

Modeling Barriers To Implementation Of Environmental Management Systems (EMS) By Corporate Organizations In Tanzania

Michael Shadrack Mangula*, Felichesmi S Lyakurwa

Department of Production and Operations Management, Mzumbe University,
P.O. Box 87, Morogoro, Tanzania

Abstract

Recently, implementation of environmental management systems (EMS) has attracted more attention as a strategy for balancing the three triple bottom line constraints of the economic, social and environmental to the production process. Thus, identification of the factors hindering implementation of EMS is essential for continuous environmental improvements. This study utilized structured questionnaires and interviews to obtain primary data from employees working in the corporate organizations located in Iringa and Morogoro municipalities as well as Dar es Salaam city of Tanzania. The IBM Statistical Packages for Social Science (SPSS) version 17 was used in the data analysis. Thereafter, barriers to implementation of EMS by corporate organizations in Tanzania were confirmed by confirmatory test modeling contained in AMOS07 software. The findings revealed various factors hindering implementations of EMS including lack of commitment from the top management, difficulty in dealing with environmental issues, uncertainties in maintaining continuous improvement, long timeframe needed for realization of results after its implementation, lack of environmental specialists, higher costs of its implementation, employees not being involved and poor communication with stakeholders on environmental issues. Nevertheless, most of the problems were found to be more managerial and financial than technical in nature. This study recommends need for corporate organizations top management full commitment on implementation of EMS; employees awareness on their roles and responsibilities, adequate communication between the top management and other stakeholders in the environmental field to effective implementation of EMS in Tanzania.

Keywords: Environmental Management System, Corporate Organization, barriers, Tanzania.

1. Introduction

EMS implementations by corporate organizations have gained global support due to emerged environmental problems soon after industrial revolution in Europe early 19th century (Graedel and Allenby 2004). The industrial revolution was accompanied with massive production of various industrial products leading to progressive deterioration of the environment which threatens the human health and ecosystems' quality. Moreover, these problems have been exacerbated by production activities from corporate organizations in both, developed and developing countries since pollution has no borders. In the early 1970s' most of the countries in the world decided to consider environmental issues in their corporate strategic plans to ensure continuous environmental performances. According to Heberling and Hopton (2012), Montabon *et al.*, (2000) industrial production managers are supposed to consider economic, social and environmental aspects in the early product design and production processes. In response to the pressing need for companies to address the impact of enterprises' activities on the environment, the International Organization for Standardization (ISO), in 1996, introduced the ISO 14000 series of standards (Maier and Vanstone 2005, Murray, 1999). Whereby, the ISO 14000 family of standards deals with various matters concerning the environment and the ISO 14001 primarily focuses on environmental management systems (EMS). Thus, the EMS is designed to introduce environmental improvement into every aspect of a company's operations and offers an organized approach to manage environmental issues. The British Standards Institute (BSI) defines EMS as organizational structures, responsibilities, practices, procedures, processes and resources for determining and implementing environmental policies (Netherwood, 1998). It is a voluntary tool which can help corporations to control environmental impacts arising from various activities. While implementation of EMS by corporate organizations ensures improved industrial operations, reduce liabilities resulted from non-compliance to environmental regulations and brings economic fortunes, yet barriers to EMS implementation in Tanzania has not explored.

1.2 Background of the Study

Historically, EMS can be traced before and during the industrial revolution in Europe. In that time, industrial activities which caused environmental pollution dominated the

economy. However, the EMS was informal, not standard and different organizations from different places had their own EMS. In 1992 the world witnessed the first world formal environmental management system which was developed by the British Standard Institute. The standard was called BS7750, an environmental management system standard that set the stages for the world to take a look on their environmental practices (Jeniffer, 2006). The standard was not permanent at the time but temporarily experimented to see whether it could work properly or not. A pilot study to implement the programme was done for two years during which 230 organizations implemented the programme. The feedback received from those organizations which implemented it was used to modify the programme for better performance and the modified EMS standard was published in January 1996 (Starkey, 1998).

In Tanzania as other countries with diverse economies, the EMS has thrown a challenge to businesses especially in environmentally sensitive industries such as manufacturing of chemicals and semiconductors, mining and in agriculture. The crafters of EMS were careful to ensure that it is applicable to organizations of varying sizes and circumstances, not just large corporations or those with economic leverage. Adoption of EMS is one way that a company will be able to demonstrate to its customers, suppliers, competitors and the regulators that it is serious about environmental stewardship (Murray, 1999). Various corporate organizations in Tanzania dealing with manufacturing and service provision have adopted the EMS in their places. Among the corporate management with EMS are Sao Hill industries, Mtibwa sugar estate, Kigombe Sisal Estate, Bonite Bottlers Limited, Coca Cola Kwanza, Twiga Cement Company and such systems acts as a framework for their activities (URT, 2008). However, many corporate firms are still contributing to the environmental problems including global climate change, depletion of stratospheric ozone, ocean degradation, the wide spread of persistent organic pollutants loss of biodiversity and other global environmental issues which had led to disappearance of flora and fauna in the environment (Katima *et al.*, 2000). Furthermore a study by Temba (2008) showed that adoption of EMS by the management of corporate firms in Tanzania is still at the infancy stage as many environmental problems such as pollution, solid and liquid waste and loss of aquatic animals still exist.

The development of BS7750 influenced European Commission to set out its proposal for an eco-audit scheme which led to the publication of the Eco-Management and Audit Scheme. This was adopted by the European Commission Council of Ministers on June 29th 1993, and became open to company participation in April 1995. Through various initiatives from the Geneva-based International Standard for Organization (ISO), an environmental standard called ISO 14001 (EMS) was established and more than 100 countries adopted it for the improvement of environmental performance in their organizations (IEA, 2009). Katima, *et al.*, (2000) added that the environmental standards do not tell the organizations what environmental performance they must achieve, rather they describe a system that will help an organization to achieve its own objectives and target by assuming that better environmental management will lead indirectly to better environmental performances.

1.3 Policy and Legal framework for EMS in Tanzania

The necessity of environmental management forced the country to establish various policies, constitutional and legal frameworks as a means to prevent environmental challenges resulted from different activities in any organization. The adoption of the policies is not done by Tanzania only; instead several countries in the world are adopting them. For example the study done by Wallace (2006) depicts that the policy recommendations given by Geneva Centre for Security Policy to be adopted by the United States Government was mainly about public awareness and education on the negative consequences of environmental damage as seen to policy makers and planners.

Moreover, the Government of Tanzania together with other collaborating institutions and agencies such as Community Based Organizations (CBOs) and Non-Governmental Organizations (NGOs) are implementing various programmes both in rural and urban areas which aim at protecting environment for sustainable development (URT, 1997). Various media institutions such as radio, Television, press and newspapers have played significant role in sensitising and undertaking various education programmes on environmental issues thereby educating the public or private interest, commitment and awareness on environmental management and conservation aspects. Among the policy

establish by the country include; the national environmental policy of 1977 where among its roles include promoting international corporation on the environmental agenda and formulate environmental sectoral legislations which are the essential components for effective and comprehensive environmental management and improvement of life (URT,1997). For example, the formulated sectoral- related environmental legislation include: forestry, wildlife, fisheries, mining, energy, water land and local authority. All these are to be well implemented for better environmental performance (URT, 1998).

Environmental management in Tanzania through adoption of proactive strategy has also been articulated in the National Environmental Management act of 2004 and become in operations in 2005. For example, in the Environmental Management Act, (2004) section 15 (a) stipulates that there shall be director of environment from the Vice President Office responsible for managing environment. The directorate coordinates various environment management activities undertaken by other agencies and promotes the integration of environment considerations into development policies, plans, programmes, strategies, projects. Also the directorate undertakes strategic environmental assessment with a view to ensuring the proper management and rational utilization of environmental resources on a sustainable basis for the improvement of the quality of human life in Tanzania encourage improved industrial and government performances. Furthermore, section 6 of the national environmental management act of 2004 stipulates that every person living in Tanzania shall have a stake and a duty to safeguard and enhance the environment and to inform the relevant authority of any activity and phenomenon that may affect the environment significantly.

Furthermore effective EMS in Tanzania is also highlighted in the constitution of the United Republic of Tanzania under article 27(1)-(2) which states that every person is obliged to safeguard and protect the natural resources of the United Republic of Tanzania, state property and all property jointly owned by the people and all persons shall by law be required to safeguard state and communal property, to combat all forms of misappropriation and wastage and to run the economy of the nation assiduously, with the attitude of people who are masters of the fate of their nation. The article also provides necessary framework for the development of national policies, laws, programmes and

plans that should enable the efficient management of the environment as well as the necessary environmental safeguards. Also the right of every person to take legal action to ensure the protection of the Constitution and the laws of the land is, enshrined in article 26(2) of the Union Constitution. And according to Article 27(1) of the Union Constitution, every person has a general duty to among other things, “protect the natural resources of the United Republic.” The express duty to protect natural resources implies also a general duty to protect the “environment” for sustainable development (URT, 1998). The necessity of adoption and ensure compliance enforce and ensure compliance of the national environmental quality standards is also stipulated in the National Environmental Management Council (NEP, 2004).

Todate Tanzania is facing various environmental problems including land degradation, lack of accessible good quality water for urban and rural inhabitants, environmental pollution, loss of wild life habitats and biodiversity, deteriorations of aquatic system and deforestation (NEP 1997, URT 1997). However, it seems that land degradation affects productivity of soil; pollution affects the health of people and loss of habitat for wildlife which affects the land and threatening the national heritage and creates uncertainty to the tourist industry (Netherwood, 1998). As industries are the main polluters of the environment the current national environment policy introduced emphasises on proactive strategies to protect environment through adoption of the environmental management system (URT, 1998). This paper therefore, reports on the challenges facing corporate firm in the course of implementing EMS in their working place and conclude by commending strategies to be adopted for its effective implementations.

3. Methodology

Barriers hindering implementation of EMS in Tanzania by corporate organizations was determined through hypothesis testing. The hypothesis was tested using various statistical parameters including, *Chi-Square*, Analysis of Variance (*ANOVA*) means for estimating causal relationships within and between constructs and the confirmatory factor analysis. The descriptive research design was employed in which questionnaires were used as data collection instruments of which a total of 85 questionnaires were administered to respondents working in the corporate organizations located in Iringa and

Morogoro municipalities and Dar es Salaam city of Tanzania. Simple random sampling technique was employed during conducting the study. The IBM SPSS version 17 was employed to calculate the test statistic parameters such as mean, Cronbach's alpha, Kaiser-Meyer Olkin (KMO), chi-square and the analysis of variance (ANOVA). Finally, the AMOS7 software was utilized to develop the model that describe factors hindering implementation of EMS in Tanzania through confirmatory factor analysis approach. Thirteen factors hindering effective implementation of EMS in the organizations were used to guide the respondents. Respondents were asked to rate all the items that find are the barriers to an organisation in implementing EMS. A five point Likert scale (1 = Not at all, 2 = very low 3 = low, 4 = to some extent and 5 = to a great extent) was used to measure the extent to which certain factors act as a barrier in the effective implementation of EMS in their organization. Before doing analysis on the opinions from employees concerning critical factors which act as barriers to the effective implementation of Corporate EMS in Tanzania, the construct reliability test of the sample was done which showed that the Cronbach's alpha was approximately 0.70. The Kaiser-Meyer Olkin (KMO) measure of sampling adequacy was 0.737 and the Bartlett's test of sphericity was significant at 0.01 (Chi-Square 443.219 and degree of freedom (df) = 78. Hence the sample was reliable and adequate for analysis. These results concur with those of Mugenda and Mugenda (1999) who depicted that Cronbach's alpha should be close to 1 (normally the proposed level is from 0.7 and above). The results are also supported by Hair et al., (1998) who argued that the highest value of Cronbach's alpha is 1.0 implying that there is highest internal consistency of reliability and the value greater than 0.6 is acceptable for exploratory research.

4. Results and Discussion

The quantitative model for the barriers hindering implementation of Corporate Environmental Management systems (EMS) in the Tanzanian has been developed.

4.1 Barriers hindering Implementation of Corporate EMS in Tanzania

Many corporate firm both from developed and developing countries have adopted EMS which provides a structure that allows the management to better control of the company's environmental impacts. Barriers hindering implementation of EMS by corporate organizations in Tanzania are presented (Table 1).

Table 1: Barriers to Effective Implementation of EMS in Tanzania

Barriers to implementation of EMS	Level of applicability					N	Mean	Std Dev.	Loadin g factor	Rank
	1	2	3	4	5					
Lack of motivation on EMS implementation among staff	4	5	9	42	25	85	3.93	1.033	0.646	2
Lack of training and awareness among employees	3	2	18	34	27	85	3.95	0.981	0.780	1
Lack of specialists in environmental issues	10	5	15	24	31	85	3.72	1.333	0.742	3
Difficulties in dealing with environmental issues	4	21	35	14	11	85	3.08	1.060	0.762	12
Uncertainties in maintaining continuous improvement	2	17	32	30	4	85	3.20	0.897	0.713	10
Difficuty to make infrastructure changes to implement EMS.	11	12	23	25	16	85	3.27	1.285	0.721	8
Lack of commitment on EMS implementation from top management	8	6	12	46	13	85	3.59	1.126	0.501	4
No legal demand/incentives on EMS implementation	7	15	34	23	5	85	3.54	4.661	0.835	5
No competitive advantages in EMS implementation	8	8	41	19	9	85	3.15	1.052	0.727	11
Incompatibility with organization corporate culture	3	13	38	23	8	85	3.24	0.947	0.575	9
Higher cost of implementing EMS in an organization	5	12	22	28	18	85	3.49	1.151	0.526	6
Long timeframe to see the results of EMS implementation	4	18	42	15	6	85	3.01	0.932	0.546	13
Poor communication among the stakeholders	4	5	29	40	7	85	3.48	0.908	0.712	7

Grand mean**3.43**

Likert scale: 1=Not at all, 2=Very low, 3=Low, 4=To some extent, 5=To a great extent

Source: Research data (2011)

The result (table 1) indicated that ten top factors hindering effective implementation of EMS in Tanzania corporate firm include; the lack of training and awareness among

employees on the application of EMS in their working place (Mean 3.95; $3.95/5=79$ percent) was ranked first and was therefore considered to be the most critical barrier. These results are in line with what is reported by other researchers who concluded that lack of employees' education, training and acknowledgement in order to gain their acceptance and motivation towards new EMS principles is among the barriers in most of the organizations (Neef, D., et al., 2003). In a similar study Biondi et al. (2000) concluded that environmental implementation in corporate firms is hindered by the lack of knowledge and expertise caused by limited or no training for employees. Furthermore, Denton (1999) concluded that training and awareness building may lead to an improvement in the environmental knowledge, skills and expertise of the staff. However these results are contrary to those obtained by Steger (2000) who concluded that EMS implementation is not influenced by training alone but is mostly affected by the lack of specialists on environmental issues and uncertainty in maintaining continuous improvement.

Other barriers to implementation of EMS includes lack of motivation on Environmental Management System amongst staff (Mean 3.93; $3.93/5=78.6$ percent), lack of specialists in environmental issues in the organization (Mean=3.72; $3.72/5=74.4$ percent), lack of commitment on EMS from the top management (Mean score=3.59; $3.59/5=71.8$ percent). These findings are supported by Welford (1998) who found that senior management commitment existing in any organization has a great impact on EMS implementation as this enable time, financial and other resources to be allocated. Similar results were also observed by Johnson (1997) who revealed EMS implementation is mostly hindered by lack of motivation and incentives, inadequate personnel on Environmental issues, and lack of management commitment on EMS. Moreover, the results are justified by Gayler (2001) who argued that regardless of how careful an EMS has been prepared, or to what standard it has been designed, unless the implementation has full support and commitment of all members of the organization especially senior management it is likely to fail. Other investigated factors hindering EMS implementation in corporate firms include; no legal demand/incentives on EMS implementation in the organization (Mean=3.54; $3.54/5=70.8$ percent). Higher costs of implementing the EMS in the organization (Mean=3.49; $3.49/5=69.8$ percent) were also found to be a critical factor

hindering EMS implementation in most of the corporate firms in Tanzania. The results are supported by previous research done by Price (2007) who found that 40 percent of corporate firms responded that the cost of implementing EMS outweighed the benefits. Furthermore the results are supported by Zailani and Wahid (2006) who observed that EMS would be a cost burden to their company and would become threat to competitiveness. Chan (2008) also found that the most important barriers to EMS implementation are higher implementation and maintenance costs, lack of knowledge and lack of human as well as financial resources.

Another limiting factor observed was poor communication of EMS reports among the stakeholders (internal and external) in the organization (Mean=3.48; $3.48/5=69.6$ percent). These findings are in line with the research done by Robert (1998) who revealed that EMS implementation is not hindered only by lack of training but also lack of communication among employees in the organization. Tinsley and Pillai (2006) stated that barriers include management style, top management commitment and lack of motivation to employees on EMS implementation.

Furthermore factors such as difficulty in making necessary infrastructure changes to implement EMS (Mean = 3.27; $3.27/5 = 65.4$ percent), incompatibility with organization corporate culture (mean = 3.24; $3.24/5 = 64.8$ percent) and uncertainties in maintaining continuous environmental improvement were said to hinder effective implementation of EMS in most of the corporate firms in Tanzania. These findings are also similarly reported by Ticker (1998) and Baumast (2001) who concluded that EMS implementation in firms is hindered mostly by unfavorable company culture and uncertainties in the maintenance of continuous improvement. The findings are further supported by Boiral and Sala (1998) who revealed that many organizations do not encourage the implementation of EMS because they feel that it is not an effective system and that it does not promise performance improvement in the area of environmental protection. Similar results were also obtained by Ann, Zailani and Wahid (2006) who concluded many organizations did not find EMS to be cost effective because it did not reduce the lead time and improve level of quality in environmental protection.

No competitive advantages on EMS implementation (Mean = 3.15; $3.15/5 = 63$ percent), difficulties in dealing with environmental issues (Mean = 3.08; $3.08/5 = 61.6$ percent),

and long timeframe to see the results of EMS implementation (Mean = 3.01; 3.01/5 = 60.2 percent), were considered to be less important as barriers to EMS implementation by corporate firms in Tanzania. These results are also supported by Hillary (1999) who concluded that EMS implementation is limited by factors such as lack of resources, negative attitude of the company and difficulty in dealing with environmental issues. Baumast (2001) also concluded that EMS implementation is less hindered by lack of EMS specialists and no competitive advantages. However Steger (2000) recommended the most critical barriers on EMS implementation are difficulty in dealing with environmental issues, lack of specialists on environmental issues and the absence of competitive advantages in its implementation.

When a Chi- Square test was done to see whether there was any association between various items (variables) that were used to establish factors which act as barriers to corporate EMS implementation in Tanzania, the results were as outlined in Table 2.

Table 2: Chi- Square test on barriers to implementation of corporate EMS in Tanzania

Barriers to EMS implementation	Chi-Square	df	Asymp. sign
Lack of motivation on EMS implementation among staff	62.706	4	0.000
Lack of training and awareness among employees on EMS	48.262	4	0.000
Lack of specialists in environmental issues	26.000	4	0.000
Difficulties in dealing with environmental issues	32.588	4	0.000
Uncertainties in maintaining continuous improvement	46.353	4	0.000
Making necessary infrastructure changes to implement EMS is difficult	08.353	4	0.079
Lack of commitment on EMS implementation from the top management	63.765	4	0.000
No legal demand/incentives on EMS implementation	55.118	5	0.000
No competitive advantages in EMS implementation	47.412	4	0.000
Incompatibility with organization corporate culture	45.294	4	0.000
Higher cost of implementing EMS in an organization	18.588	4	0.001
Longtime frame to see the results of EMS implementation	54.118	4	0.000
Poor communication among the stakeholders	63.882	4	0.000

Source (Researcher data, 2011), df refers degree of freedom, Asymp. Sign means Asymptotic significant

The Chi-Square test showed that all variables used to establish the factors which determine barriers to effective implementation of Corporate EMS in Tanzania are

significantly associated at 0.01 except necessary infrastructure changes to implement EMS is too difficult (prob. 0.079) which was not significant at the 0.01 level.

4.2 Multi-factor model using Confirmatory Factor Analysis to identify barriers to EMS implementation

The Multi- Factor model was developed and the constructs on the factors hindering effective implementation of corporate EMS were categorized into three constructs of Managerial, Technical and Financial factors. The model was found to be more reliable and appropriate to describe factors rather than the one factor model which may qualify even some factors which were to be disqualified by the Multi- factor model (Jeremy, 2006).The managerial, technical and financial factors hinder EMS implementation is presented in figure 1.

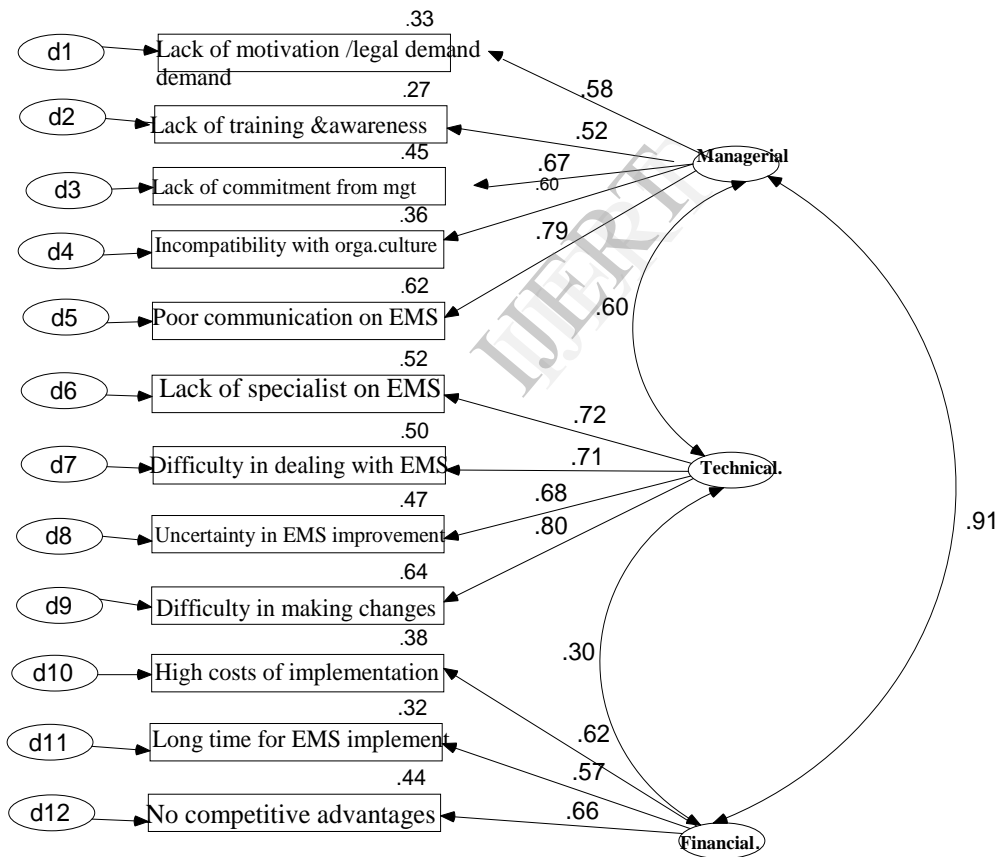


Figure 1. Multi-factor Model for identifying barriers TO EMS implementation

The results in the model (figure 1) show that, there is positive correlation for the factors which act as barriers to the effective implementations of Corporate EMS within the

constructs (managerial and financial factors) but not for the Technical aspects. Moreover some factors hindering the effective implementation of Corporate EMS had no correlation when compared between construct functions so that some barriers were viewed as not being critical despite the good results shown by Chi-square, and in those shown when one factor model on confirmatory factor analysis was done

When tested at the loading factor ($\lambda = 0.60$) for correlation between Managerial and Technical constructs; lack of commitment from top management on EMS ($\lambda = 0.67$), incompatibility with corporate organization culture ($\lambda = 0.60$), poor communication between the management and stakeholder on EMS report ($\lambda = 0.62$) were found to be the managerial factors hindering EMS implementation while the lack of specialists on environmental issues ($\lambda = 0.72$), difficulties in dealing with environmental issues ($\lambda = 0.71$), uncertainty in maintaining continuous improvement ($\lambda = 0.68$) and making necessary infrastructure changes to implement EMS is difficult ($\lambda = 0.80$) were found to be the technical factors hindering EMS implementation. On the other hand managerial factors such as lack of motivation on EMS implementation amongst staff ($\lambda = 0.58$) and lack of training and awareness among employees on EMS ($\lambda = 0.52$) were found to be also important factors hindering EMS implementation even though their loading factors are less than 0.6.

When tested at loading factor ($\lambda = 0.30$) for correlation between the Technical and Financial factors; all factors such as high cost of implementing EMS ($\lambda = 0.62$), long time frame to see the profit/results on EMS implementation ($\lambda = 0.57$) and no competitive advantages on its implementation ($\lambda = 0.66$) were found to be the financial factors affecting EMS implementations by corporate firms on Tanzania. The results also showed that no incentive on EMS implementation was found to be a less critical factor. This implies that the top management should identify the suitable type of motivation and incentive to employees for effective EMS implementation as motivation is subjective and varies from one employee to another, also it can be deduced that EMS training and awareness of employees are not enough if they are not practiced.

Therefore, the data show that the critical factors were found to be managerial and financial than technical ones. This implies that even if the organization is technically sound in terms of skilled labour and equipments; continuous improvement in the

environment cannot be attained if the management is not committed in terms of human and financial resources. The findings comply with those of Mohamed, (2010) who found that most of the problems affecting environmental information systems in Tanzania are organizational or managerial in nature and rarely technical ones.

5. Conclusion

From the study findings and its discussion, the paper concludes that most of the factors hindering effective implementations of Environmental Management System in Tanzania are managerial and financial than technical ones. Therefore, if corporate organizations' top management is committed to settings of the strategic environmental plans and adheres to team work approach, EMS will be implemented successfully; hence environmental problems will be reduced if not eliminated at all.

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