The Impact of Cost Accounting on the Adoption of Environmental Management Systems in the Tourism Industry

Noor Rohin Awalludin[1] , Norhani Aripin[2]

Abstract

Environmental issues often receive attention in Malaysia in parallel with the rapid development of the tourism industry which has contributed to environmental pollution. In connection with that, various efforts have been made to prevent and reduce the effects of pollution on the environment, including the Environmental Management System (EMS). By implementing an Environmental Management System (EMS), the effects of unwanted pollution on the environment will be reduced. The purpose of this study is to expand the understanding of how cost accounting factors affect the application of EMS among hotels in Malaysia. The sample of this study is based on a questionnaire collected from 56 4 and 5 star hotels in the Central Region of Malaysia including Selangor, Kuala Lumpur and Putrajaya. This study uses Semi-Structured Least Squares Equation Modeling and Institutional Theory as supporting theory. The study found that cost savings do affect the use of EMS among hotels in Malaysia. Further analysis shows that different hotel sizes do not affect the adoption of EMS. This study expands knowledge on how cost accounting simultaneously influence the adoption of EMS in a tourism industry in Malaysia. Next, this study also provides new evidence that the size of the hotel does not influence the effect of cost accounting factors on the implementation of EMS.

Keywords: *Environmental Management System (EMS), Cost Savings, High Implementation Costs, High Maintenance Costs, Hotel*

INTRODUCTION

The tourism industry is one of the significant contributors to economic growth and development in Malaysia. In 2018, Malaysia was ranked first in the Global Muslim Travel Index (Crescent Rating, 2019), and Kuala Lumpur was ranked among the Top 100 City Destinations (Euromonitor International, 2018). Malaysia was also ranked 15th for tourist arrivals and 21st for revenue sharing (UNWTO, 2018).

Mensah (2006) highlighted that tourism is one of the key industries that rely heavily on the environment. This is because the hotel sector is often associated with sources of environmental pollution. Most of the industry's operation involves consuming vast amounts of water, energy, and waste (Hanafiah et al., 2013). Therefore, to increase hotels' environmental efficiency, the introduction of the international EMS standard is seen as an effective method in mitigating environmental risks (Ho et al., 2018). EMS is a managerial approach to addressing the environmental aspects of a business operation by controlling the impact of its activities, products, or services on the natural environment (Chan, 2007).

Likewise, the British Standards Institute (BSI) defines EMS as the organisational structure, responsibilities, practices, and resources. It is for determining and adopting an environmental policy that can benefit a hotel organisation by enhancing its organisational learning (Kassim, 2019). The adoption of EMS by hotel management is to improve waste management, water conservation and energy conservation (Ashraf, 2011). Among the many elements that can improve the environment are reducing tree felling during building, introducing dual-purpose toilets, placing notices to encourage guests to minimise water use, and installing motion sensors in public and community areas (Abdul Khalid et al., 2011).

Nevertheless, various factors affect the adoption of EMS in Malaysian hotels (Abdul Khalid et al., 2010; Samdin et al., 2012; Ho et al., 2018; Deraman et al., 2017), that includes costs saving (Samdin et al., 2012, Ho et al., 2018), high implementation cost and high maintenance cost (Kamarul Ariffin et al., 2013).

[1] Universiti Poly-Tech Malaysia. E-mail: n_rohin@kuptm.edu.my
[2] Universiti Utara Malaysia. E-mail: norhani@uum.edu.my

Therefore, the objective of this study is to investigate the influence of cost accounting factors to the application of EMS among hotels in Malaysia, this study also examines the moderating effect of hotel size on the relationship between the factors of the management systems of Malaysian hotels.

LITERATURE REVIEW

Hotel cost savings are a major reason for EM practices (Ho et al., 2018). Cost savings include water conservation, energy management, and waste management as the key factors. The installation of dual-flush toilets, the use of energy-saving air conditioners and energy-efficient usages (e.g., light bulbs), as well as the use of eco-friendly cleaning products and recycled paper for brochures, are some ways that can help hotels reduce their operating costs. Hotels can save operating costs and reduce all societal costs via green management (Ho et al., 2017; Chen & Chen, 2012). Deraman et al. (2017) included costs among the reasons that can affect the adoption of EMS in hotel management.

In studying 31 hoteliers in Macau, Yim King et al. (2017) found high-level environmental consciousness among the hotel management. Most of the hoteliers adopted initiatives that contributed to cost savings. Some of the initiatives were use of energy-saving light bulbs, an active system for detecting/repairing leaks, and installation of water-saving fixtures, although programmes involving the use of solar- powered lawn lighting, the recycling of leftover food, and the re-use of wastewater were projected for adoption.

Cost is a key contemplation for the hotel sector. Under the present economic circumstances; carbon, water, and resource management activities are attracting more consideration from hoteliers than ever before as a means of decreasing operational costs and enhancing competency (Ustad, 2010). The cost of adopting an EMS is approximately RM600,000 (Ann et al., 2006). This includes the cost of retaining and enhancing EMS within the organaisation so that the programme remains receptive to the changing circumstances and to the needs of the organisational environment (Chan & Wong, 2006; Saira et al., 2021).

The adoption costs and high price of certification are the two most key factors that impede the adoption of EMS. These are accompanied by lack of human capital, inefficiency of contractors, excessive paperwork, and attention to the environmental vulnerability of the hotel. It may be difficult to understand the amount of time involved and the effect on the present organisational structure. Despite the high costs of adopting EMS, its long-term benefits make adopting EMS worthwhile (Igwe, 2017).

Despite its many benefits, the implementation of ISO14000 was limited by cost issues. Many organisations only implemented it halfway as they were impeded by huge costs. Some organisations delayed the implementation of ISO 14000 simply due to cost factors (Arifin, 2006). The EMS maintenance costs have to be determined more carefully. The EMS maintenance requires some activities, including training of workers, determining the environmental impacts due to the production activities, monitoring and measurement of environmental aspects, public communications, procedures and documentation control, as well as reporting to update documentation regarding environmental performance (Alberti et al., 2010). These demand high investment and costs.

METHODOLOGY

This study is designed using the quantitative method by focusing on costs saving, high implementation cost and high maintenance cost, effect on the adoption of EMS among Malaysian hotels. Moreover, this study places the size of the hotel as a moderator to examine the effect of the relationship between motivational factors and EMS.

For this study, a self-completion questionnaire was developed and circulated via Google Form to the 86 4-star and 5-star hotels located in Malaysia's central region (Kuala Lumpur, Selangor and Putrajaya). It is more convenient as it gives participants more freedom in terms of space and time while completing research questions. The questions were modified from previous studies by Coban et al. (2017), Yusof and Jamaludin (2014), Kamarul Ariffin et al. (2013), Samdin et al. (2012), Bakori et al. (2012), Abdul Khalid et al. (2011), and Ustad (2010).

The questionnaire developed for this research was divided into five sections. Section A required company profile and it comprised of eleven (11) questions. Section B comprised eleven (12) questions. Section C comprised of ten (10) questions required the respondents to indicate the motivational factors that encourage them to implement environmental management system. Section D comprised of ten (10) questions required the respondents to indicate the barrier factors to implement environmental management system. Section E required the respondents to answer nominal scale 'Yes' ot 'No'. The questions in this study were presented in the form of a five-point Likert Scale.

Partial Least Squares Structural Equation Modelling (PLS-SEM) is used to assess the reliability and validity of the data collected. The two main criteria used to assess the PLS-SEM measurement model are reliability and validity (Hulland, 1999; Ramayah et al., 2011; Hair et al., 2017; Ullahet al., 2021). In the measurement model, the individual EMS or reliability indicators were assessed. Composite reliability for the collected data was measured to show the consistency of the elements used in the research design of this study, while data validity was assessed on the basis of two criteria: convergent and discriminatory validity.

The primary goal of this present study is to examine the cost accounting factors that affected the adoption of EMS among Malaysian hotels. This effect was examined based on the moderating influence of size of hotels. This means; three variables were employed in this study, in which EMS represents the dependent variable, while cost savings, high implementation costs and high maintenance costs serve as the independent variables, and size is the moderating variable. Based on these variables, Figure 1 illustrates the conceptual framework upon which this study is grounded. Six hypotheses are developed in line with the study framework:

Hypothesis 1: There are a significantly positive relationship between cost savings and adoption of environmental management systems.

Hypothesis 2: There are a significantly positive relationship between high implementation costs and adoption of environmental management systems.

Hypothesis 3: There are a significantly positive relationship between high maintenance costs and adoption of environmental management systems.

Hypothesis 4: Size of hotel moderates the relationships between cost savings and adoption of environmental management system.

Hypothesis 5: Size of hotel moderates the relationships between high implementation costs and adoption of environmental management system.

Hypothesis 6: Size of hotel moderates the relationships between high maintenance costs and adoption of environmental management system.
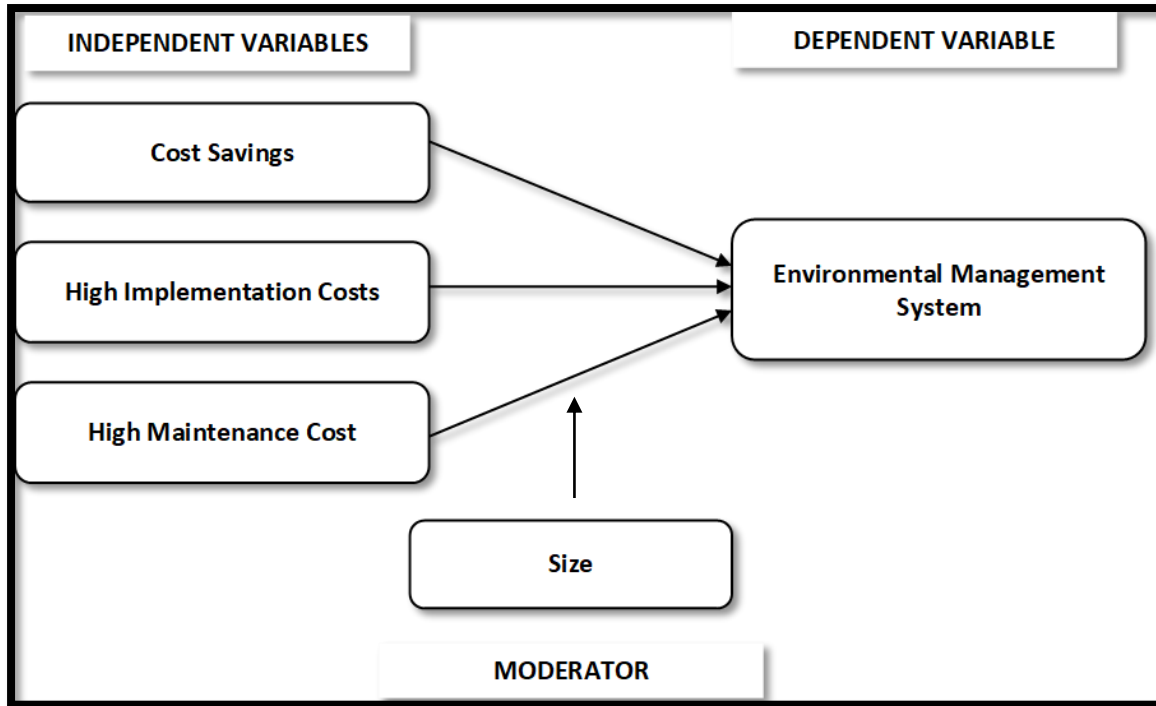
Figure 1: Conceptual Framework

ANALYSIS

Construct Reliability and Validity

The two main criteria used to assess the PLS-SEM measurement model are validity and reliability (Hair et al., 2017; Hulland, 1999; Ramayah et al., 2011). In the current study, validity is assessed based on 1) convergent validity and 2) discriminatory validity. Hair et al. (2017) defined convergent validity as the extent to which measurements of the same design are positively correlated, and how strongly these measurements correlate with the theoretical design. In convergent validity, objects that are construction indicators will overlap or share a high proportion of variation where the ratio is zero to one (0–1). For reflective indicators, the ideal standard loading level is 0.70, but 0.60 is acceptable (Barclay et al., 1995).

According to Henseler (2009) and Hair et al. (2013), the Average Variance Extracted (AVE) measure determines if the constructs manage to attain sufficient convergent validity. AVE should be more than 0.50 for each item in the construct. It environmental management system with a value of less than 0.50 should be deleted to improve data quality (Hair et al., 2014; Akbar, 2021). An extracted value of 0.50 means that the construct explains half of the variance for the indicators, thus achieving convergence (Hair et al., 2013, 2017). Table 1 shows that all AVE variables exceed 0.50, establishing convergent validity.

Table 1: Results of Average Variance Extracted

Construct	Average VarianceExtracted (AVE)
Cost Savings	1.000
Environmental Management System	0.610
High Implementation Costs	1.000
High Maintenance Costs	1.000
Moderating Effect Cost Savings	1.000
Moderating Effect High Implementation Costs	1.000
Moderating Effect High Maintenance Costs	1.000
Size	1.000

A reliability test assesses the degree of consistency between multiple variable measurements using Cronbach's Alpha, a common method for testing data reliability (Coakes et al., 2010). Hair et al. (2017) recommended a Cronbach's Alpha of 0.70 as a minimum threshold but, a value of 0.60 may be satisfactory. As described in Table 2, the Cronbach's Alpha value surpassed the 0.70 threshold for all variables. While the durability values for composites vary between 0.931 to 1.000. Thus, the measures possess an acceptable level of reliability.

Table 2: Results of the Reliability Tests

Construct	Cronbach's Alpha	CompositeReliability
Cost Savings	1.000	1.000
Environmental Management System	0.933	0.931
High Implementation Costs	1.000	1.000
High Maintenance Costs	1.000	1.000
Moderating Effect Cost Savings	1.000	1.000
Moderating Effect High Implementation Costs	1.000	1.000
Moderating Effect High Maintenance Costs	1.000	1.000
Size	1.000	1.000

Table 3 presents the results of the hypotheses testing. Hypothesis 1, 2, 3, and 6 results show a positive relationship between factors and environmental management system. The size of hotels does moderate the relationship between high maintenance costs and environmental management system. Hypothesis 1 and 4 show a significant results with value of P = < 0.05 (H1: P= 0.000; H4: P= 0.016).

Table 3: Hypotheses Results Using Path Coefficient

Hypotheses No	Path	OriginalSample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Result
1	├ Cost Savings -> Environmental Management System	0.698	0.110	6.323	0.000	Significant
2	High Implementation Costs -> Environmental Management System	0.161	0.107	1.507	0.132	Insignificant
3	High Maintenance Costs -> Environmental Management System	0.174	0.109	1.599	0.110	Insignificant
4	Moderating Effect Cost Savings -> Environmental Management System	-0.266	0.110	2.422	0.016	Significant

5	Moderating Effect High Implementation Costs -> Environmental Management System	-0.146	0.102	1.428	0.154	Insignificant
6	Moderating Effect High Maintenance Costs -> Environmental Management System	0.139	0.101	1.379	0.168	Insignificant

DISCUSSION

This study recorded the positive relationship between cost savings, high implementation costs, high maintenance costs and the environmental management system among Malaysian hotels. Meanwhile, the obtained statistical results showed a positive and significant relationship between the two variables, with the significance level amounting to 0.000 (O = 0.698, T statistics = 0.6323 < 1.96, P = 0.000 > 0.05). With this result, H1 was empirically supported, suggesting that some of the factors affecting environmental practices.

Based on the value of the original sample, the highest value affecting the EMS is the cost savings (0.698) followed by the high maintenance costs (0.174). The high implementation costs (0.161). The high implementation costs is reported to be the least influential variable with the smallest original sample of 0.161. The size of hotels does not moderate the relationship between cost savings and high implementation costs and EMS. Based on the original simple value, the moderating effects of these factors are negative with values of -0.266 and -0.146 respectively. The only moderating effect that holds a positive value is the high maintenance costs with a 0.139 original sample. Thus, the size of hotels does moderate the relationship between high maintenance costs in the adoption of EMS.

Cost-saving was recorded to have a significant relationship as internal motivational factors with EMS adoption. This finding was in line with the research conducted by Deraman et al. (2017), which reported that cost saving is a factor affecting the decision of managers to adopt sustainable practices. However, this result was not in agreement with other studies conducted around the world where cost savings were perceived to be the primary factor of the adoption of EMS (Penny, 2007; Ayuso, 2007; Rivera 2002; Bobakova and Kajzar, 2023; Soh et al., 2023). Environmental practices are generally anticipated as a cost-saving opportunity, although these are not realized in the practice of many managers.

Tzschentke et al. (2008) claimed that many hotel managers are hesitant to adopt sustainable practices due to cost-related reasons occurring particularly during the budgetary downturn, namely sustainable audit, certification fees, and improved facilities. In line with this study, Harvard Business Review (2009) identified the specific environmental practices that do not burden many hoteliers. These practices have become environmentally friendly, leading to a reduction in operating costs and an increase in sales in hotels.

Cost is an insignificant barrier to the acceptance and adoption of EMS in hotels (Ustad, 2010). This aspect is in line with the earlier studies by Chan and Ho (2006), Best (2008), and Ann et al. (2006). The financial commitment includes coaching costs, documentation, equipment and storage costs, and computer operating systems (Chan & Ho, 2006; Ann et al., 2006; Van & Singyabuth, 2023), which are necessary for EMS to overcome environmental challenges. Steady investment is needed to meet economic commitments. However, this study found that high implementation and high maintenance costs was an insignificant factor to the adoption of EMS, which was in line with Yusof and Jamaludin (2014) who recorded that high adoption cost was not the most barrier factor.

CONCLUSIONS

The tourism industry is a major player in the international economy, and a number of its trade institutions have emphasised the industry's role in ensuring the sustainable development goals success. An EMS is a problem-solving tool that should be practised by the staff during regular activities in an organisation. While the hotel industry is strongly affected by environmental concerns, air pollution and waste disposal by the hotel industry in Malaysia lead to a negative impact on the environment. This study was conducted to examine the relationship

between cost accounting factors and the adoption of an EMS among Malaysian hotels. The moderating impacts of the size of hotels on the a forementioned direct relationship were also examined in the context of Malaysia's hotel industry. The study sample comprised hotels located in the Central Region, Selangor, Kuala Lumpur, and Putrajaya. The questionnaires were distributed to the hotels located in all three states. The findings of this study outlined the factors affecting the EMS adoption in Malaysian hotels. This research identified cost savings as the most cost accounting factor affecting environmental management practices, which are widely used in hotels in Malaysia. These programmes are largely attributed to cost savings derived from them..

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