

Environmental Management Accounting In Malaysian Local Government: A Case of Solid Waste Management

Nik Kamaruzaman bin Hj Abdullatiff^{1,a}, Anis binti Abul Hasan Ashari^{2,b}, Junaidah Hanim binti Ahmad^{3,c}, Wan Noraswaniaty binti Wan Ahmad^{4,d}, Zanirah binti Mustafa@Busu^{5,e}

^{1,2,3,4}Faculty of Accountancy, Universiti Teknologi MARA Cawangan Kelantan, Bukit Ilmu, 18500, Machang, Kelantan Darul Naim, Malaysia.

⁵Academy of Contemporary Islamic Studies, Universiti Teknologi MARA Cawangan Kelantan, Bukit Ilmu, 18500, Machang, Kelantan Darul Naim, Malaysia.

^anklatiff@kelantan.uitm.edu.my, ^banisabul@kelantan.uitm.edu.my,
^cjun372@kelantan.uitm.edu.my, ^dwaniaty@kelantan.uitm.edu.my,
^ezanir126@kelantan.uitm.edu.my

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Abstract. Local governments in Malaysia, have faced an emerging challenge of the growing quantity of solid waste generation and the unorganized management of space waste disposal in recent years. Indeed, the solid waste management is actually “a wake-up call” to many local government administrations – to understand and managing environment. The federal government has urged and demonstrated the importance of developing strategies to make full environmental costs and impacts of solid waste disposal (economically as well as environmentally) accountable for waste management decision making. However, research into this field is limited in our country, especially related to management accounting. This paper investigates the development of environmental management accounting practices in local government in relation to solid waste management. Specifically, the paper discusses the solid waste disposal costs and the potential economic values of solid waste. Using literature search as research design, this paper applies the analysis using theoretical framework of symbolic-interactions where the understandings of the world are derived from social interaction and modified through interpretation. Minimal biased methods were used for acquiring literature for the paper. A number of databases in fields such as sociology, social sciences, psychology, and economics were used to acquire literature on the topic. It is expected from this research resulting to derive the complementary explanations for the development of environmental management accounting in solid waste – combining the social system-based theories normally used in environmental studies and the contextual dynamics based on contingency theory of management accounting in effort to explain environmental changes in local government

Introduction

The management of waste materials is a global dilemma. In the developing countries, waste management is becoming a major issue as urbanization and economic development increase leading to larger quantities of waste materials requiring management in these countries. As in Asia, the management of waste materials requires immediate attention especially in countries such as China, South Korea and Malaysia which have been categorized as emerging industrialized countries [1]. To date, Malaysia is confronting an uncontrolled increment in waste generation because of rapid population growth, economic development, and industrialization. Responding to the rapid increase, the search for and the provision of an efficient management method of waste has become a serious concern [2]. In light of Vision 2020 which lays out the direction for Malaysia to become a fully developed nation by 2020, solid waste management is a major dispute for Malaysia to address. In an attempt to manage this issue, it is likely that to observe it in the perspectives of environment accounting.

For the past three decades, accounting researchers has grown research interest in environmental disclosures [3,4,5,6]. However very few efforts given to environmental management accounting (EMA) practices, and even more lesser the environmental management accounting issues researched in the public sector [7,8,9,10]. There is a continuous call for more research into environmental management accounting practices, solutions and motivations by organizations, private as well as public sectors, to advise theoretical underpinnings of current development of environmental management accounting [11,12,13]. Especially to public sectors, it is important to understand of present specification on how change of environmental activity does and can take place [14]. Gradually this observation could facilitate public organizations to gain practical solution in attending environmental changes over time and provide useful information for an organization committed to sustainability [15].

The management of solid waste is a major task because it is reflective of the lifestyle, economic status and perception about the sanitation condition of the nation. Malaysia generates more than 25,000 metric cubic tons of waste every day [16] that need to be efficiently managed but despite its economic achievements, the solid waste management in Malaysia is relatively poor [17,18]. Malaysia is relying heavily on the landfilling method which is no longer sustainable. The task to manage waste is shared between the Environment Agency (waste regulator) and local authorities (waste collection and waste disposal authority). However, the central government is tasked to set the waste management policy for the country. Malaysia has the institutional structure in place under the Ministry of Housing and Local Government. The rationale is to ensure that local needs are catered for, and local challenges can be effectively resolved. Originally, the solid waste management in Malaysia was under the responsibilities of local authorities. The local Government Act (Act171) LGA permitted local authorities to carry out waste management services but they are allowed to contract it to a second party. Nevertheless, the quality of services vary from one local authority to another, resulting in incidents of poor services, forcing the federal government to take over.

This paper investigates the development of environmental management accounting practices in local government in relation to solid waste management. Specifically, the paper discusses the solid waste disposal costs and the potential economic values of solid waste. Perhaps, this research can provide a basis for environmental strategists and government regulators to make policies for the future development of environmental management accounting and to predict how local government should be designed to facilitate the use of environmental management accounting information to support sustainable waste solutions. Using literature search as research design, this paper applies the analysis using theoretical framework of symbolic-interactions where the understandings of the world are derived from social interaction and modified through interpretation. Minimal biased methods were used for acquiring literature for the paper. A number of databases in fields such as sociology, social sciences, psychology, and economics were used to acquire literature on the topic.

Literature Analysis

Environmental Management Accounting. Mokhtar [19] and Langfield-Smith & Thorne [20] quoted The International Federation of Accountants (IFAC) in its *International Guidance Document: Environmental Management Accounting* in defining EMA as, “...the management of environmental and economic performance through the development and implementation of appropriate environment related accounting systems and practices... may include reporting and auditing in some companies” [21]. A complementary definition of EMA is also offered by the United Nations Expert Working Group on EMA where EMA is, “...the identification, collection, analysis and use of two types of information (monetary and non-monetary) for internal decision making”[22].

EMA constitutes two types of information, physical and monetary [23]. Along the same line, Langfield-Smith & Thorne [24] also offered similar categorization, although they use a slightly different terminology in describing that EMA produces both financial and physical information. Physical environmental information or physically oriented EMA can be defined as information on the flow of energy, water, materials and wastes, or in other words, the business environmental impact (in physical units) such as the total amount of fresh water consumed, the volume of wastes generated, the amount of materials used, and the amount of energy consumed [25,26]. Monetary environmental information relates to environmental costs and earnings which include waste and emission control costs, environmental research and development costs, sales from scrap and wastes, recycling subsidies and tax incentive on green equipment [27]. Monetary environmental information can also be referred to as the monetized of physical environmental information. Langfield-Smith & Thorne [28] categorize financially oriented EMA into five; namely environmental costs, environmental product costs, environmental performance indicators, environmentally induced capital expenditure and environmentally induced revenues.

EMA has often been associated with sustainability and sustainable accounting. However, it is agreed upon that sustainability is the overarching concept that includes three pillars, the environmental, social and financial aspects [29,30]. These three need to be considered in order for EMA to be sustainable. This is also referred to as the triple bottom line, a concept that values social and environmental elements alongside financial success of an organisation [31]. Although there may not be a standardized definition of EMA [32], the concepts and approaches of environmental management accounting have been quickly developed and extensively studied since the early 1990s [33]. It has also received significant attention and has become an important topic of discussion among researchers [34]. Nine variables have been identified to impact EMA either via push or pull mechanisms [35].

Solid Waste Management. Generally known as ‘solid waste’ in such a way to distinguish it from waste that is liquid or can be disposed-off through pipes, this type of refuse requires systematic management to minimize undesirable impacts on people and environment [36]. In Malaysia, the Solid Waste and Public Cleansing Management Act 2007 defined solid waste as any scrap material or other unwanted surplus substance or rejected products that arise as a result of human activity [37,38]. Proper management of solid waste is important as it reduces or eliminates adverse impacts on the environment and human health, supports economic development and improved quality of life. Solid waste management refers to the

supervised handling of waste material from generation at the source through the recovery processes to disposal. Gilpin [39] defined solid waste management as a planned system of effectively controlling the production, storage collection, transportation, processing and disposal or utilization of solid waste in a sanitary, aesthetically acceptable and economic manner. It includes all the administrative, financial, legal and planning functions as well as the physical aspects of solid waste handling.

Malaysian solid waste management has become a national concern due to the ever increasing rate of solid waste where the total solid waste generation inclusive of households and business premises is estimated to increase from about 10.9 million tons per year in 2010 to about 12.8 million tons per year in 2015 and to about 15.6 million tons per year in 2020 (Waste Management Policy of Malaysia 10th Plan, 2010 to 2020) and in spite of the aggressive economic development in Malaysia, the solid waste management is relatively poor [40] and grappling to deal with the disposal of solid waste [41]. Improper management of solid waste negatively impact public health of entire communities and cities, contaminate ground and surface water, damage ecosystem, contribute to climate change and ocean plastic pollution, and hinder climate change adaptation [42]. Failing in managing solid waste leads to increased operation cost and damaging the environment [43,44]. Thus, it is crucial for Malaysia to look forward towards innovative solutions to the problems of inadequate and inefficient services provided by the waste management practices [45].

Local Government Waste Management. Local government, as stated in the Federal Constitution, is the grass-roots in the government hierarchy of Malaysia. This mean local State Government have wide powers to control the local authorities and to ensure their effectiveness and efficient. Local Government is subsystem operating within or among a number of other subsystems and given the authority to handle local issues but has limited autonomy. According to Malcolm W. Norris, Local Government denotes the Government of urban area, rural area or a combination of urban and rural area, subordinate to the state government, but having an independent legal existence from the federal government [46].

The local government is allowed to contract out the implementation of the systems to private contractors (S.101.d). In addition, the local government have the right to make by laws on SWM, determining the requirement for the generators and contractors (S.73.1.a). Another piece of legislation empowering the local government in regards to SWM is the Street, Drainage and Building Act 1974 (Act 133), S.133, which relates to the provision, maintenance, repair and provision of ash pits, dustbin and the like receptacles. Local government needs to fulfil the demand and needs of the people in terms of cleanliness, safety and health, facilities, schools, lamppost, roads and so on. Usually, local government have traditional functions, which means provide the cleanliness activities such as housing garbage collection, industrial, sewerage, sanitation and others.

Currently, in Malaysia, environmental management practices are being overseen by the federal government, making it accountable for the collection of various types of waste as well as responsible for the regulations and enforcement. The Act on Solid Waste and Public Cleansing Management was passed in 2007 that involved states in Peninsular Malaysia. The Act has given the executive authority of managing solid waste and public cleansing to the Federal government although it was originally handled by the local authorities. Hence, new federal institutions such as National Solid Waste Management and Public Cleansing Corporation were set up with operational offices throughout the Peninsular [47]. The federalisation also allows it to privatize the collection and transportation of solid waste management.

The leading criticism of waste management in Malaysia is the unsatisfactory quality of the current services. Lack of funds by the local government to adopt the latest technologies for the disposal and treatment of solid waste is a major setback. This is in addition to the lack of workforce to execute the policies and to reinforce the regulations. Another issue that needs to be addressed is the lack of awareness in terms of environmental management accounting, environmental management accounting information and information about environmental accounting practices.

Discussion and Recommendation

EMA for solid waste. Traditional accounting procedures concentrate on quantitative measures of economic transactions and ignore the social costs of environmental pollution, resource exhaustion, or project impact on cultural and ethical values [48]. By failing to include environmental impacts, management accounting potentially provides insufficient information to decision makers to make informed decisions.

According to Muhammad Jamil et al. [49], EMA has emerged as a response to the challenges faced by traditional management accounting systems in relation to environmental activities. Greater environmental impact and its related costs, as well as failure of conventional accounting systems to provide required information for reducing these impacts and costs, have led significantly to the emergence of EMA.

EMA emphasises on measuring the hidden induced environmental cost of a finished product and/or service [50], which is usually allocated as overhead costs and treated as indirect cost of the product and/or service in the conventional management accounting [51]. The conventional accounting practices, only emphasis on describing economic events where environmental information is treated as overhead costs [52]. What most companies seem to overlook is that the

measurement of this hidden cost may actually result in cost savings through the identification, assessment and allocation of environmental and material flow costs [53].

Qian, Burritt and Monroe [54] explored environmental management accounting practices and their motivations in local government, focusing on the case of waste management. They reported that a moderate level of environmental accounting was found in local government waste management. Their research concluded that environmental information in waste management has been increasingly identified and used for waste management decision making at the local government level. Although the current level of environmental accounting is not high, the situation seems to be improving.

Qian, Burritt and Monroe [55] signified that among explanatory factors for the need of solid waste accounting to include the effort of identifying economic values and innovation effort of recycling, as well as the incentives of cost reductions in handling the solid waste. Muhammad Jamil et al. [56] noticed that several coercive factors have a significant influence on EMA practices. The finding also shows that financial constraint is the main barrier to the development of EMA in the manufacturing SMEs. This means that the authoritative bodies, as well as professional accounting bodies can play a very important role in promoting EMA practices through the issuance of proper guidelines and training. Monetary incentive could also be introduced to encourage the implementation of EMA since financial constraint has been found to be the main barrier.

Solid Waste Economic Values and Costs. Effective waste management requires appropriate levels of funding. The cost associated with the solid waste management generally covers several components which relates to solid waste service collection, cleansing, disposal and transfer, and it is found that costs of solid waste management services have risen steadily over the past decade [57]. Local governments try to control solid waste management costs through a variety of measures, including restructuring waste services and encouraging waste reduction. However, making effective decisions and developing cost-effective waste management strategies can be difficult without complete cost information [58]. Nevertheless, this issue might be resolved by adopting the concept of environmental management accounting (EMA). EMA provides a better understanding of the importance of social responsibility and helps in making organization decisions regarding the environment [59]. EMA, not only helps organization to better manage costs, but also strengthens organization reputation in society [60].

The state of accounting in local government waste management, according to Qian and Burritt & Monroe [61], divided environmental costs into three perspectives; waste flow and activity accounting, impacts of hidden and future costs, and impact of external costs. The environmental accounting information items related to waste flow and activity accounting are to include quantities of garbage waste collected and incinerated, waste sent to landfill, garbage waste collection costs, and garbage waste disposal costs. In relation to impacts of hidden and future costs are public waste education and outreach costs, expected costs of landfill site and facility replacement, administrative costs of waste management, waste reporting and auditing costs, and landfill disposal costs avoided through recycling and reduction. Meanwhile, examples of the impact of external costs items are costs associated with reducing greenhouse effects, controlling toxic and odorous landfill gas emissions, landfill leach ate collection and treatment for protection of ground water, and the costs associated to the loss of amenity because of waste disposal.

The future consideration that very much important to be noted is that the economic values gain from solid waste activities. Qian and Burritt & Monroe [62] found that the environmental accounting information items that has economic values is to include environmental benefits from current recycling services, economic value of waste resources, and innovate value of waste disposal. Total recyclables collected, total recyclables recovered, recyclables sales revenue, recyclable sales revenue, and garbage waste to energy sales revenue.

Theories Implications. Previous researchers have found that a wide range of organizational contextual factors and social structural factors have driven the adoption of environmental accounting for waste management in the local government organizations investigated. According to Scott [63], rather than social norms, the contingency theory directs attention to technical rationality; focusing on technical requirements of the task on hand. The nature of the environment to which the organization must relate is crucial knowledge to know the best way to organise. Chenhal [64] assumes that management control systems are developed, or adopted to aid in achieving desired organizational goals and outcomes and the contingent factors that would determine the appropriate management accounting system to be employed. Parker [65] and Bouma and van der Veen [66], suggested that the development of environmental accounting is contingent upon the uncertainty of an organization's surrounding environments and the proactivity of an organization's environmental strategy.

The concept of situational management whereby an organization has to adapt itself in order to remain efficient can be related to environmental management accounting [67]. Environmental management accounting is indirectly impacted by many environmental factors which directly influence or shape the organizational environment. A set of contingency factors which organizations need to adapt and accommodate for achieving expected performance are analysed under the contingency theory [68,69,70,71]. The contingency theory therefore has proven to provide theoretical support for

organizational contextual factors which include complex waste operations and services, proactive waste management strategies, and uncertain organizational environments. To address the theoretical guidelines, potential contingency variables that impact the design of EMA via a meta-analysis were examined [72]. A push - pull model was used to identify the Interactions between the contingency variables [73]. Those factors that demand for EMA implementation but do not interfere in the internal application process are push factors while the pull factors are those factors that incentivize the internalization of a specific instrument or define the scope of the EMA application.

Categorized under both organization-related activities and social-related activities are organizational actions and changes which include environmental accounting activities. Social-related activities or social structural factors include regulatory pressures, community awareness and expectations, and voluntary local and regional initiatives and cooperation, which the institutional theory provides support [74]. An organization needs to conform to institutionally mandated behaviour in the wider social structure [75]. Institutional theory is defined by Scott [76,77] as a widely accepted theoretical posture that emphasizes rational myths, isomorphism, and legitimacy. It is a theory on the deeper and more resilient aspects of social structure which considers the processes by which structures, including schemes, rules, norms, and routines, become established as authoritative guidelines for social behaviour. The basic argument of the institutional theory is that organizations like all other social systems exist in an institutional environment that defines and delimits social reality. Environmental changes and movements in the broad social context are likely to drive an organization's development of environmental management accounting as the organization needs be seen as appropriate and legitimate by other members in the social institutions [78].

Conclusion

This study provides the complementary explanations for the development of environmental management accounting in solid waste. For further investigation, it is suggested that to combine the social system-based theories normally used in environmental studies and the contextual dynamics based on contingency theory of management accounting in effort to explain environmental changes in local government.

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Reference

- [1] Lau, V. L. (2004). Case Study on the Management of Waste Materials in Malaysia. *Forum Geokol*, 15(2).
- [2] Al-Ansari, M. S. (2012). Improving Solid Waste Management in Gulf Co-operation Council States: Developing Integrated Plans to Achieve Reduction in Greenhouse Gases. *Modern Applied Science*, 6(2), 60-68.
- [3] Mathews, M. (1997) Twenty-five Years of Social and Environmental Accounting Research: Is There a Silver Jubilee to Celebrate? *Accounting, Auditing and Accountability Journal* 10(4), pp.481-531
- [4] Mathews, M. (2000) The Development of Social and Environmental Accounting Research 1995-2000, Discussion Paper Series No.205, Palmerston North, NZ: Massey University, School of Accountancy
- [5] Deegan, C. (2002) The Legitimising Effect of Social and Environmental Disclosures—A Theoretical Foundation *Accounting, Auditing & Accountability Journal* 15 (3), pp.282-311
- [6] O'Donovan, G. (1999) Managing Legitimacy through Increased Corporate Environmental Reporting: An Exploratory Study *Interdisciplinary Environmental Review* 1 (1), pp.63-99
- [7] Gibson, R. and Guthrie, J. (1995) Recent Environmental Disclosures in Annual Reports of Australian Public and Private Sector Organisations *Accounting Forum* 19 (2/3), pp.111-127
- [8] Burritt, R. and Welch, S. (1997) Accountability for environmental performance of the Australian Commonwealth Public Sector *Accounting, Auditing & Accountability Journal* 10 (4), pp.532-561
- [9] Frost, G. (1998) A Study of Environmental Accounting within the New South Wales Public Sector *Accounting Research Journal* 11 (2), pp.400-411
- [10] Qian, W., Burritt, R. & Monroe, G. (2008), Environmental Management Accounting in Local Government: A Case of Waste Management, *A-CSEAR 2008 Proceedings*

- [11] Bouma, J. and van der Veen, M. (2002) Wanted: A Theory for Environmental Management Accounting, in Bennett, M., Bouma, J. and Wolters, T. (eds.), *Environmental Management Accounting: Informational and Institutional Developments*, Kluwer Academic Publishers, pp.279-290
- [12] Burritt, R. L. (2004). Environmental management accounting: Roadblocks on the way to the green and pleasant land. *Business Strategy and the Environment*, Vol. 13(1), pp. 13-32.
- [13] Qian, W., Burritt, R. & Monroe, G. (2008), Environmental Management Accounting in Local Government: A Case of Waste Management, *A-CSEAR 2008 Proceedings*
- [14] Gray, R. (2002) The Social Accounting Project and *Accounting, Organisations and Society* Privileging Engagement, Imaginings, New Accountings and Pragmatism Over Critique? *Accounting, Organisations and Society* 27 (7), pp.687-708
- [15] Langfield-Smith, K. and Thorne, H. (2013). *Management Accounting*, 6th ed., McGraw Hill.
- [16] Nadzri Bin Yahaya. (2013). *Federalising Solid Waste Management In Peninsular Malaysia*. Kuala Lumpur: Department of National Solid Waste Management, Ministry of Housing and Local Government.
- [17] Ministry of Housing and Local Government (1988), *Action plan for the beautiful and Clean Malaysia (ABC Plan)* Kuala Lumpur.
- [18] Nesadurai, N., (1999). 'The 5R Approach to Environmentally Sound Solid Waste'. Paper presented in Seminar on "Local Communication and the Environment" organized by EPSM, 24-25th Oct., 1998 Shah's Village Hotel, 1999.
- [19] Mokhtar, N. (2015), *The Extent of Environmental Management Accounting (EMA) Implementation And Environmental Reporting (ER) Practices: Evidence From Malaysian Public Listed Companies*, University of Malaya, Kuala Lumpur
- [20] Langfield-Smith, K. and Thorne, H. (2013). *Management Accounting*, 6th ed., McGraw Hill.
- [21] International Federation of Accountants [IFAC]. (2005). *International Guidance Document: Environmental Management Accounting*. New York: USA.
- [22] International Federation of Accountants [IFAC]. (2005). *International Guidance Document: Environmental Management Accounting*. New York: USA.
- [23] Mokhtar, N. (2015), *The Extent of Environmental Management Accounting (EMA) Implementation And Environmental Reporting (ER) Practices: Evidence From Malaysian Public Listed Companies*, University of Malaya, Kuala Lumpur
- [24] Langfield-Smith, K. and Thorne, H. (2013). *Management Accounting*, 6th ed., McGraw Hill.
- [25] Mokhtar, N. (2015), *The Extent of Environmental Management Accounting (EMA) Implementation And Environmental Reporting (ER) Practices: Evidence From Malaysian Public Listed Companies*, University of Malaya, Kuala Lumpur
- [26] Langfield-Smith, K. and Thorne, H. (2013). *Management Accounting*, 6th ed., McGraw Hill.
- [27] International Federation of Accountants [IFAC]. (2005). *International Guidance Document: Environmental Management Accounting*. New York: USA.
- [28] Langfield-Smith, K. and Thorne, H. (2013). *Management Accounting*, 6th ed., McGraw Hill.
- [29] Langfield-Smith, K. and Thorne, H. (2013). *Management Accounting*, 6th ed., McGraw Hill.
- [30] Mokhtar, N. (2015), *The Extent of Environmental Management Accounting (EMA) Implementation And Environmental Reporting (ER) Practices: Evidence From Malaysian Public Listed Companies*, University of Malaya, Kuala Lumpur
- [31] International Federation of Accountants [IFAC]. (2005). *International Guidance Document: Environmental Management Accounting*. New York: USA.

- [32] Parker, L., & Owen, D. (2008). Chronicles of wasted time? *Accounting, Auditing & Accountability Journal*, 21(2), 240-267. doi: 10.1108/09513570810854428
- [33] Qian, W., Burritt, R. & Monroe, G. (2008), Environmental Management Accounting in Local Government: A Case of Waste Management, *A-CSEAR 2008 Proceedings*
- [34] 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, 619-626
- [35] Baumann, S. (2015), Push and Pull Contingency Variables - a Model for Environmental Management Accounting
- [36] United Nations Development Programme (UNDP), (2008), 'Malaysia Developing a Solid Waste Management Model for Penang'. Published by the United Nations Development Programme (UNDP), Malaysia. Retrieved from http://www.my.undp.org/content/malaysia/en/home/library/environment_energy/EEPub_SolidWaste.html
- [37] Agamuthu P. & Dennis V (2011). Policy Evolution of Solid Waste Management In Malaysia. Insitute of Biological Sciences, University of Malaya, Kuala Lumpur.
- [38] Johari, A., Alkali, H., Hashim, H., Ahmed, S. I., and Ramli, M. (2014), Municipal Solid Waste Management and Potential Revenue from Recycling in Malaysia, *Modern Applied Science*; Vol. 8, No. 4.
- [39] Gilpin, A (1976), Dictionary of Environmental Terms, London: Routledge and Kegan Paul Ltd, pp-169.
- [40] Nesadurai, N., (1999). 'The 5R Approach to Environmentally Sound Solid Waste'. Paper presented in Seminar on "Local Communication and the Environment" organized by EPSM, 24-25th Oct., 1998 Shah's Village Hotel, 1999.
- [41] Sreenivasan, J., Govindan, M., Chinnsami, M. and Kadiresu, I. (2012), 'Solid Waste Management in Malaysia: A Move towards Sustainability'. Waste management: An Integrated Vision, 55-70. Retrieved on January 31, 2018 from <https://www.intechopen.com/books/waste-management-an-integratedvision/solid-waste-managemen-in-malaysia-a-move-towards-sustainability>.
- [42] EGSSAA, (Environmental Guidelines for Small: Scale Activities in Africa), (2009). 'Solid waste: generation, handling, treatment and disposal'. Retrieved on February 4, 2018 from www.encanafrica.org.
- [43] Agamuthu, P. (2001). *Solid waste: principles and management: with Malaysian case studies*. Insitute of Biological Sciences, University of Malaya, Kuala Lumpur.
- [44] Weitz, K. A., Thorneloe, S. A., Nishtala, S. R., Yarkosky, S., & Zannes, M. (2002). The impact of municipal solid waste management on greenhouse gas emissions in the United States. *Journal of the Air & Waste Management Association*, 52(9),1000-1011.
- [45] Sreenivasan, J., Govindan, M., Chinnsami, M. and Kadiresu, I. (2012), 'Solid Waste Management in Malaysia: A Move towards Sustainability'. Waste management: An Integrated Vision, 55-70. Retrieved on January 31, 2018 from <https://www.intechopen.com/books/waste-management-an-integratedvision/solid-waste-managemen-in-malaysia-a-move-towards-sustainability>.
- [46] Phang Siew Nooi, (1989). Sistem Kerajaan Tempatan. Selangor: Dewan Bahasa dan Pustaka.
- [47] Nadzri Bin Yahaya.(2013). Federalising Solid Waste Management In Peninsular Malaysia. Kuala Lumpur: Department of National Solid Waste Management, Ministry of Housing and Local Government.
- [48] Milne, M. J. (1996), On sustainability; the environment and management accounting, *Management Accounting Research*, 7, 135-161
- [49] 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, 619-626
- [50] Sulaiman, M., and Nik Ahmad, N. N. (2006). Towards a sustainable future. *Accountants Today*, pp. 29-33.
- [51] Ditz, D., Ranganathan, J. and Banks, R. (1995) *Green Ledgers: Case Studies in Corporate Environmental Accounting*, Washington, DC: World Resources Institute.
- [52] Burritt, R. L. (2004). Environmental management accounting: Roadblocks on the way to the green and pleasant land. *Business Strategy and the Environment*, Vol. 13(1), pp. 13-32.
- [53] Sulaiman, M., and Nik Ahmad, N. N. (2006). Towards a sustainable future. *Accountants Today*, pp. 29-33.
- [54] Qian, W., Burritt, R. & Monroe, G. (2008), Environmental Management Accounting in Local Government: A Case of Waste Management, *A-CSEAR 2008 Proceedings*
- [55] Qian, W., Burritt, R. & Monroe, G. (2008), Environmental Management Accounting in Local Government: A Case of Waste Management, *A-CSEAR 2008 Proceedings*
- [56] 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, 619-626
- [57] Macve, R. (2000), "Accounting for environment cost", in *The industrial green game: Implications for environmental design and management*, National Academy Press, Washington, USA, pp: 185-199.
- [58] United States Environmental Protection Agency (USEPA) (2006), "Environment Protection Authority Annual Report", USEPA, Washington, D. C., U.S.A.
- [59] Burritt, R.L., Hahn, T. and Schaltegger, S. (2002). 'Towards a comprehensive framework for environmental management accounting: Links between business actors and environmental management accounting tools'. *Australian Accounting Review*, 12(2), 39-50.
- [60] Jovanović, D. and Jovanović, M. (2012). 'Management Accounting Aspect of Environmental Costs'. *International Scientific Conference Contemporary Issues in Economics, Business and Management*, 524 – 538.
- [61] Qian, W., Burritt, R. & Monroe, G. (2008), Environmental Management Accounting in Local Government: A Case of Waste Management, *A-CSEAR 2008 Proceedings*
- [62] Qian, W., Burritt, R. & Monroe, G. (2008), Environmental Management Accounting in Local Government: A Case of Waste Management, *A-CSEAR 2008 Proceedings*
- [63] Scott, W. (1987) The Adolescence of Institutional Theory *Administrative Science Quarterly* 32 (4), pp.493-511
- [64] Chenhall, R. H., 2003 Management control systems design within its organizational context: findings from contingency-based research and directions for the future: *Accounting, Organisations and Society* Vol.28 2-3, pp. 127-168
- [65] Parker, L. (1997) Accounting for Environmental Strategy: Cost Management, Control and Performance Evaluation *Asia-Pacific Journal of Accounting* 4 (2), pp.145-173
- [66] Bouma, J. and van der Veen, M. (2002) Wanted: A Theory for Environmental Management Accounting, in Bennett, M., Bouma, J. and Wolters, T. (eds.), *Environmental Management Accounting: Informational and Institutional Developments*, Kluwer Academic Publishers, pp.279-290
- [67] Waterhouse, J. H., & Tjessen, P. (1978). A contingency framework for management accounting systems reserach. *Accounting, Organizations and Society*, 3(1), 65 - 76.
- [68] Lawrence, P. and Lorsch, J. (1967) *Organisation and Environment: Managing Differentiation and Integration*, Homewood, Illinois: Richard D. Irwin, Inc.
- [69] Ewusi-Mensach, K. (1981) The External Organisation Environment and Its Impact on Management Information Systems Accounting, *Organisations and Society* 6, pp.301-316
- [70] Chenhall, R. and Morris, D. (1986) The Impact of Structure, Environment, and Interdependence on the Perceived Usefulness of Management Accounting Systems: *The Accounting Review* 61(1), pp. 16-35
- [71] Badri, M., Davis, D. and Davis, D. (2000) Operations Strategy, Environmental Uncertainty and Performance: A Path Analytic Model of Industries in Developing Countries *Omega: The International Journal of Management Science* 28, pp.155-173

- [72] Baumann, S. (2015) Push and Pull Contingency Variables - a Model for Environmental Management Accounting: Elsevier , pp.1-24
- [73] Horbach, J., Rammer, C., & Rennings, K. (2012). Determinants of eco-innovations by type of environmental impact — The role of regulatory push/pull, technology push and market pull. *Ecological Economics*, 78(0), 112-122. doi: <http://dx.doi.org/10.1016/j.ecolecon.2012.04.005>
- [74] Qian, W., Burritt, R. & Monroe, G. (2008), Environmental Management Accounting in Local Government: A Case of Waste Management, *A-CSEAR 2008 Proceedings*
- [75] Meyer, J. and Rowan, B. (1977) Institutionalised Organisations: Formal Structure as Myth and Ceremony *American Journal of Sociology* 83 (2), pp.340-363 NSW
- [76] Scott, W. Richard 1995. *Institutions and Organizations*. Thousand Oaks, CA: Sage.
- [77] Scott, W. Richard (2008) *Institutions and Organizations: Ideas and Interests*. Los Angeles, CA: Sage Publications.
- [78] Qian, W., Burritt, R. & Monroe, G. (2008), Environmental Management Accounting in Local Government: A Case of Waste Management, *A-CSEAR 2008 Proceedings*