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Evaluating the Influence of Barriers to Environmental Sustainability on Environmental Management Accounting in the Food and Beverage Manufacturing Firms in Durban, South Africa

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Abstract: The purpose of this study is to investigate how barriers to environmental sustainability influence the implementation of environmental management accounting in the food and beverage manufacturing firms in Durban, South Africa. Most professions make extensive use of environmental sustainability. However, research on environmental sustainability difficulties in the context of environmental management accounting in food and beverage manufacturing enterprises is limited. In this study, the quantitative research approach was applied, and convenience sampling was used to select study participants. The study obtained primary data from participants who work as finance managers, management accountants, factory accountants, and chief accountants in food and beverage manufacturing firms. The data was analyzed using SPSS. A total of 128 questionnaires were administered, with 124 filled correctly and evaluated. A Pearson's correlation research and regression analysis were performed. The Pearson's correlation coefficient findings show a statistically significant relationship between barriers to environmental sustainability and environmental management accounting in food and beverage manufacturing enterprises at ($r = .250$, $p < 0.0005$). According to the results of a regression study, the independent variable, barriers to sustainability, is a major predictor of environmental management accounting, $B= 0.442$, $p< 0.05$. The study suggests that firms within the food and beverage sector must resolve barriers to environmental sustainability in order to successfully implement environmental management accounting practices in their operations.

Keywords: Environmental management; Environmental Accounting; Sustainability; Institutional theory

1. Introduction

The term sustainability has changed over time, evolving in tandem with the dynamics of human society. Humans are collectively accountable for the world, and every one of them should be part of the battle against abuse and neglect of the environment. This disclosure challenged people throughout the world to distinguish between environmental duty and environmental irresponsibility (Opoku, Ayarkwa, & Agyekum, 2019). Environmental sustainability entails the act and process of being able to replenish resources, restrict pollutant production, and remove practices that affect our environment. Other phrases, such as becoming green and corporate social obligations, are also tied to helping corporations protect the environment in their practices. Large firms only generate around 30% of global pollution; nonetheless, they are significantly more competent to attain environmental sustainability. This is because they have more resources, such as capital, knowledge, and technology

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to adjust and drive their business and become more environmentally sustainable (Bakos, Siu, Orengo, & Kasiri, 2020). Although some companies are exposed to numerous resources, they are still faced with challenges in engaging in environmentally friendly practices. Stakeholders are putting pressure on firms to be transparent and accountable about what they are doing to expand environmental sustainability. As a result of these influences, numerous perspectives of the idea and practices of environmental accounting have emerged (Burritt, Hahn, & Schaltegger, 2002). Authorities, customers, local communities, and international organizations have come to embrace the notion of sustainable development, which holds that economic progress may continue while the environment and natural resources are protected (Setthasakko, 2010).

Environmental management accounting is a combined technique that allows information from financial accounting, cost accounting, and mass balances to be transferred to boost resource productivity, minimize environmental impacts and hazards, and lower environmental protection costs (Jasch, 2003). If professional organizations, practitioners, and academics alike accept to challenge their current processes to incorporate sustainability in the development of new tools and standards, EMA could be the missing link to sustainability. Indeed, despite numerous requests for corporations to promote openness and responsibility for their negative environmental consequences, reporting has long been regarded as insufficient to push organizations toward sustainability. Bringing the EMA closer to adopting sustainable development could thus be a positive step toward reconciling organizations with sustainability (Gibassier & Alcouffe, 2018).

The concept of sustainability is not new to the organizational world, as reflected, for example, in the rising trend for companies to implement sustainability in their mission and vision statements, endorse efficient and environmentally friendly procedures, adopt triple-bottom-line disclosure requirements, and rejoice sustainability. However, there is still a long way from living in a sustainable society, as there are still significant impediments to achieving sustainability goals (de Paiva Duarte, 2015). Five key types of impediments to environmental sustainability, are institutional barriers, managerial barriers, resource constraints, informational barriers, and culture differences (Iredele & Ogunleye, 2017). The aim of this paper is to investigate the influence of environmental sustainability barriers to environmental management accounting in the food and beverage manufacturing firms in Durban, South Africa. There is limited information on the background causes of barriers to environmental sustainability and the development of environmental management accounting. This paper explores barriers to environmental sustainability to understand the challenges of implementing environmental management accounting in the food and beverage manufacturing firms in Durban. In industrialized nations environmental management accounting procedures have improved as a support mechanism for managing environmental difficulties, enterprises on the African continent that face many hurdles as a result of environmental deterioration have underutilized this instrument (Iredele & Ogunleye, 2017).

2. Literature Review

2.1. Review on Barriers to Environmental Sustainability and Environmental Management Accounting

Environmental awareness among corporations is increasing. As a result, many businesses are acquiring ecologically responsible options (goods and services that have a low environmental impact) and integrating them into their operational processes in the hopes of reaping benefits, such as cost savings, productivity improvements, and positive consumer impressions (Ramirez, Gonzalez &

Moreira, 2014). Some businesses, on the other hand, take a more environmentally ambivalent position, recognizing that expenditures may be followed by the risk of low profits and long payback periods. To summarize, data suggest that adopting ecologically responsible solutions might represent a significant opportunity and that failing to do so may have a detrimental influence on a firm's reputation, cost structure, and earnings (Ramirez et al., 2014).

The concept of corporate or commercial sustainability is related to a wide range of difficulties and considerations. However, it is common for businesses to just address a portion of the sustainability issue by focusing on specific areas and/or business activities. Simultaneously, different international and national requirements necessitate addressing specific sustainability challenges, while businesses may also choose a variety of extra sustainability factors for their sustainability activities (Stewart, Bey & Boks, 2016). Environmental sustainability challenges have arisen as critical topics of concern in corporate management. Growing consumer demand for environmentally friendly products and services, as well as tightened environmental legislation and a growing desire for greater corporate social responsibility, have become the primary motivators for businesses to implement green initiatives (Evangelista, Colicchia, & Creazza, 2017). Environmental sustainability is a constantly expanding and evolving science, yet there is still significant uncertainty in elements of the problems and solutions, despite a substantial body of study in this area (Khatter, White, Pyke, & McGrath, 2021). Innovation can give a solution to the major environmental concerns, but it frequently encounters opposition, demanding a change in output to assure its acceptance. Certain barriers typically obstruct organizational change for sustainability; understanding them can aid in the use of appropriate techniques to overcome them, hence assisting in the better incorporation and institutionalization of sustainability (Orji, 2019).

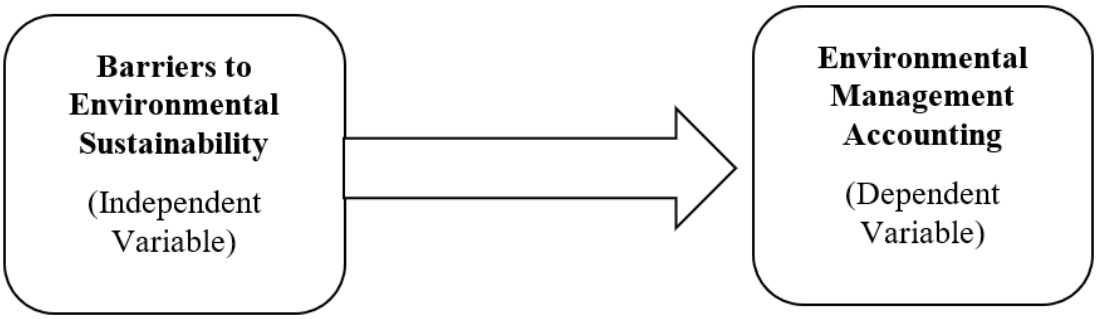
Environmental sustainability barriers and drivers are variables that restrict or enhance an organization's contribution to environmental sustainability. These elements can be internal, external, or organizational. Smaller organizations' efforts to address environmental sustainability challenges are hampered by a lack of awareness and comprehension of the idea, as well as a lack of pressure from their clients and other effective drivers (Khatter et al., 2021). According to Álvarez Jaramillo, Zartha Sossa, and Orozco Mendoza (2019), factors that affect the adoption of environmental sustainability in small firms includes financial insecurity, unsatisfied and inefficient employees, poor public perceptions about the business, and environmental harm (with variable repercussions depending on factors such as the company's size, geographic location, and type of economic activity). Internal barriers are a major reason why organizations do not incorporate environmentally sustainable practices into their daily operations. Costs and a lack of perceived legitimacy are some of the primary internal barriers impeding ecologically friendly activities, while legislation and industry-specific barriers are some of the external barriers (Khatter et al., 2021). Poor market structure, a lack of proper logistics, and inadequate environmental regulation are all obstacles to implementing sustainable practices. According to research, smaller businesses face greater issues and restrictions due to a lack of resources such as finances and educated staff (Bakos et al., 2020).

Previous research has found a minimal correlation between environmental management accounting and sustainability. Environmental management accounting may be the missing link to long-term sustainability, according to some researchers. Therefore, embracing these notions may aid organizations in implementing sustainability in their practices (Gibassier & Alcouffe, 2018). According to Schaltegger (2018), because EMA focuses on natural environment issues, it must be considered from the perspective of environmental issues of sustainability. In what the authors refer to

as the critical perspective, the other viewpoint reflected in the EMA literature represents a broader environmental accountability and sustainability objective. According to this viewpoint, one major critique of the conservative EMA approach is that, despite the rhetoric, the environment remains subservient to the corporate economic agenda (Cullen & Whelan, 2006).

According to Jasch (2003), environmental management accounting is an integrated technique that allows information from financial reporting, cost accounting, and material flow balances to be transferred to boost material efficiency, minimize environmental effects and risk, and lower environmental protection costs. EMA is carried out by private or public organizations, but not by states, and it includes both a financial and a physical component. A further study by Jasch (2006) highlighted a recent evolution of EMA is to integrate social components and to shift the emphasis from "Environment" to "Sustainability". Currently, sustainability is requiring businesses to discover strategies to better environmental performance while growing economically. Understanding the obstacles to sustainability and environmental management accounting is essential for conquering them. Integrating environmental considerations into typical accounting systems is a difficult task. The three underlying causes of the impediments are an absence of organizational learning and inadequate environmental experience and expertise (Setthasakko, 2010).

2.2. Conceptual Framework to Show the Linkage between the Variables



2.3. Theoretical Framework: Institutional Theory

The institutional theory focuses on the relationship between the organization and its environment, notably on the organization's firmness and continued existence. This theory emphasizes how firms can incorporate ingrained norms and standards to strengthen their foundations and increase their likelihood of living. Furthermore, adhering to these standards and practices leads to legitimacy, the ability to receive assistance, and the attraction of resources (Chen & Roberts, 2010);((Michelon, Pilonato, Ricceri, & Roberts, 2016). According to (Muhammad, Mohamed, Muhammad & Ali, 2015), This theory investigates how organizations are surrounded by organizational pressures such as the authorities, professional associations, and society through organizational structure and actions. As a result, the isomorphic concept is crucial in institutional theory, and it usually includes various mechanisms: Coercive pressures, imitative pressures, and socially contracted pressures are all examples of socially contracted pressures. According to Chathurangani and Madhusanka (2019), The theory is beneficial because it tackles institutional influences in company and labour behaviour. External and organizational settings, such as laws, values, traditional influences, common understandings, norms, and societal expectations, according to institutional theory, have a considerable influence on organizational behaviours and practices (Wang, Wang & Wang, 2019).

2.4. Empirical Review

In a study conducted by Ramirez et al. (2014) it was determined that supplier-related constraints, such as associated costs, simplicity of use, supplier reputation, and the inventiveness and implementation of their offers, and intra-organizational constraints, such as organizational structure and culture impede the implementation of environmentally friendly practices. According to the study's findings by Orji (2019), the main impediments include an inefficient legislative framework, poor proactive strategies, a lack of sustainable waste management, and institutional buyers' preferences. Furthermore, the most influential factors were determined to be implementing government legislation, including sustainability into proactive strategies, marketing sustainable products, and improving infrastructure support and facilities for sustainability. Stewart et al. (2016) conducted a study on the barriers of different types of sustainability approaches and it was discovered that performance assessment systems and access to industry-specific information, benchmarks, or reference cases are common areas of difficulty for all types. When changing from a production to a value proposition focus, the key variation is an increase in obstacles beyond the firm's borders. Khatter et al. (2021) investigated barriers to environmental sustainability in the hotel sector and found that time, financial challenges, availability of resources, and the views and imperatives of hotel owners and shareholders are the major barriers to implementing and sustaining environmental sustainability.

Opoku et al. (2019) found that the main barriers to environmental sustainability included perceived initial costs, a lack of awareness, technological challenges, external pressures to embrace techniques, and environmental circumstances in underdeveloped nations. A study conducted by Álvarez Jaramillo et al. (2019) investigate barriers to sustainability in small companies and it revealed that common barriers were a scarcity of resources, the high initial investment cost of adopting sustainable measures, and a scarcity of knowledge.

In a study conducted by Iredele and Ogunleye (2017) it was highlighted the most significant impediment to the adoption of EMA standards in South Africa is a financial barrier. The core and foundation of this obstacle are whether the cost of implementing EMA surpasses the benefits. Setthasakko (2010) found that the underlying causes of the impediments, which include a lack of organizational learning, a narrow focus on economic success, and a lack of guidance on environmental management accounting. A study by Lee (2011) determined that certain manufacturing companies do not have a structured approach to implementing environmental management accounting into their practices. Furthermore, these companies' accounting and information systems hinder the adoption of environmental management accounting. According to Jamil, Mohamed, Muhammad, and Ali (2015), financial constraints are the most significant impediment to the development of EMA in manufacturing small companies. Thus, inadequate environmental awareness (in terms of genuine costs and benefits) and skills also limit the incorporation of environmental issues into accounting systems and practices. The study also discovered that the lack of an EMA guide is a barrier to integrating environmental issues into existing accounting systems and procedures.

3. Research Methodology

The study adheres to the positivist research paradigm. As a result, the quantitative approach is employed in this work. The researcher utilized a regularly used way to obtain primary data, which was a survey. The survey approach used in this study entailed distributing closed-ended structured questionnaires to Durban's selected food and beverage manufacturing enterprises. The quantitative

portion was based on data from five closed-ended Likert scale surveys. Respondents were expected to read and reply to questions independently because the questionnaires were self-administered.

The inquiry focused on food and beverage manufacturing enterprises in Durban. The study concentrated on food and beverage manufacturing firms because they use single-use plastics for packaging food, fruits, and other things, as well as plastic carrying bags, which are the leading source of plastic pollution. There are roughly 55 food and beverage manufacturing enterprises in Durban (Robbins & Velia, 2015). The researcher intended to analyze the entire population because the population was small. A non-probability sampling technique was used for this study. The researcher used a technique called convenience sampling. Due to the limited size of the population, the researcher depended on firms that were available and willing to participate in the study. This study's sample size was 32 food and beverage production enterprises multiplied by the four chosen respondents (financial managers, management accountants, factory accountants, and chief accountants). As a result, this study used a sample size of 128 respondents from Durban's food and beverage manufacturing enterprises. This number of manufacturing enterprises picked provided the researcher with enough data to conduct the study and achieve the objectives.

The researcher contacted the respondents via email and informed them about the goal of the study. Each respondent's email address was obtained from their website, and each potential participant found was invited to participate through email. Questionnaires were delivered to the 128 respondents from the sampled food and beverage manufacturing enterprises, with 4 respondents predicted from each of the 32 firms chosen. However, four (4) of the questionnaires were filled improperly when they were returned. The Statistical Package for the Social Sciences (SPSS) was used to collect and analyze data from survey questions. The ordinal data was measured on a scale of 1 (strongly disagree) to 5 (strongly agree) (strongly agree). The codes for the nominal data were (1), which indicated "Yes," and (2), which indicated "No."

4. Results

4.1. Descriptive Analysis

Table 1. Respondent's Demographic Details

Item	Description	Frequency	Percent
Job designation	Finacial managers	31	25%
	Mangement accountant	32	25.8%
	Factory accountant	31	25%
	Chief accountant	30	24.3%
Highest level of education	Diploma/ Bachelors degree	16	12.9%
	Honour's degree/Btech	54	43.5%
	Master's degree	29	23.4%
	Doctoral degree	25	20.2%
Number of years of experience	0-5 years	11	8.9%
	6-10 years	25	20.2%
	11-15 years	36	29%
	16-20 years	36	29%
	> 21 years	16	12.9%
Firm scale	Small	57	45.9%
	Medium	39	31.5%
	Large	28	22.6%

4.2. Correlation and Regression Analysis Influence of Barriers to Environmental Sustainability on Environmental Management Accounting on Food and Beverage Manufacturing Firms.

The Pearson's correlation coefficient was utilized to demonstrate a link between environmental sustainability and environmental management accounting in food and beverage manufacturing companies. The outcome of the statistical analysis is illustrated in Table 4.1

Table 4.1. Correlation between Barriers to Environmental Sustainability and Environmental Management Accounting

Construct A	Construct B	Pearson's correlation (r)	p-value
Barriers to Environmental sustainability	Environmental Management Accounting	.250**	<.0005

***Correlation is significant at the 0.01 level (2-tailed)*

The Pearson's correlation coefficient results in Table 4.1 show a statistically significant association between environmental sustainability constraints and environmental management accounting in food and beverage manufacturing enterprises at ($r = .250$, $p < 0.0005$). The positive correlation suggests that construct A and construct B have a direct relationship. In other words, as barriers to sustainability lessen, it will be simpler for food and beverage manufacturing enterprises to implement environmental management accounting practices.

A regression analysis was then performed to determine the degree of influence between the two constructs. Table 4.2 displays the outcome of the linear regression.

Table 4.2. Linear Regression Barriers to Environmental Sustainability and Environmental Management Accounting

Variables in the equation	B	Beta	t	p-value	R^2	F	df	p-value
Constant	6.404		4.303	<.0005	.063	8.149	1; 122	<.05
Barrier to Sustainability	.442	.250	2.855	<.05				

DV – Environmental Management Accounting

Predictor (Constant) – Barriers to Sustainability

The regression analysis results, summarized in Table 4.2, show an R^2 value of 0.063, indicating that environmental management accounting accounts for 6.3 % of the variance in environmental sustainability and that there is a significant positive linear relationship between constraints to environmental sustainability and environmental management accounting, $F(1, 122) = 8.149$, $p<.05$. Constraints to environmental sustainability, an independent variable, is a major predictor of environmental management accounting., $B= 0.442$, $p< 0.05$.

5. Discussions

Balasubramanian and Shukla (2020) argue that challenges to environmental sustainability include a lack of ecological experts and sustainable suppliers, a lack of sufficient funding, high adoption costs, and a lack of knowledge and awareness. Accounting to Ghisetti, Mancinelli, Mazzanti, and Zoli (2017), the existence of financial barriers, as well as special difficulties in gaining access to foreign sources of funding, pose substantial dangers to the environmental capability of European Union

manufacturing SMEs. The lack of secure and competitive markets, as well as a credible institutional backdrop, heightens the uncertainties and dangers associated with Environmental Innovation investments, emphasizing the stifling nature of external financing limitations. Between 2013 and 2017, the authors Álvarez Jaramillo et al. (2019) examined the 50 most cited publications to assess the problems that SMEs encounter when integrating sustainable development initiatives. The most typical roadblocks are a lack of cash, a high initial investment cost in implementing sustainable procedures, and a lack of knowledge.

According to Kapardis and Setthasakko (2010), companies are being compelled to find strategies to improve environmental performance while expanding their operations. Environmental management accounting (EMA) was created expressly to identify and record the financial and non-financial consequences of enterprise environmental operations. Environmental issues are integrated into regular accounting systems by EMA. The study also discovered that barriers to the establishment of EMA included a lack of organizational learning, limited environmental knowledge and skills, and management's incapacity to use environmental data. These barriers have an impact on both corporate environmental performance and the road to environmental and social sustainability. According to Iredele and Ogunleye (2017), EMA barriers are classified as follows: managerial barriers, institutional barriers, attitudinal barriers, and financial constraints. The biggest impediment to implementing environmental management accounting in South Africa was determined to be a financial barrier (which comprises a lack of resources, non-consideration of environmental costs, and the efficiency of financial consideration). A further in-depth assessment of financial constraints indicated that EMA practices in South Africa are substantially impeded by the high costs associated with integrating EMA into business processes and accounting systems. A prior study by Muhammad Jamil et al. (2015) also found that financial constraints, restricted resources, financial competence, and lack of attention to environmental costs are all challenges to EMA procedures.

Environmental sustainability barriers and environmental management accounting barriers are comparable. This explains why the two variables have a positive association. When environmental sustainability constraints are addressed, it will be possible for the business to adopt environmental management accounting practices.

6. Conclusions

The purpose of this study was to investigate the impact of environmental sustainability constraints on environmental management accounting in food and beverage manufacturing enterprises. The study concentrated on businesses in Durban, South Africa. The overall goal was to assess whether resolving environmental sustainability constraints will have a favourable impact on the implementation of environmental management accounting practices in these industrial firms.

The researcher used a Pearson's correlation coefficient and linear regression analysis to examine data from questionnaires. The Pearson's correlation coefficient revealed a substantial relationship between environmental sustainability and environmental management accounting. Regression analysis determined an R^2 value of 0.063 (6.3% of Environmental Sustainability) which indicated a significant relationship between environmental sustainability and environmental management accounting.

Based on the findings, it is possible to conclude that removing environmental sustainability barriers will increase the adoption of environmental management accounting in food and beverage manufacturing enterprises.

References

Álvarez Jaramillo, J.; Zartha Sossa, J. W. & Orozco Mendoza, G. L. (2019). Barriers to sustainability for small and medium enterprises in the framework of sustainable development—Literature review. *Business strategy the environment, 28*(4), 512-524.

Bakos, J.; Siu, M.; Orengo, A. & Kasiri, N. (2020). An analysis of environmental sustainability in small & medium-sized enterprises: Patterns and trends. *Business strategy the environment,* 29(3), pp. 1285-1296.

Balasubramanian, S. & Shukla, V. (2020). Foreign versus local firms: implications for environmental sustainability. *Benchmarking: An International Journal, 27*(5), pp. 1739-1769.

Burritt, R. L.; Hahn, T. & Schaltegger, S. (2002). Towards a comprehensive framework for environmental management accounting—Links between business actors and environmental management accounting tools. *Australian Accounting Review,* 12(27), pp. 39-50.

Chathurangani, H. B. P. & Madhusanka, K. J. S. (2019). Environmental Management Accounting (EMA) Adoption Level among Listed Manufacturing Companies in Sri Lanka: Institutional Theory Perspective *Research in Social Sciences, 2*(1), pp. 1-12.

Chen, J. C. & Roberts, R. W. (2010). Toward a More Coherent Understanding of the Organization- Society Relationship: A Theoretical Consideration for Social and Environmental Accounting Research. *Journal of Business Ethics,* 97(4), pp. 651-665. doi:10.1007/sl0551-010-0531-0.

Cullen, D. & Whelan, C. (2006). Environmental management accounting: the state of play. *Journal of Business Economics Research,* 4(10), pp. 1-6.

de Paiva Duarte, F. (2015). Barriers to sustainability: an exploratory study on perspectives from Brazilian organizations. *Sustainable Development,* 23(6), pp. 425-434.

Evangelista, P.; Colicchia, C. & Creazza, A. (2017). Is environmental sustainability a strategic priority for logistics service providers? *Journal of environmental management*, 198, pp. 353-362.

Ghisetti, C.; Mancinelli, S.; Mazzanti, M. & Zoli, M. (2017). Financial barriers and environmental innovations: evidence from EU manufacturing firms. *Climate Policy, 17*(1), pp. 131-S147.

Gibassier, D. & Alcouffe, S. (2018). Environmental management accounting: the missing link to sustainability? *Social and Environmental Accountability Journal, 38*(1), pp. 1-18.

Iredele, O. O. & Ogunleye, O. J. (2017). Identifying barriers to environmental management accounting practices: a comparative study of Nigeria and South Africa. *The Business and Management Review, 9*(1), pp. 168-179.

Jamil, C. Z. M.; Mohamed, R.; Muhammad, F. & Ali, A. (2015). Environmental management accounting practices in small medium manufacturing firms. *Procedia-Social Behavioral Sciences*, 172, pp. 619-626.

Jasch, C. (2003). The use of Environmental Management Accounting (EMA) for identifying environmental costs. *Journal of Cleaner Production,* 11(6), pp. 667-676.

Jasch, C. (2006). Environmental management accounting (EMA) as the next step in the evolution of management accounting. *Journal of Cleaner Production*, 14, pp. 1190-1193.

Kapardis, M. K. & Setthasakko, W. (2010). Barriers to the development of environmental management accounting. *EuroMed Journal of Business*.

Khatter, A.; White, L.; Pyke, J. & McGrath, M. (2021). Barriers and drivers of environmental sustainability: Australian hotels. *International Journal of Contemporary Hospitality Management,* 33(5), pp. 1830-1849.

Lee, K. H. (2011). Motivations, barriers, and incentives for adopting environmental management (cost) accounting and related guidelines: a study of the republic of Korea. *Corporate Social Responsibility Environmental Management*, 18(1), pp. 39-49.

Michelon, G.; Pilonato, S.; Ricceri, F. & Roberts, R. W. (2016). Behind camouflaging: traditional and innovative theoretical perspectives in social and environmental accounting research. *Sustainability Accounting, Management and Policy Journal, 7*(1), pp. 2-25.

Muhammad Jamil, C. Z.; Mohamed, R.; Muhammad, F. & Ali, A. (2015). Environmental management accounting practices in small medium manufacturing firms *Procedia - Social and Behavioral Sciences*, 172, pp. 619 – 626 doi:10.1016/j.sbspro.2015.01.411

Opoku, D.-G. J., Ayarkwa, J., & Agyekum, K. (2019). Barriers to environmental sustainability of construction projects. *Smart Sustainable Built Environment*, 8(4), pp. 292-306.

Orji, I. J. (2019). Examining barriers to organizational change for sustainability and drivers of sustainable performance in the metal manufacturing industry. *Resources, Conservation Recycling*, 140, pp. 102-114.

Ramirez, E.; Gonzalez, R. J. & Moreira, G. J. (2014). Barriers and bridges to the adoption of environmentally-sustainable offerings. *Industrial Marketing Management*, 43(1), pp. 16-24.

Robbins, G. & Velia, M. (2015). *Spatial Elements from a Survey1: Constraints to Growth and Employment facing Medium and Large Manufacturing Firms in eThekwini Municipality2*. Retrieved from KwaZulu Natal.

Schaltegger, S. (2018). Linking environmental management accounting: A reflection on (missing) links to sustainability and planetary boundaries. *Social Environmental Accountability Journal, 38*(1), pp. 19-29.

Setthasakko, W. (2010). Barriers to the development of environmental management accounting: An exploratory study of pulp and paper companies in Thailand. *EuroMed Journal of Business, 5*(3), pp. 315-331.

Stewart, R.; Bey, N. & Boks, C. (2016). Exploration of the barriers to implementing different types of sustainability approaches. *Procedia Cirp*, 48, pp. 22-27.

Wang, S.; Wang, H. & Wang, J. (2019). Exploring the effects of institutional pressures on the implementation of environmental management accounting: Do top management support and perceived benefit work? *Business Strategy and the Environment, 28*(1), pp. 233-243. doi:10.1002/bse.2252.