JMS ISSN 2948-4286 Journal of Management Scholarship
December **2, 2** (2023) https://doi.org/10.38198/JMS/2.2.2023.22

Waste Management and Business Sustainability Performance: Moderating Role of Organisation Age

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Received: 12st October 2023
Accepted for publication: 1st November 2023
Published: 25th December 2023

Abstract

The chemical manufacturing sector in Malaysia is among the industries that actively pursue sustainable practices. Waste management aids personnel in upholding the principles of sustainability within a company, while simultaneously fulfilling industrial requirements. This study investigates the impact of waste management practises on business sustainability performance, with organisation age serving as a moderating factor. In the country of Malaysia, a total of 366 chemical manufacturing enterprises were identified for the purpose of this study. The researchers employed a stratified random sampling technique to choose a representative sample from this population. A Partial Least Squares (PLS) analysis was conducted on a sample of 130 questionnaires that were completed. The data indicate that there is no relationship between the age of an organisation and there is an improvement of business sustainability through waste management. In order to ensure sustainability, chemical manufacturers must incorporate effective waste management practices. Incorporation into organisational strategies is crucial. This study was anticipated to provide assistance to chemical manufacturers in selecting environmentally conscious practices that align with their business sustainability performance objectives.

Keywords: waste management, business, sustainability, performance, organisation age

Introduction

Environmentally conscious issues have become more complex in today's globally competitive environment due to rapid advancements, industrialisation (Fornasiero et al., 2016), and a variety of environmental and socio-economic problems caused by unethical, illegal, or careless business practices when acquiring and purchasing supplies, manufacturing, and transportation disposing of goods at the end of their lifespan, and waste management (Foo et al., 2018). Even though Malaysia's scheduled waste management is thought to be well-established after more than 35 years, there are still issues with pollution and waste management that need to be addressed right away by interested parties. These issues include a lack of awareness of sustainability, poor execution, irregular inspections, and illegal dumping (Salmah & Norfaridatul Akmaliah, 2016).

The Malaysian green revolution has experienced substantial expansion in recent years, as indicated by the Waste Management and Renewable Energy Act's enactment in 2007 and the formation of the Malaysian Green Building Confederation (MGBC) in 2009 (Ezani et al., 2018). Green practices implemented at the corporate level include waste disposal initiatives, recycling initiatives, and greenhouse gas management initiatives (Nor Azah et al., 2018). The

performance of the environment demonstrates a company's capacity to lower the levels of pollution in the environment, air, and soil; its ability to implement
proper waste management in order to prevent or diminish the consumption of potentially dangerous and/or harmful supplies; and its ability to carry out any enhancements in the context of reducing the incidence of ecological incidents and obtaining goals related to the environment.

The Malaysian government intends to accomplish a waste-efficient approach by establishing rules for efficient execution and optimum utilisation of resources. Moreover, the longevity of the enterprise is a significant determinant in attaining success in the realm of business sustainability. The term "business longevity" refers to the precise number of years that a company has been operational since its establishment (Dangelico & Pontrandolfo, 2015). Business maturity presents an opportunity for enhanced sustainability effectiveness, as established, larger enterprises possess more substantial resources to initiate environmental management initiatives (Zhang & Yang, 2016). The age of the organisation may impact the development of environmental innovation (Amores-Salvadó et al., 2015) and more established organisations are anticipated to have greater resources and capacities to implement these types of improvements.

The question of what drives businesses to embrace sustainability initiatives has been the subject of past studies, but until recently, they focused almost exclusively on developing countries, ignoring Southeast Asia, where many businesses, including those in Malaysia, are located. Secondly, minimal research has been done on how organisation age affects business sustainability in the long run. Although there is some theoretical and conceptual work on the moderating effects of organisation age on organisational linkages, empirical research on these topics is sparse. Besides, there is an imbalance of the sustainability components (economic, environmental, and social), this is because social sustainability has not been addressed in the same manner as the other two. A higher understanding and awareness of the social component and its associated challenges may greatly improve the company's performance, hence enhancing its triple bottom line of sustainability. Hence, this study aims to examine the influence of waste management practises on the sustainability performance of businesses, with the level of organisation age serving as a moderating factor.

Literature Review

Business Sustainability Performance

Sustainability in business has yet to be clearly described (Koc & Durmaz, 2015). Sustainability in business can be viewed as an evolving situation that occurs while a business establishes constantly investor and customer worth in order to preserve the economy, environment, and society's well-being over time (Elkafi et al., 2012). Sustainability for businesses is also defined as executing activities in an approach that accommodates present-day requirements without jeopardising the capacity of subsequent generations to meet their own demands, while also taking into account the effects that the company's activities have on the quality of life of the society within which it functions (Hart & Milstein, 2003). Business sustainability is crucial for accomplishing the business's objectives with no sacrificing its edge in the marketplace, as well as promising across the organisation growth in the economy, commitment to the environment, and social duties despite compromising the company's objectives and objectives (Koc & Durmaz, 2015). The triple bottom line comprises the components of business sustainability performance: economic, environmental, and social sustainability (Elkington, 1998).

Waste Management

Any material or item that is being thrown away or has no value for the owner or organisation is referred to as waste. Products or materials that are sold or reused by the organisations that possess them are not considered waste (Australian Government Productivity Commission, 2006). On the other hand, "waste management" typically refers to all kinds of waste. Waste management, as defined by the United Nations (1997), is the set of procedures and activities needed to control waste from the point of origin to the point of disposal. The products produced when raw materials are processed into final and intermediate products, the consumption of finished goods, the extraction of raw materials, and other human activities are all related to waste management (United Nations, 1997). Governments should focus on making rules clearer, increasing oversight and stopping illegal dumping, and raising knowledge among stakeholders (Ding et al., 2016). High productivity means high income, but an excess of waste is made because people are consuming more, which makes waste management problems worse (Ropke, 1999). The rate of trash formation in Malaysia is occurring at a concerning pace, beyond the natural degradation process. Additionally, the use of resources in the country is surpassing the rate at which these materials are replenished (Ramayah et al., 2010).

Organisation Age

Organisation age was defined by Coad et al. (2018) as the total number of years that a company has been in business, calculated from the beginning to the present. Organisation age is a crucial factor that affects how well an organisation performs since it shows how much operational experience the company has (Yoon & Suh, 2018). One of the most often

utilised controlled factors to explain the association between sustainability practices and organisational success is the age of the organisation; generally speaking, older organisations are more profitable and larger in size (Amin et al., 2019). According to Mdolo et al. (2018), organisational age is associated with a longer history of commitment and a propensity to uphold the reputation that has been built up over time. Financial performance is also considered to have an impact on business sustainability commitment.

In addition, because of their long history of organisational learning, older companies facilitate idea sharing, the formation and improvement of efficient employee teams' communication, and the emergence of multifunctional work teams—all of which are important for the growth of innovation (Gomes & Wojahn, 2017). According to Kucher et al. (2020), internal issues are the main reason why young businesses fail. Hansen (2016) contends that because of their years of organisational learning, expertise, and maturity, older businesses typically outperform younger ones in terms of innovation. According to Aziz and Samad (2016) findings, the age of the firm mitigates the impact of innovation on its performance. According to certain arguments, an organisation's performance gets better as it gets older. As previously mentioned, an organization's age promotes knowledge and organisational learning as well as profit, both of which contribute to the organisation's competitive advantage in maintaining itself.

Waste Management and Business Sustainability Performance

The study conducted by Yacob et al. (2018) revealed a significant relationship between the implementation of green practices, specifically waste management, and the level of environmental sustainability within manufacturing companies in Malaysia. According to a study conducted by Kulkarni et al. (2014), the implementation of waste management practices has been crucial in facilitating the attainment of sustainable business performance within the sector. In the industrial sector, the development of innovative manufacturing methods and the substitution of hazardous chemicals with environmentally friendly alternatives can enhance resilience to environmental difficulties (Kulkarni et al., 2014). According to Chan (2013), the safeguarding of the environment can be achieved by the demonstration of a firm dedication to environmental preservation, primarily through the implementation of effective waste management practices. In the realm of social implications, the use of sophisticated technology in waste management has been found to enhance the safeguarding of employees' health (Kirama & Mayo, 2016).

Furthermore, the effective management of trash has been shown to mitigate health and safety hazards. Effective waste management enhances the productivity of an organisation by streamlining collection processes and reducing the time required for loading and off-loading waste materials (Kirama & Mayo, 2016). According to Shah and Ward (2007), prior research has demonstrated that waste management practices are associated with the promotion of environmental sustainability. According to Kirama and Mayo (2016), proper waste disposal is crucial for safeguarding public health and preserving the ecosystem. A study conducted by Schoenherr (2012) has demonstrated that the implementation of environmental measures, such as waste management, offers benefits both in terms of ethical responsibility and organisational performance. Hence, it is imperative for organisations to incorporate waste management practices into their daily operations in order to attain sustainable business outcomes. Therefore, the subsequent hypothesis was formulated for testing in this research study:

H1: Waste Management significantly affect the business sustainability performance.

Moderating Role of Organisation Age in the Relationship between Waste Management and Business Sustainability Performance

This section examines a potential moderating factor in the relationship between green practices and business sustainability performance within the context of this study, namely the age of the organisation. The inclusion of organisational age as a moderator in a study at the organisational level has the potential to create new research opportunities across various fields (Coad et al., 2018). Numerous scholarly works have indicated that the age of an organisation has an impact on its rate of growth (Coad et al., 2018). The study conducted by Shrivastava and Tamvada (2019) provided empirical evidence highlighting the significance of adopting environmentally sustainable practices inside companies that are in the middle stage of their life cycle. The findings of the study also indicate the necessity of modifying greening methods as organisations progress in their development.

According to Shrivastava and Tamvada (2019), the implementation of environmentally friendly practices can lead to financial savings and increased operational efficiency for organisations over a period of time. According to Ford et al. (2014), companies have the potential to beyond mere compliance obligations as they strive to achieve a competitive advantage through their strategic actions. According to Delmas et al. (2015), the proactive tendency to exceed compliance obligations has a beneficial impact on the long-term performance of organisations. In accordance with the findings of Bayoud et al. (2012), the sustained existence of a firm fosters the acquisition of experience and sufficient competence, enabling the organisation to engage in green innovation and enhance its overall performance. The current study aimed to examine the

moderating effect of organisation age on the link between green practices and business sustainability performance. Consequently, the subsequent hypothesis was formulated for the purpose of testing:
H2: Organisation age moderates the relationship between green practices and business sustainability performance.

Methodology

Samples and Procedure

The FMM research identified a total of 366 manufacturing firms. The researchers employed a methodology known as stratified random sampling in order to collect the samples. A total of 130 chemical production firms in Malaysia were surveyed through the distribution of questionnaires. The organisations included in this study were selected from the membership records of the Federation of Malaysian Manufacturing. The participants in the study employed a Likert scale consisting of five levels, ranging from "strongly disagree" to "strongly agree". This inquiry utilised a self-administered survey. Statistical power analysis has commonly been employed to calculate the sample size for partial least squares (PLS) analysis. The utilisation of G-Power 3.1 facilitated the execution of a statistical power analysis, enabling researchers to ascertain an appropriate sample size for the research endeavour. Hence, a sample size of 113 companies was determined to be the minimum need for adequately representing the target population in the study.

Result & Discussion

Reliability

Amin et al. (2018) stresses the importance of evaluating a measure's convergent validity by looking at how well it correlates with other measures of the same variable. Table 1 displays the results of the analysis of the AVE and factor loadings for the measurement model. According to research by Hair et al. (2014), all factor loadings should be at least 0.70. A factor loading of 0.7 or greater is indicative of a strong explanatory role for that factor in explaining the variance in the variable in question. These items below 0.70 may have been eliminated because they do not contribute sufficiently to explaining the variable in question. The legitimacy of convergence of the measures utilised in this study was confirmed, and all AVE values for these items were greater than 0.50.

Table 1: Convergent Validity

First-Order Construct	Second Order Construct	Loadings		Loadings		AVE	CR
Waste Management		WM1	0.638	WM7	0.669	0.50	0.902
		WM10	0.825	WM8	0.852		
		WM5	0.669	WM9	0.844		
		WM6	0.650	WM3	0.534		
		WM4	0.598	WM7	0.669		
Economic Sustainability Performance		EP10	0.751	EP6	0.819	0.605	0.924
		EP2	0.746	EP8	0.821		
		EP3	0.820				
		EP5	0.768				
Environment Sustainability Performance		EnvP10	0.751	EnvP6	0.762	0.567	0.929
		EnvP2	0.777	EnvP7	0.816		
		EnvP3	0.707	EnvP8	0.749		
		EnvP4	0.783	EnvP9	0.801		
		EnvP5	0.714				

Social sustainability performance		SP10	0.771	SP5	0.848	0.603	0.932
		SP2	0.759	SP7	0.777		
		SP3	0.748	SP8	0.774		
		SP4	0.810	SP9	0.754		
	Business Sustainability Performance	Economic		0.924		0.482	0.962
		Social		0.875			
		Environment		0.945			

Discriminant Validity

According to Muslim et al. (2016), discriminant validity assesses how well items differentiate between distinct concepts or variables. The authors Hair et al. (2014) say that a discriminant valid variable can describe an event that is not explained by any other variables in the same model. In this study, HTMT was used to check the discriminant validity (Table 2). After discovering that cross-loading and the Fornell and Larcker criterion, two prior methodologies, can be incorrect in establishing discriminant validity, Henseler et al. (2015) suggest HTMT as a new standard for SEM work. Discriminant validity is absent if the absolute HTMT value is greater than 0.85 or 0.90. Table 2 displays the results of the HTMT study used to determine the validity of the test's ability to discriminate between groups.

Table 2: Discriminant Validity (HTMT)

Variable	BSP	WM
Business Sustainability Performance (BSP)	**0.689**	
Waste Management (WM)	0.564	**0.706**

The study revealed that waste management has a significant impact on sustainability performance of chemical manufacturing organisations (as shown in Table 3). Thus, hypothesis 1 (H1) was supported. The implementation of waste management practices has facilitated the sector in attaining sustainable business success. The preservation of the environment is achieved via the dedicated adherence to environmental protection principles, which includes the effective implementation of sound waste management practices. Effective waste management streamlines garbage collection processes and minimises the duration required for waste loading and off-loading, hence enhancing organisational efficiency (Kirama & Mayo, 2016).

As indicated by Chan (2013), the preservation of the environment can be achieved through the demonstration of a dedicated commitment to environmental protection. This can be accomplished by implementing various environmental measures and services aimed at minimising waste generation, reducing energy and water use, and mitigating resource depletion. Regarding the aspect of social sustainability performance, the utilisation of sophisticated equipment in waste management yields enhanced health protection for personnel, while effectively managed trash diminishes health and safety hazards. The appropriate management and collection of garbage have been shown to enhance public health and safety, as well as improve the aesthetic aspects of the environment (Napoleon et al., 2011). Effective waste management is a crucial aspect for chemical manufacturing organisations. It encompasses various practices such as waste separation, composting of chemical waste, prioritising waste reduction within different functional areas of the organisation and collaborating with supply chain partners to eliminate waste. These measures are undertaken with the ultimate goal of achieving business sustainability performance. The use of environmentally friendly practices, such as efficient waste management, can provide benefits not only from an ethical standpoint but also in terms of enhancing organisational performance.

The obtained interaction effect (β=-0.051) suggests that the duration of operation of a chemical manufacturing organisation in Malaysia does not have a significant impact on the relationship between green practices and business sustainability performance (as shown in Table 3). Given that the moderation effect of organisational age on the link between green practices and business sustainability performance was shown to be statistically insignificant, it was deemed unnecessary to get an interaction plot. Therefore, the null hypothesis H2 was rejected. Irrespective of an organisation's age,

the adoption of environmentally friendly practices does not appear to have a significant impact on the association between such practices and the overall sustainability performance of corporations, specifically within the chemical manufacturing sector in Malaysia.

Table 3: Result of Hypotheses Testing

Hypotheses	Std. Beta	Std. Error	t-value	Decision
H1: WM -> CSP	0.453	0.46	6.492**	Supported
H2: WM*OA*CSP	-0.051	-0.051	0.066	Not Supported

Conclusion

The objective of this study was to investigate the impact of adopting environmentally friendly policies on the sustainability potential of a corporation while considering the variable of firm age. The findings of this study were mainly consistent with hypothesis 1 (H1) but did not align with the hypothesis 2 (H2). The results of the study indicate that the age of an organisation does not have a moderating effect, and they provide empirical support for the notion that waste management practices contribute to enhancing the business sustainability performance of chemical manufacturing enterprises in Malaysia.

The chemical manufacturing industry is largely acknowledged as a significant contributor to the Malaysian economy. As underscored in the governmental strategy, it is imperative that these organisations incorporate environmentally sustainable practices into their operational protocols. In light of the aforementioned considerations, every organisation must acknowledge and protect the interests of the economy, environment, and society. Moreover, the use of environmentally friendly practices offers numerous advantages to enterprises, especially those involved in chemical manufacturing within emerging countries that share comparable circumstances with Malaysia. Managers must integrate social, environmental, and economic considerations into their operational strategies. Chemical manufacturing businesses are required to adapt and capitalise on possibilities using suitable strategies in order to attain business sustainability performance.

Nevertheless, it is crucial to acknowledge that there exist certain constraints. Given the cross-sectional nature of this study, it is important to note that all the data and information were derived at a single point in time. Despite the quantitative nature of this study, it is a need to acknowledge the significance of including qualitative or mixed-methods research methodologies. Furthermore, it is crucial to stress that the entirety of the data was derived from the chemical industrial sector. This study did not encompass other sectors or industries. Therefore, it is possible to evaluate numerous proposals for further research. It is also recommended that forthcoming research endeavours encompass a broader range of industry classifications within the manufacturing sector, specifically focusing on wood production and electronics manufacturing, in order to fully comprehend the multifaceted contributions made by enterprises. Given the limited scope of this study, which exclusively focuses on chemical manufacturing enterprises, it is important to acknowledge that doing a similar investigation inside alternative industries would likely yield contrasting results. By utilising this approach, one can obtain a full portrayal of environmentally friendly practices, organisational age, and business sustainability performance within the industrial sector.

Acknowledgements

The authors would like to thank the Graduate School of Business, Universiti Kebangsaan Malaysia for sponsorship of this research paper under the GSB-2023-025 and GSB-2023-022.

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