theoretically, the most important contribution of this study to the body of the knowledge comes from being able to combine contingency and NIS theory to create a complementary perspective, by examining the moderating effect of four contingent variables (company size, company age, EMS adoption and business type) on the relationship between institutional pillars and EMA

adoption in manufacturing companies in Libya. The implication of the study to practitioners is also presented. It showed that while organisations may face institutional pressure to address environmental issues, the manner in which they respond to such pressure is likely to be shaped by their size. However, since we did not find impact of mimetic and normative pressures on EMA, we make a call on enhancing links between educational and professional bodies and businesses in Libya. Lastly, as implication to policy-making, the research calls on governmental agencies and business societies to activate competition among manufacturing companies operating in Libya. Such completion should lead to enhancement of environmental and sustainable practices by these businesses.

6.2 Suggestion for Future Research

This study has been subject to a number of limitations. First, this study is subject to the normal limitations of survey-based research, including response and social desirability bias (Christ and Burritt, 2013). Future research could be conducted using a combined approach of survey and interview to strengthen the explanatory aspect of this type of studies. Second, this study is classified as cross-sectional as all data used in this research were collected at one point in time rather than longitudinally. This means the results reflect the situation at a specific point in time. Eventually, this calls for longitudinal study for replication and comparison of findings.

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APPENDIX

Appendix A: Questionnaire (English Version)

Questionnaire Survey

Dear participant

The main aims of the research are to explore environmental management accounting practices among manufacturing companies in Libya, to identify the factors influencing the presence of EMA practices within the manufacturing companies in Libya.

The questions in the questionnaire are designed to collect data relating to the research aims. The research aims can only be achieved by you and other participant' co-operation in completing the enclosed questionnaire. Your response will be treated as **strictly confidential** and only used for the research purposes. It will not be disclosed to third parties under any circumstances.

The survey is straightforward and should take no more than 30 minutes approximately. Please attempt to answer all the questions and make any comments you may think relevant to the issues mentioned in the questionnaire using the space provided or additional sheets if necessary. Should you need further clarification of any questionnaire item, please do not hesitate to contact me at the address below. If you think someone else should answer the questions, please pass the questionnaire to the appropriate colleague within your company.

I greatly appreciate your contribution to this research by completing the questionnaire.

Thank you in advance for participating in this research

Yours faithfully

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Part A: Demographic information

A1. What is your current occupation?
[ ] Financial manager
[ ] Assistant Financial Manager
[ ] Financial accountant
[ ] cost accountant
[ ] Managerial accountant
Other (please specify) ……..

A2. How long have you been in this occupation?
[ ] Less than 3 years
[ ] 3-5
[ ] 6-10
[ ] 11-15
[ ] More than 15 years

A3. How long have you worked for this company?
[ ] Less than 3 years
[ ] 3-5
[ ] 6-10
[ ] 11-15
[ ] More than 15 years

A4. How many years work experience do you have of accounting/finance?
[ ] Less than 3 years
[ ] 3-5
[ ] 6-10
[ ] 11-15
[ ] More than 15 years

A5. What is the highest academic qualification you have?
[ ] High school level
[ ] Bachelor degree
[ ] Intermediate Diploma
[ ] Postgraduate (e.g. MSc, MBA, PhD)
Professional qualification (please specify)…….

A6. Where did you achieve your highest academic qualification?
[ ] Libya
Other (please specify)…….

A7. Do have any professional qualification in accounting?
[ ] No
[ ] The Institute of Arabic Accountants and Auditors
[ ] The American Institute of Certified public Accountants
[ ] Libyan Association of Accountants and Auditors
[ ] The Association of Chartered Certified Accountants
Other (please specify) ……..

A8. Have you ever attended a training course concerning environmental management and/ or environmental accounting?
[ ] Yes
[ ] No
If yes, where did the training course take place…….

Part B: Corporate characteristics

B1. What is the approximate number of employees of your company?

[ ] 1-100
[ ] 101-200
[ ] 201-300
[ ] More than 300

B2. What is the age of your current company?

[ ] 1 – 3 years
[ ] 4 – 6 years
[ ] 7 – 9 years
[ ] 10 – 12 years
[ ] More than 12 years

B3. Does your company have an environmental management system (EMS)?

[ ] Yes
[ ] Doesn't have
[ ] An EMS is under development
[ ] My company is planning to develop EMS in the future

B4. Please tick one box to indicate your company's type of business**:**

[ ] Food and drinks
[ ] Plastic and rubbery products
[ ] Chemical
[ ] Textiles, wearing apparels and leather
[ ] Metal
[ ] Electrical power
[ ] Oil and gas
[ ] Furniture, carpet and wooden products
[ ] Paper and packing
[ ] Cement
[ ] Motor and Vehicles
Other (please specify)……
[ ] Electrical equipment

Part C: The current adoption of environmental management accounting practices:

For each of the following environmental management accounting practices, **if a practice is currently adopted** by the company accounting system, please circle, on the scale below, for how often the practice is adopted to indicate the extent to which the company currently engaged in each of the practices.

Does not do at all	Does to some extent	Does to a moderate extent	Does to a great extent	Does to a very great extent
1	2	3	4	5

Practices	The level of adoption
Our company's accounting system identifies environment-related costs	1 2 3 4 5
The accounting system in our company estimates environmental-related contingent liabilities	1 2 3 4 5
Our company's accounting system classifies environment-related costs	1 2 3 4 5
Our company's accounting system carries out environmental life cycle costing	1 2 3 4 5
Our company's accounting system carries out environmental target costing	1 2 3 4 5
Our company's accounting system improve environment-related cost management	1 2 3 4 5
Our company's accounting system creates and uses environment-related cost account	1 2 3 4 5
Our company's accounting system develops and uses environment-related key performance indicators (KPIs)	**Deleted**
The accounting system in our company elaborates financial environmental budgeting induced by operations effects to plan for improvement and control the environmental impacts	1 2 3 4 5
The accounting system in our company integrates environmental issues when elaborating the capital budgeting	1 2 3 4 5
The accounting system in our company carries out environmental life cycle budgeting	1 2 3 4 5
Our company's accounting system carries out environmental life cycle target pricing	1 2 3 4 5
The accounting system in our company assesses the potential environmental impacts associated with capital investment decisions	1 2 3 4 5

Part D: The current adoption of environmental management accounting practices:

D1. Could you please read carefully the following statements, which relate to environmental practices or environmental management accounting practices, and show for you agree or disagree with each statement by circling, on the scale below, the appropriate number to indicate the main factors that might influence the management's decision to adopt environmental management accounting.

Strongly Disagree	Disagree	Undecided	Agree	Strongly agree
1	2	3	4	5

Items					
The company's labor union is concerned about environmental issues, and this has put pressure on the company to improve its environmental performance, and the company tries to reduce this pressure by adopting EMA practices	1	2	3	4	5
The increasing environmental consciousness of consumers have spurred our firm to implement environmental management accounting.	1	2	3	4	5
The increasing environmental consciousness of company's shareholders have spurred our firm to implement environmental management accounting	1	2	3	4	5
The company's head office may not support our company if our company does not implement environmental management accounting	1	2	3	4	5
The local community is concerned about environmental issues, and this has put pressure on the company to improve its environmental performance, and the company tries to reduce this pressure by adopting EMA practices	1	2	3	4	5
The environmental NGOs around our firm expect all firms in the industry to improve their environmental performance, and the company tries to meet this expectation by adopting EMA.	1	2	3	4	5
Being environmentally responsible and disclosure of environmental information is a basic requirement to obtain financing or loans from financial institutions.	1	2	3	4	5
The company is subject to a lot of governmental regulation regarding environmental matters, and this has put pressure on the company to improve its environmental performance and the company tries to reduce this pressure by adopting EMA practices.	1	2	3	4	5
The company adopts environmental policies to meet the requirements of government regulations on environmental issues	**Deleted**				
The company is subjected to pay fines if there is a failure to comply with the Libyan environmental laws, and this has put pressure on the company to improve its environmental performance and the company tries to reduce this pressure by adopting EMA practices.	1	2	3	4	5

Continued D1				
Strongly Disagree	**Disagree**	**Undecided**	**Agree**	**Strongly agree**
1	2	3	4	5

The company is concerned with environmental issues to improve its image and reputation on public opinion	**Deleted**				
The media has created a lot of concern about environmental issues, and this has put pressure on our company to improve our environmental performance and the company tries to reduce this pressure by adopting EMA practices.	1	2	3	4	5
The company's environmental management accounting practices have been influenced by academic institutions in Libya	1	2	3	4	5
The company's environmental management accounting practices have been influenced by accounting research in Libya	1	2	3	4	5
The company's environmental management accounting practices have been influenced by accounting research in developed countries	1	2	3	4	5
The company often sends its accounting staff for training with regards to environmental accounting practices	1	2	3	4	5
The company's environmental management accounting practices have been influenced by specialist management accounting books and journals	1	2	3	4	5
The company's environmental management accounting practices have been influenced by conferences and scientific seminars related to environmental issues	1	2	3	4	5
The company's environmental management accounting have been influenced by accounting bodies and unions in Libya	1	2	3	4	5
The company adopted environmental management accounting practices as the other industry organisations are well-known for adopting these practices for reducing their impacts on the environment	**Deleted**				
The company adopted environmental management accounting practices as the companies in our industry are well-known for adopting these practices for reducing their impacts on the environment	1	2	3	4	5
The company adopted environmental management accounting practices as the leader companies in our industry are well-known for adopting these practices for reducing their impacts on the environment	1	2	3	4	5
The company adopted environmental management accounting practices as the multinationals companies in our industry are well-known for adopting these practices for reducing their impacts on the environment.	1	2	3	4	5

If you see any other factors that may have affected the company's adoption of environmental management accounting practices, please refer to them below

……
……
……

Thank you very much for your assistance in completing this questionnaire. We would appreciate any comments or suggestions you may care to make about any issue mentioned in the questionnaire. You may use the space below, or use a separate sheet and return it with the completed questionnaire or separately.

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Many thanks for taking the time to complete this questionnaire

Appendix B: Questionnaire (Arabic Version)

استبيان

الأخوة المشاركين في هذه الدراسة /

أقوم بإجراء دراسة حول ممارسات المحاسبة الادارية البيئية، كأحد الإفرازات الحديثة لمجال المحاسبة البيئية، في الشركات الصناعية العاملة في ليبيا.

صممت أسئلة الاستبيان لجمع بيانات تتعلق بأهداف الدارسة والتي يمكن تحقيقها فقط بواسطة تعاونك وتعاون المجيبين الأخين في ملء الاستبيان المرفق. اجابتك سوف تعامل بسرية تامة وسوف تستخدم فقط لأغراض الدراسة ولن يفصح عنها لأي طرف ثالث تحت أي ظروف. أود أن أؤكد لك أيضاً ... بأن ملؤك لهذا الاستبيان هو تطوع منك للمساعدة ، لذلك لك مطلق الحرية في رفض المشاركة أو الانسحاب والعدول عن تكملة الاجابة عن الاستبيان بدون أن تكون مجبرًا لإبداء أي سبب ... فهو حقك.

الاستبيان سهل ولن يأخذ من وقتك إلا قرابة العشرون دقيقة لاستكماله. الرجاء حاول الإجابة عن جميع الأسئلة ووضع أي ملاحظات ترى أنها متعلقة بالقضايا التي ذكرت في الاستبيان باستخدام المكان المعد لذلك أو في صفحات إضافية إذا لزم الأمر. و إذا احتجت إلي أي توضيحات إضافية لأي من بنود الاستبيان، الرجاء لا تتردد بالاتصال علي العناوين المذكورة أدناه. إذا كنت تعتقد أن أي شخص أخر يجب أن يجيب على الأسئلة، فيرجى تمرير الاستبيان إلى الزميل المناسب في الشركة.

مع الشكر سلفا لقبولكم المشاركة بهذه الدراسة

و تفضلوا بقبول فائق التقدير و الاحترام

سامي سالم الحصادي
جامعة تونس – تونس
هاتف نقال: 00218918300445
البريد الالكتروني: Sf.hoss@yahoo.co.uk
Samihoss82@yahoo.com
LinkedIn: www. Linkedln.com/in/sami-elhossade

الجزء أ: معلومات شخصية:

أ1. ما هو مركزك الوظيفي الحالي؟

[ ] مدير القسم المالي
[ ] مساعد مدير مالي
[ ] محاسب مالي
[ ] محاسب تكاليف
[ ] محاسب اداري
اخري (الرجاء حدد).....

أ2. كم عدد السنوات التي قضيتها في هذا المركز؟

[ ] أقل من 3 سنوات
[ ] 3-5 سنوات
[ ] 6-10 سنوات
[ ] 11-15 سنة
[ ] أكثر من 15 سنة

أ3. كم عدد السنوات التي عملتها في الشركة ؟

[ ] أقل من 3 سنوات
[ ] 3-5 سنوات
[ ] 6-10 سنوات
[ ] 11-15 سنة
[ ] أكثر من 15 سنة

أ4. كم عدد سنوات الخبرة العملية لديك في مجال المحاسبة/المالية؟

[ ] أقل من 3 سنوات
[ ] 3-5 سنوات
[ ] 6-10 سنوات
[ ] 11-15 سنة
[ ] أكثر من 15 سنة

أ5. ما هو أعلى مؤهل علمي تحصلت عليه؟

[ ] ثانوي
[ ] معهد عالي أو بكالوريوس
[ ] معهد متوسط
[ ] دراسات عليا (ماجستير، دكتوراه، اخري)
أخرى (الرجاء حدد) .....

أ6. ما هي الدولة التي تحصلت فيها على أعلي مؤهل علمي؟

[ ] ليبيا
أخرى (الرجاء حدد) .....

أ7. هل لديك (أو لا) أي من المؤهلات المهنية التالية في مجال المحاسبة؟

[ ] لا يوجد
[ ] المجمع العربي للمحاسبين والمراجعين
[ ] المجمع الأمريكي للمحاسبين القانونيين
[ ] نقابة المحاسبين والمراجعين الليبيين
[ ] جمعية المحاسبين القانونيين ببريطانيا
أخرى (الرجاء حدد) .....

أ8. هل سبق أن حضرت دورات تدريبية في مجال الإدارة البيئية أو المحاسبة البيئية؟

[ ] نعم
[ ] لا
إذا كانت الإجابة بنعم، أين أقيمت الدورة التدريبية؟.....

[ ] غذائية ومشروبات
[ ] منتجات بلاستيكية ومطاطية

[ ] كيميائية

[ ] صناعة معادن

[ ] نفط وغاز

[ ] صناعة ورق

[ ] سيارات وأدوات نقل

[ ] أدوات كهربائية

[ ] منسوجات وملابس وجلود

[ ] طاقة كهربائية

[ ] أثاث ومفروشات وأخشاب

[ ] صناعة اسمنت

[ ] أخرى، الرجاء حدد.....

ب1. ما هو عدد العاملين في الشركة تقريباً؟

[ ] أقل من 50
[ ] 50 - 100
[ ] 101 - 200
[ ] 201 - 500
[ ] أكثر من 500

ب2. ما هو عمر شركتكم الحالي؟

[ ] 1 - 3 سنوات
[ ] 4 - 6 سنوات
[ ] 7 - 9 سنوات
[ ] 10 - 12 سنة
[ ] أكثر من 12 سنة

ب3. هل لدى شركتكم نظام للإدارة البيئية؟

[ ] نعم
[ ] لا
[ ] نظام إدارة البيئة تحت التطوير حاليا
[ ] الشركة تخطط لتبني نظام إدارة البيئة في المستقبل

ب 4. الرجاء ضع علامة (√) لتحديد القطاع الأساسي للشركة:

[ ] غذائية ومشروبات
[ ] كيميائية
[ ] صناعة معادن
[ ] نفط وغاز
[ ] صناعة ورق
[ ] سيارات وأدوات نقل
[ ] أدوات كهربائية
[ ] منتجات بلاستيكية ومطاطية
[ ] منسوجات وملابس وجلود
[ ] طاقة كهربائية
[ ] أثاث ومفروشات وأخشاب
[ ] صناعة اسمنت
[ ] أخرى، الرجاء حدد.....

الجزء ج: المستوى الحالي لتطبيق ممارسات المحاسبة الإدارية البيئية

ج1. لكل من ممارسات المحاسبة الادارية البيئية التالية، **إذا تم تطبيق الممارسة في الوقت الحالي** من قبل النظام المحاسبي بالشركة، يرجى وضع دائرة - علي المقياس أدناه - في كل صف على الرقم المناسب، لمعرفة مستوى تطبيق الشركة حالياً لكل ممارسة.

إلى حد كبير جداً	إلى حد كبير	إلى حد معقول	إلى حد ما	لا يتم أبداً
5	4	3	2	1

ممارسات المحاسبة الادارية البيئية					
يقوم النظام المحاسبي في شركتنا بتحديد التكاليف ذات الصلة بالبيئة	1	2	3	4	5
يقوم النظام المحاسبي في شركتنا بتقدير الالتزامات المحتملة ذات الصلة بالبيئة	1	2	3	4	5
يقوم النظام المحاسبي في شركتنا بتصنيف التكاليف ذات الصلة بالبيئة	1	2	3	4	5
النظام المحاسبي في شركتنا يقوم بتطبيق تكاليف دورة الحياة البيئية	1	2	3	4	5
النظام المحاسبي في شركتنا يقوم بتطبيق التكلفة المستهدفة البيئية	1	2	3	4	5
يقوم النظام المحاسبي في شركتنا بـتحسين إدارة التكاليف البيئية	1	2	3	4	5
يقوم النظام المحاسبي في شركتنا بإنشاء واستخدام حسابات للتكلفة البيئية	1	2	3	4	5
يساهم النظام المحاسبي في شركتنا في تطوير واستخدام مؤشرات الأداء البيئي					
يقوم النظام المحاسبي في شركتنا بإعداد ميزانية مالية بيئية ناتجة عن تأثير العمليات للتخطيط في تحسين و التحكم في التأثيرات البيئية	1	2	3	4	5
يقوم النظام المحاسبي في شركتنا بدمج القضايا البيئية في الميزانية الرأسمالية	1	2	3	4	5
النظام المحاسبي في شركتنا يقوم بتطبيق ميزانية دورة الحياة البيئية	1	2	3	4	5
النظام المحاسبي في شركتنا يقوم بتطبيق التسعير المستهدف لدورة الحياة البيئية	1	2	3	4	5
يقوم النظام المحاسبي في شركتنا بـتقدير الآثار البيئية المحتملة المرتبطة بـالقرارات الاستثمارية	1	2	3	4	5

الجزء د: العوامل المؤثرة في تطبيق ممارسات المحاسبة الإدارية البيئية

الرجاء أن تقرأ بعناية العبارات التالية، التي تتعلق بالعوامل التي أدت إلى تطبيق ممارسات المحاسبة الادارية البيئية، ومن فضلك اختار درجة الموافقة التي تراها مناسبة لكل صف وذلك بوضع دائرة - علي المقياس أدناه - في كل صف على الرقم المناسب.

موافق بشدة	موافق	محايد	غير موافق	غير موافق على الاطلاق
5	4	3	2	1

البنود					
تهتم نقابة العمال في الشركة بالقضايا البيئية ، وقد أدى ذلك إلى الضغط على الشركة لتحسين أدائها البيئي، وتحاول الشركة تقليل هذا الضغط من خلال تطبيق ممارسات المحاسبة الإدارية البيئية	1	2	3	4	5
هناك وعي بيئي متزايد لدى عملاء الشركة الامر الذي دفع شركتنا لتطبيق ممارسات المحاسبة الإدارية البيئية	1	2	3	4	5
هناك وعي بيئي متزايد لدى مساهمي الشركة الامر الذي دفع شركتنا لتطبيق ممارسات المحاسبة الإدارية البيئية	1	2	3	4	5
حصولنا على الدعم من المكتب الرئيسي للشركة يعتمد وبشكل رئيسي علي تطبيق شركتنا لممارسات المحاسبة الإدارية البيئية	1	2	3	4	5
يهتم المجتمع المحلي بالقضايا البيئية، وقد أدى ذلك إلى الضغط على الشركة لتحسين أدائها البيئي، وتحاول الشركة تقليل هذا الضغط من خلال تطبيق ممارسات المحاسبة الإدارية البيئية	1	2	3	4	5
تتوقع المنظمات غير الحكومية المدافعة عن البيئة من جميع الشركات العاملة الصناعية تحسين أدائها البيئي ، وتحاول شركتنا تلبية هذا التوقع من خلال تطبيق ممارسات المحاسبة الإدارية البيئية	1	2	3	4	5
تعتبر المسؤولية البيئية والافصاح عن المعلومات البيئية شرطًا أساسيًا للحصول على تمويل أو قروض من المؤسسات المالية.	1	2	3	4	5
تخضع الشركة إلى الكثير من اللوائح الحكومية المتعلقة بالمسائل البيئية ، وقد فرض هذا ضغطًا على الشركة لتحسين أدائها البيئي وتحاول الشركة تقليل هذا الضغط من خلال تطبيق ممارسات المحاسبة الإدارية البيئية .	1	2	3	4	5
تتبني الشركة ممارسات بيئية لمواجهة ضغوط المؤسسات الحكومية	حذفت				
تفرض على الشركة غرامات مالية إذا كان حدث اختراق للقوانين البيئية الليبية ، الأمر الذي فرض ضغطاً على الشركة لتحسين أدائها البيئي وتحاول الشركة تقليل هذا الضغط من خلال تطبيق ممارسات المحاسبة الإدارية البيئية .	1	2	3	4	5
تهتم الشركة بالقضايا البيئية لتحسين صورتها وسمعتها أمام الرأي العام	حذفت				
أثارت وسائل الإعلام قلقًا كبيرًا بشأن القضايا البيئية ، وقد فرض هذا ضغطاً على شركتنا لتحسين أدائها البيئي وتحاول الشركة تقليل هذا الضغط من خلال تطبيق ممارسات المحاسبة الإدارية البيئية	1	2	3	4	5
تأثرت ممارسات المحاسبة الإدارية البيئية للشركة بالمؤسسات الأكاديمية في ليبيا	1	2	3	4	5
تأثرت ممارسات المحاسبة الإدارية البيئية للشركة بالأبحاث المحاسبية في ليبيا	1	2	3	4	5
تأثرت ممارسات المحاسبة الإدارية البيئية للشركة بالأبحاث المحاسبية في الدول المتقدمة	1	2	3	4	5

تابع د1					
موافق بشدة	موافق	محايد	غير موافق	غير موافق على الاطلاق	
5	4	3	2	1	
غالبًا ما تقوم الشركة بتوفير دروات تدريبية للمحاسبين حول ممارسات المحاسبة البيئية	1	2	3	4	5
تأثرت ممارسات المحاسبة الإدارية البيئية للشركة بالكتب والمجلات المتخصصة في مجال المحاسبة الإدارية	1	2	3	4	5
تأثرت ممارسات المحاسبة الإدارية البيئية للشركة بالمؤتمرات والندوات العلمية ذات العلاقة بالقضايا البيئية	1	2	3	4	5
تأثرت ممارسات المحاسبة الإدارية البيئية للشركة بالهيئات والنقابات المحاسبية في ليبيا	1	2	3	4	5
تقوم الشركة باستخدام ممارسات المحاسبة الإدارية البيئية تماشياً مع الشركات الصناعية الأخرى التي عرفت باستخدامها كأداة لتخفيض آثارها البيئية	حذفت				
تقوم الشركة باستخدام ممارسات المحاسبة الإدارية البيئية تماشياً مع الشركات المنافسة التي عرفت باستخدامها كأداة لتخفيض آثارها البيئية	1	2	3	4	5
تقوم الشركة باستخدام ممارسات المحاسبة الإدارية البيئية تماشياً مع الشركات المنافسة التي عرفت باستخدامها كأداة لتخفيض آثارها البيئية	1	2	3	4	5
تقوم الشركة باستخدام ممارسات المحاسبة الإدارية البيئية تماشياً مع الشركات المتعددة الجنسية التي عرفت باستخدامها كأداة لتخفيض آثارها البيئية	1	2	3	4	5

إذا كنت ترى أي عوامل أخري قد أثرت في تبني الشركة لممارسات المحاسبة الإدارية البيئية يمكن أن تستخدم الجزء المخصص أدناه لذكرها

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شكراً على مساعدتك في تعبئة الاستبيان. نحن نقدر أي ملاحظات أو اقتراحات ترغب في اثارتها حول أي نقطة ذكرت في الاستبيان. يمكن أن تستخدم الجزء المخصص أدناه أو استخدام صفحة إضافية وارفقها مع الاستبيان المعبأ.

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إذا ترغب أن نرسل إليك نسخة من ملخص نتائج هذا البحث حال إتمامه؛ اكتب لنا بريدك الإلكتروني هنا

بريدك الإلكتروني.....@.....

شكراً جزيلا لتعاونكم وتخصيص جزءاً من وقتكم لاستكمال هذا الاستبيان