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DOES THE ENVIRONMENT MATTER? EMPIRICAL EVIDENCE FROM AN INSTITUTION OF HIGHER LEARNING IN MALAYSIA

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ABSTRACT

The ability of an organization to manage its environmental performance is emerging as a strategic issue for many organizations. Institutions of higher learning are no exception. Given that a university is a consumer of natural resources and a producer of waste (Flint, 2001), it is imperative that environmental cost information is made visible to the management of the organization so that the impact can be managed more effectively. Environmental management accounting (EMA) is often lauded as the tool to "capture" environmental cost information. However, before such a tool can be implemented, it is important to examine if indeed the university community is aware of environmental issues. If they are, what types of information do they perceive as important to enable them to better address the impact of their activities on the environment. Using the International Islamic University Malaysia (IIUM) as the case, our study examined two pertinent issues: the extent the university community is aware of environmental issues and EMA and their need for environmental cost information. Data was collected using a questionnaire survey. The results revealed a moderate level of awareness on environmental matters amongst IIUM staff. Most were aware of environmental management systems (EMS) but not EMA. Further, they perceive environmental cost information to be useful to manage the impact of their activities on the environment. In particular, they felt that information on the use of paper is important.

Keywords: Environmental Management Accounting, Environmental Awareness, Environmental Management, Universities, Institution of Higher Learning, Malaysia

1. INTRODUCTION

Activities of institutions of higher learning have a substantial impact on the environment. The use of natural resources by its population, namely, electricity, water and paper and the production of waste are some of the impacts. The ability to provide relevant information on the impact of such activities will enable management to manage these activities more

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effectively. Subsequently, this will lead to cost savings. Studies on environmental awareness and environmental management in institutions of higher learning are still a less explored area, particularly in Malaysia. The focus of prior studies has largely been on profit making organizations and companies in the manufacturing sector. Accordingly, this study will contribute to literature in the area of environmental awareness and its management in a non-profit, service organization. Specifically, there are two primary objectives of the study. The first ascertains the level of awareness of staff (both academic and administrative) of the International Islamic University Malaysia (IIUM) on issues pertaining to environmental management and environmental accounting. The second examines the extent environmental cost information is useful in their decision making. For this, we investigated environmental cost information that is currently needed as well as those that will be needed in the future. A comparison of what is needed now and in the future may well provide an indication as to whether we are moving in the right direction as far as environmental matters are concerned. Our study is pertinent for several reasons. The first relates to the dearth of research on environmental issues in institutions of higher learning, particularly in developing countries. Second and more importantly, it is hoped that our study may provide a future platform on which the university may launch various proactive strategies to better manage the use of natural resources and at the same time address the ballooning utilities expense. Thirdly, our study echoes the strong belief of the Parliamentary Assembly of the Council of Europe when it stated that environmental accounting is an essential tool of governance. Hence, proper governance of an institution of higher learning may well include a responsibility towards the environment. Finally, the stages that we have suggested an institution of higher learning should undertake in order for it to be environmentally responsible is, perhaps, the most pertinent contribution of our study.

The remainder of the paper is structured as follows. The following section discusses the literature review while section 3 outlines the theoretical framework. Section 4 focuses on the data collection as well as a discussion of the results. Section 5 elaborates on the recommendations while section 6 concludes.

2. LITERATURE REVIEW

2.1. Environmental accounting (EA)

The university, as a consumer of natural resources and a producer of waste (Flint, 2001), naturally has a large impact on the environment. Thus, it is important that environmental cost information is made visible to the management of the university and the university community so that the impacts can be managed more effectively. More importantly, in order for any organization to address environmental issues in a more systematic manner, there should be a proper environmental accounting (EA) system in place. EA generally consists of environmental reporting (ER) and environmental management accounting (EMA). The study focuses on the latter.

There is no single and universally accepted definition of EMA. However, for the purpose of our study, we have adopted the International Federation of Accountants' (IFAC) definition of what EMA is. IFAC (2005, p19) defines EMA as:

The management of environmental and economic performance through the development and implementation of appropriate environment-related accounting system and practice. While this may include reporting and auditing in some companies, environmental management accounting typically involves life-cycle costing, full-cost accounting, benefits assessment and strategic planning for environmental management.

Clearly then, EMA constitutes a branch of accounting that provides both monetary and physical environmental related information to suit the needs of internal stakeholders. EMA is thus classified into monetary EMA (MEMA) and physical EMA (PEMA). PEMA information refers to the flow and use of energy, water, material and waste. Thus, such information is presented in the form of physical quantities, for example, kilowatts, kilograms and cubic metres. PEMA information is based on the concept that every material, energy and water that "enters" the organization must leave the organization either as a product or as waste. The analysis on the flow can be done at various levels, for example, the organizational level, the cost centre level, the process level as well as at the individual product level. The physical amount revealed by the analysis can then be converted into a monetary value. Monetary EMA (MEMA) information is concerned with the environmental related costs and earnings measured in monetary units. This information reflects the environmentally induced impact of companies' activities on the economic system. MEMA, typically, includes the cost that arises from the effort to control and prevent waste and emissions. This may comprise both internal and external costs and includes costs related to environmental damage and protection (Jasch, 2002).

There are various benefits of adopting EMA: compliance, eco-efficiency and strategic position (IFAC, 2005). Compliance refers to the cost-efficient compliance with environmental regulations, including pollution prevention, environmental supply chain management and environmental performance reporting. Eco-efficiency relates to the reduction of cost and environmental impact. This includes more informed decision making through explicit consideration of a particular environmental cost, ability to uncover more opportunities through further analysis of environmental costs; and improved pricing of the products through accurate allocation of costs (Deegan, 2003). Strategic position focuses on the evaluation and implementation of cost-effective and environmentally sensitive programmes. These programmes may lead to increased competitive advantage and improved reputation (Deegan, 2003). Thus, it is pertinent that the university community be aware of the benefits just discussed in order for proactive strategies to be put in place to address environmental issues.

2.2. EMA and EMS

Various studies have found that EMA can complement environmental management systems (EMS) in many ways. Staniskis and Stasiskiene (2005) argued that unless true environmental cost is discovered, companies are not willing to invest in energy management programmes. In addition, EMA techniques will enable the pre and post evaluation of cleaner production programmes. Consistent application of EMA enables a company to produce integrated information that can increase value to organizations (Scavone, 2005). Gale (2006) argued that EMA enables the generation of cost and benefit figures, which lead to positive changes in cleaner production strategies. Moreover, Montel (2002) revealed that EMA techniques can be used to assess the costs and benefits of having EMS.

2.3. Sustainability and institutions of higher learning

Specific to environmental management in institutions of higher learning, Flint (2001) performed a study on the ecological footprint analysis (as a measure of sustainability) of the University of Newcastle in Australia. From the ecological footprint perspective, the university, with its large population, is seen as the importer of consumption items, which will eventually have an impact on the external environment. The impact was categorized as follows: food-dairy and meat; buildings – maintenance and operation; transportation – infrastructure, private transport, rail travel, bus travel and air travel; consumer goods – office paper and alcohol; and services –water, cleaning and waste.

Within the same context of the ecological footprint, a case study was undertaken by Venetoulis (2001) for the University of Redlands in the US. In that study, the environmental impacts were assessed through the consumption of water (hydroprint), solid waste (wasteprint), energy (energyprint) and transportation (transportprint).

Shriberg (2000) performed a study on sustainability management in campus housing at the University of Michigan in the US which subsequently provided a framework for the management of sustainability at the university's Housing Division. Specifically, the environmental impacts of the division include the use of electricity, steam, gas and water; the purchase of consumable items such as toilet paper, cleaner, soap and trash bags; waste – solid waste, recycled paper and container; dining services – food and paper products purchased and food and paper waste; and pest/ground management – fertilizer.

In the study by Dahle and Neumayer (2001) on barriers to campus greening, they concentrated on two environmental impact management programmes relating to solid waste and energy management. Solid waste management includes recycling programmes undertaken by the institutions. The study on energy management includes the assessment of how far the institutions have taken initiatives in energy conservation, for example, investing in building an energy management system and installing energy saving devices.

Walton and Galea (2005) explored how universities can implement successful environmental sustainability practices that have been applied by business organizations previously. The study was based on the review of various literature and practices by firms and universities in the US. Strategic comparison made between universities and businesses revealed that there were similarities to support activities of both institutions. These were facilities management, procurement and waste management. The latter includes environmental impact items such as energy, water, packaging, solid waste and hazardous materials management.

On the basis of the above studies, one may classify the environmental impacts related to the university operations as follows:

(i) Use of energy, which includes electricity, gasoline and natural gas;
(ii) Use of water;
(iii) Waste costs, which includes disposal of solid waste, food waste, hazardous material and food waste;
(iv) Transportation; and
(v) Consumable items such as toilet paper and trash bags.

Although these are common in all institutions of higher learning, the extent may vary depending on the type of programmes/degrees offered. For example, if the university offers hospitality management, then the resulting food waste may well be more than that of a university that merely offers management and social science programmes. Given the exploratory nature of the current study, we will only focus on the impact of electricity, water, paper and waste costs. Transportation is not included because this is regarded as external to the university and generally borne by the students themselves. Although we acknowledge that transportation cost is pertinent when examining sustainability issues, the fact that we have excluded this is clearly a limitation of the study.

2.4. EMA and educational institutions

On EMA, there have been very few studies examining the adoption of the tool in institutions of higher learning. The most recent study was by Chang (2007) from the RMIT. The study is based on the case study method where the primary data collection method was in-depth interviews with a few respondents from each of the five universities (RMIT and AUS University in Australia, Transworld Institute of Technology, Nanhua University and National University of Kaohsiung in Taiwan). Chang (2007) also reviewed various related documents. The objectives of the study were to understand the current accounting practices in managing major environmental impacts and to identify factors that influence EMA adoption by the universities. The major environmental impacts considered in the study included electricity, water and paper usage and waste management costs. A similar study conducted by Deegan, earlier (in 2003), focused on the Methodist Ladies College (MLC) in Perth, Australia. The study was also based on a case study. The objective of that study was to assess how far EMA has been implemented in the services industry, particularly in the learning institutions environment. The scope of the study covered how the environmental impact was assessed within the existing accounting system. Consistent with prior studies, the environmental impacts considered in the study pertain to the usage of energy, water, paper and waste management.

The results from both studies, somewhat, supported various limitations of conventional accounting. For example, paper usage cost was not revealed by the general ledger as the cost is hidden in overhead accounts. Further, waste costs were understated and only reflected the cost paid to subcontractors for the removal and disposal of waste. Physical information on the type and quantity of services provided was not available within the current accounting system. Operating costs were combined as part of the operating costs for the whole institution and no proper allocation was made to allocate the costs to the responsibility centre. A responsibility-centred budgeting system for environmental costs was not implemented. More importantly, key managers were generally not held responsible for the environmental costs incurred. Additionally, the utilization of some of the EMA techniques (for example, the consideration of environmental costs in capital budgeting) were done in a superficial manner, where there was only minimal consideration of environmental costs and the costs considered may not really have an impact on the projects. Finally, there was poor communication between the environmental management department and the management accounting department.

Because of the above limitations, some recommendations were made by authors of both studies to better manage the environmental costs. Among the suggestions put forward were restructuring the accounting system to link the monetary environmental costs information with the related physical information and to improve the method of identification and measurement of major environmental costs. As for the problem of misallocation of environmental costs, it was suggested that a suitable allocation base be established and an advanced management accounting technique applied, for example, activity based costing. Another recommendation was to introduce a responsibility-centred budgeting system that charges the cost back to the responsibility centre. In addition, it was suggested that major environmental costs be considered in capital investment appraisals and environmental performance be assessed.

Given that the knowledge of EA and EMA, even among accountants, is at a very superficial level presently, it may be less useful for the current study to look into the implementation of EA or EMA. Perhaps of more importance is to assess the level of awareness of EMS, EA and EMA. This is precisely what we attempted have to do. The social issue life cycle theory, the theory used to explicate the results, is discussed next.

3. THEORETICAL FRAMEWORK

The social issue lifecycle theory has often been used to explain how an organization responds to managing social issues. According to the theory, social issues progress following an evolutionary path that consists of a few predictable stages (Mahon and Waddock, 1992). More specifically, the issues evolve from the period of "unthinkable" or "unthought-of" to the period of increasing awareness and expectation and, finally, to a period where new standards are required and embedded in the normal functioning of a business (Nasi et. al, 1997).

Ackerman (1975) described three stages through which the issue evolves. The three stages are identification and policy creation, learning, and commitment. The first stage (identification and policy creation) is when the social issue emerges and is identified by management. The emerging issue is significant enough to trigger the responses required to deal with the issue resulting in a general policy being formulated by management. However, the policy is formulated without a systematic analysis of the problem. Staff still lacks the knowledge and necessary skills to deal with the problems. In addition, the formulation of the policy does not lead to any organizational action towards the issue. The second stage, the learning stage, is where the 'specialist' or staff with a specialised knowledge is hired to deal with the problems. It is at this phase, that the organization begins to address the issue more seriously and in a structured manner. Thus, the appointment of an environmental manager and the establishment of an environmental division by a company may signal that it is in the second stage of the social issue lifecycle theory. The third stage is the commitment stage when new standards are required and embedded in the normal functioning of a business and the task becomes the responsibility of line managers. This is the phase where organizations start to include supplementary reporting and audit practices to address a particular social issue. In the context of environmental accounting, this is when companies include environmental issues in performance evaluation.

Although environmental issues are social issues requiring management attention, given that there is no emphasis by the university authority on such issues, one would expect a low level of awareness both in environmental management and EMA in the university. Given the exploratory nature of the study, we have developed propositions instead of hypotheses. Thus, the following proposition is put forth:

Proposition 1:
There is a low level of awareness concerning environmental management and environmental accounting among staff of IIUM.

Secondly, we examined the need for environmental cost information by both the administrative and academic staff of the university. This was examined from two perspectives: current and future needs. Prior studies on EMA indicate that EMA is still at its infancy (Deegan, 2003; Burritt, 2004). As there has been no specific policy formulated by the university authority to address environmental issues, one can expect that there will also be a lower need for environmental cost information at present. Thus, proposition 2(a) is developed as follows:

Proposition 2(a):
Currently, there is a low level of need for environmental cost information by the staff.

According to the social issue lifecycle theory, organizations will respond to the social issue following a predictable stage. Due to the community's increasing awareness on environmental issues, it is expected that environmental cost information will be perceived to be important in future. Consequently, given this positive perception of environmental cost information, the university may need to disseminate such information to the relevant parties. Further, Nasi et al (1997) opine that a social issue evolves from a period of "unthinkable" to a period of increasing awareness. Accordingly, it is expected that the university community will be more concerned in the future on environmental issues. Thus, it is expected that the need for environmental cost information in future will be higher than it is, presently. Thus,

Proposition 2(b):
There will be a greater need for environmental cost information in the future

4. DATA COLLECTION AND RESULTS

Data was collected using a questionnaire survey on one particular organization, the International Islamic University Malaysia (IIUM). There are various advantages to using a survey. A survey enables one to collect large quantities of data from the survey respondents. In addition, it is a cost efficient way of obtaining information and requires less training (Wilkinson and Birmingham, 2003). On the use of a case as in this study, a researcher needs to establish three things, namely, the 'case' to be studied, the unit of analysis and whether it is a single case or multiple case studies (Yin, 2003). In the current study, the 'case' to be studied is the International Islamic University Malaysia (IIUM). IIUM is selected because the researcher is both a student as well as a staff member of the university. Being a staff of the organization is a great advantage, in terms of networking and access to data.

We sent the questionnaire to staff of the various divisions within the university, staff (both academic and administrative) of all *Kulliyyahs* (faculties) and all the principals and fellows of the *Mahallahs* (hostels) at the Gombak Campus.

4.1. The Survey Instrument

Section 1 of the questionnaire focused on the issues of interest in the study; namely the awareness, the current need for environmental cost information and the future need for the same. Section II focused on the demographics. A pilot test was conducted before sending the questionnaire to the respondents. The general comments received were incorporated in the final version of the questionnaire. Data collected was analyzed using the SPSS software. Given the exploratory nature of the study, quantitative analysis of the data was less rigorous. Data was primarily analysed using descriptive statistics including the mean, median, mode and frequency.

4.2. Demographic Information

Table 1 provides a summary of the questionnaire distributed and the respective response rates. The overall response rate is 6.5%. The response rate is low mainly due to the non-availability of many lecturers at the time the questionnaire was distributed. The questionnaire was distributed in May, which was during the short semester where most of the lecturers either had no teaching assignments, out doing research or on annual or study leave. From a total of 98 responses 39 responses were from the *Kulliyyahs,* 39 from Divisions and 20 from *Mahallahs*.

Table 1: Response rate

	No of respondents	**Total distributed**	**Percent**
Division	39	277	14.1
Kulliyyah	39	1113	3.9
Mahallah	20	126	15.9
Total	**98**	**1516**	**6.5**

A few Divisions and *Kulliyyahs* did not respond, citing that they did not understand the subject matter that was asked in the survey. They indicated that the questions asked were more related to financial matters and refused to respond.

4.3. Level of awareness of EMS, EA and EMA

Assessment of the level of awareness is based on the scale of '1' (Not aware at all) to '5' (Very well aware). The average mean for the score was calculated to determine the level of awareness. The highest mean was for EMS and the lowest mean was for EA and EMA. Accordingly, this indicates that respondents are most aware of environmental management but least aware of EA and EMA. The average mean ranges from a low of 2.29 and a high of 2.87. Table 2 presents the detailed overall results.

Table 2: Awareness: All respondents

Items Ranked by Overall respondents	Mean	Rank
Environmental Management	2.87	1
Environmental Management System – ISO 14001	2.35	2
Benefits of EMA	2.33	3
Environmental Accounting	2.29	4
Environmental Management Accounting	2.29	4

Further analysis of the ranked items based on the *Kulliyyahs,* Divisions and *Mahallahs* revealed quite different results. However, the item that most of the respondents were aware of was still environmental management. Other items were ranked differently by each Division, *Kulliyyah* and *Mahallah*. The rank of the items is shown in table 3 below:

Table 3: Environmental Awareness: Divisions, Kulliyyahs and Mahallahs

Items	Division		Kulliyyah		Mahallah	
	Mean	Rank	Mean	Rank	Mean	Rank
Environmental Management	2.68	1	2.97	1	2.90	1
Environmental Management System – ISO 14001	2.29	5	2.42	2	2.35	2
Benefits of EMA	2.53	2	2.18	3	2.20	5
Environmental Accounting	2.53	2	2.05	4	2.25	3
Environmental Management Accounting	2.53	2	2.05	4	2.25	3

For the Divisions, EMS was ranked first, while EA, EMA and the benefits of EMA were ranked second. This is probably driven by the large responses obtained from the Finance Division, where some of the staff have been exposed to knowledge concerning EA and EMA as well as environmental management. For both the *Kulliyyahs* and *Mahallahs,* the first item in the rank was environmental management, followed by EMS-ISO 14001. This appears to be consistent with the results from the overall respondents.

We then analysed the need for environmental cost information presently as well as in the future. Environmental cost information refers to both the monetary and physical information on the usage of electricity, water, paper and waste costs. Respondents had to respond using a Likert scale from '1' (No need at all) to '5' (Very much needed). The average mean was then calculated.

4.4. The need for environmental cost information: Current

On the current need for environmental cost information (Table 4) the information that respondents need most at the present time is the monetary information on the usage of paper, followed by the physical information on the usage of paper. The mean ranges from 2.98 to 3.59. This may be considered as moderately high.

Table 4: Current need: All respondents

Items – Overall Respondents	Mean	Rank
Monetary information on the usage of paper	3.59	1
Physical information on the usage of paper	3.43	2
Monetary information on usage of electricity	3.26	3
Monetary information on usage of water	3.12	4
Waste food disposal costs	3.11	5
Physical information on usage of electricity	3.03	6
Wastewater treatment cost	3.02	7
Physical information on usage of water	2.98	8

The information on the usage of paper appears to be of highest importance probably because this information is rarely available even in the majority of business organizations. Moreover, the nature of the university activities may also require such information as a good number of activities of the university involves the usage of paper (for example, examinations and printing of students' projects). Indeed, the information on the usage of paper can become a valuable piece of information for the users. The third item in the list is monetary information on the usage of electricity, followed by the monetary information on usage of water. This information is available from the current accounting system for the whole university but it may not be utilized and communicated properly to each cost centre. Additionally, and more importantly perhaps, is the fact that the current accounting system does not provide the cost of electricity and water usage for each Department or *Kulliyyah*. Given that this is a very valuable piece of information in order for the utilities expenses to be managed, one would expect such information to be provided to each cost centre/Kulliyyah/Division/Mahallah in the future, at least. The fifth item in the list is waste food disposal, and the information on the wastewater treatment cost comes in seventh in the list. Both items of information are unavailable currently but they may become important information in the future, particularly for the *Mahallah* management due to the large impact of the *Mahallah* resident activities on the environment. The last two items in the rank are physical information on the usage of electricity and water. This information is the least needed, probably because it is more related to environmental performance and users are not able to see the relationship between the physical amount and its related monetary value. More importantly, not many users are interested in having this information as the university does not evaluate the environmental performance of each cost centre.

Further analysis of the rank of the items that respondents currently need based on the *Kulliyyah,* Division and *Mahallah* categories reveal that the monetary and physical information on the usage of paper are still ranked as first and second for all categories of respondents. Table 5 below provides the results.

For Division, monetary and physical information on the usage of electricity are ranked as third and fourth, monetary and physical information on the usage of water are ranked as fifth and sixth. The last two items in the rank are wastewater treatment cost and waste food

Table 5: Current need: Ranked by Divisions, Kulliyyahs and Mahallahs

Items	Division		Kulliyyah		Mahallah	
	Mean	Rank	Mean	Rank	Mean	Rank
Monetary information on the usage of paper	3.63	1	3.50	1	3.65	1
Physical information on the usage of paper	3.45	2	3.37	2	3.45	2
Monetary information on usage of electricity	3.34	3	3.16	3	3.35	4
Monetary information on usage of water	3.21	5	2.95	5	3.35	5
Waste food disposal costs	2.92	8	3.08	4	3.40	3
Physical information on usage of electricity	3.29	4	2.84	6	2.95	8
Wastewater treatment cost	2.95	7	2.95	5	3.30	6
Physical information on usage of water	3.18	6	2.76	7	3.05	7

disposal costs. These two items are least required, probably due to the nature of the job for administrative staff. Generally, administrative staff are not involved in the disposal of waste or waste management. Thus, it is understandable that this information is the least required by the Divisions.

For the *Kulliyah,* the rank, more or less, reflects the rank given for overall respondents. The least required information is the physical information on the usage of electricity and water. This is understandable given that most users are interested in the "bottom line" and the bottom line relates to a monetary value.

For Mahallah, the rank is quite different from the overall respondents except for the first two items. The third item is the information on waste food disposal cost. This information is required by the Mahallah management, probably due to the large number of students that utilize the canteen facilities. The fourth and fifth items in the rank are monetary information on the usage of electricity and water. The last two items in the rank are physical information on the usage of water and electricity. This is consistent with the rank for the *Kulliyyah*.

4.5. The need for environmental cost information: Future

The purpose of assessing the future need of the environmental cost information is to know whether there is any change in the information requirement in the future compared to the current situation. An increase in the future need for environmental cost information indicates

that the staff are becoming more concerned about the environmental impact of the university's activities. On the future need for environmental cost information Table 6 presents he results for the overall respondents. The mean ranges from 3.42 to 3.78. The range for average mean is higher than the range for "current needs" assessment. Accordingly, this indicates that users put more importance on environmental cost information in the future as compared to the present. This may be due to the increased emphasis on environmental issues by the government.

Table 6: Future need: Ranked by overall respondents

Items Ranked by Overall Respondents	Mean	Rank
Monetary information on the usage of paper	3.78	1
Physical information on the usage of paper	3.67	2
Monetary information on usage of electricity	3.61	3
Monetary information on usage of water	3.58	4
Waste food disposal cost	3.45	6
Physical information on usage of electricity	3.45	6
Wastewater treatment cost	3.47	5
Physical information on usage of water	3.42	8

From the table above, the results on the future need of environmental cost information revealed that the rank is almost consistent with the rank for the current need for environmental cost information except for the fifth item in the rank – wastewater treatment cost and the seventh item –waste food disposal cost. Consistent with the previous results on the "current need" the most needed information is on the usage of paper, both in monetary and physical forms. This is followed by the monetary information on the usage of electricity and water. Accordingly, there is not much difference in the information required except that the means are higher for the "future need".

Further analysis on the rank according to *Kulliyyah,* Division and *Mahallah* revealed that both monetary and physical information on the usage of paper is still ranked as first and second. The ranking by each category of respondents on the "future" need of the environmental costs information did not vary much with the "current" except that the average mean range is higher (3.38 to 3.85) for the former as compared to the latter (2.92 to 3.63).

Table 7: Future need: Ranked by Divisions, Kulliyyahs and Mahallahs

Items	Division		Kulliyyah		Mahallah	
	Mean	Rank	Mean	Rank	Mean	Rank
Monetary information on the usage of paper	3.85	1	3.62	1	3.95	1
Physical information on the usage of paper	3.72	2	3.54	2	3.85	2
Monetary information on usage of electricity	3.62	3	3.49	3	3.85	2

Table 7: Future need: Ranked by Divisions, Kulliyyahs and Mahallahs *(cont)*

Items	Division		Kulliyyah		Mahallah	
	Mean	Rank	Mean	Rank	Mean	Rank
Monetary information on usage of water	3.56	5	3.46	4	3.85	2
Waste food disposal costs	3.38	8	3.38	6	3.70	3
Physical information on usage of electricity	3.59	4	3.23	7	3.60	4
Wastewater treatment cost	3.41	7	3.41	5	3.70	3
Physical information on usage of water	3.51	6	3.23	7	3.60	4

5. CONCLUSION

The survey results reveal that there is a certain level of awareness of EMS, EA and EMA amongst the university staff. More importantly, staff indicated that they do need information pertaining to electricity, water and paper usage currently and in the future. This signals that environmental issues are becoming increasingly important. However, it appears that management does not have the skill and/or resources to attend to the issue. The fact that there is no specific department in the university handling environmental issues clearly puts IIUM at stage one of the social issue lifecycle. As may be recalled, stage one of the social issue lifecycle is when a particular social issue starts to emerge and the issue is significant enough to attract management's attention with a general policy formulated to deal with the issue but without a systematic analysis of the problem. At this stage staff still lacks the knowledge and the necessary skills to deal with the problem. In addition, the formulation of a policy on the issue does not lead to any organizational action towards the issue. Accordingly, one important question raised at this point is "How can IIUM move to the next stage?"

The management of the university should proactively address the need of the users pertaining to the information on the environmental impact of the university's activities. The study reveals that there is a need for environmental cost information at the present moment and more so in the future. The university should consider implementing EMA and make full use of the information generated from EMA to obtain maximum benefit, particularly in achieving cost savings. Thus, moving to the next stage may require greater effort by management in addressing the environmental impact of the activities at the university.

There are various measures that IIUM can take to be proactive regarding environmental issues. Following Deegan (2003), IIUM should adopt an incremental change strategy as follows:

First, is to create a separate account code to record the cost of paper usage. In the current accounting system, the cost of paper usage is recorded under the account name 'Office Stationery and Supplies'. Under the same account, costs related to other stationery and related supplies are also recorded. Thus, the information on the paper usage is 'hidden'. Therefore,

the creation of a separate account code in the current chart of accounts to record the cost of paper usage is suggested. This will result in each cost centre being fully aware of their paper consumption and, subsequently, the impact to the university in terms of operational costs incurred.

Second, is to create a suitable allocation base to allocate the cost of electricity and water usage to each cost centre. Presently, the costs are not allocated to the cost centres. The ideal way to record the actual usage of electricity and water is the meter reading for each cost centre or building. However, since meters are not available for each cost centre or building, it is suggested that a suitable allocation base be created to allocate the cost. The suggested allocation base is floor space area.

Third, is to provide the required information to the users within the university. The users may consist of the staff (academic and administrative) and, also, the students. From the survey, it is revealed that the users need and want environmental related information pertaining to their Department, *Kulliyyah* or *Mahallah*. At the present moment, the Finance Division can make use of the available information generated through the current accounting system to produce a report for each cost centre pertaining to the usage of electricity, water and paper. The report can be produced on a monthly or quarterly basis depending on the needs of the users. It may contain the information on the total cost incurred by the university as well as the cost incurred for individual cost centres based on the allocation made.

Fourth, is to further analyse the information available for each cost centre into various indicators, for example, the cost per user. For departments and centres where there are no students involved, the analysis can be made based on the cost incurred per number of staff employed under the related cost centre. Where there are students such as the *Kulliyyahs* and *Mahallhahs,* the cost should be further analyzed into cost per number of students. It is also suggested that each head of department, the dean of the *Kulliyyah* and the principal of the *Mahallah* should take responsibility for unnecessary increases in cost. Ideally, each (the heads of department, deans of the *kulliyyahs* and the principals of the *mahallahs*) should appoint a specific person to monitor the costs of electricity, water and paper in their respective cost centre. However, the monitoring of electricity and water usage may not be feasible at the moment given that meters are only installed to capture usage at the university level. Paper usage on the other hand, can be controlled to some extent. It is suggested that the number or reams of paper used per week, month or year should be clearly indicated and compared with the target.

Fifth, is to monitor the cost of usage of electricity, water and paper on a regular basis. It can be monitored through analysis on the trend of the costs incurred over a period of time, for example, quarterly, half-yearly or yearly. Each department should be made answerable for the increase in cost or be rewarded for the savings made.

Sixth, is to provide information on waste management to the users of the information. The purpose is to create awareness and to make the staff and students realize how waste can result in significant costs to the university. In the current accounting system of the university, the waste costs are not recorded anywhere. Therefore, it is suggested that the Finance Division obtain the information from relevant parties, for example, the waste disposal cost from canteen

operators or directly from the waste disposal contractors. Additionally, cost on waste disposal at the *Mahallah* should also be recorded.

Seventh, we recommend an incentive as opposed to punitive measures to address environmental issues at the university. The university should reward cost centres that have actively participated in the energy conservation campaign and, subsequently, save costs. The rewards can be made through the quality day award presentations. It can also be made in the form of food tokens for students as an incentive for the students to contribute to the cost savings.

Finally, and most importantly, environmental issues can only become strategic issues if there is top management commitment. Thus, top management of the university must make environmental matters an important agenda of the university.

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