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THE ANTECEDENTS OF CORPORATE SUSTAINABILITY PERFORMANCE

Abstract:

Climate change and global warming are major challenges for Malaysia as well as for companies. Companies are fronting growing pressure to become greener or more environmentally friendly. Due to pressure from consumers and government, companies need to review their production processes. Consequently, they have to apply the concept of sustainable development in their policies and plans. The objective of this study is to examine three dimensions, mainly, knowledge management, eco-innovation and corporate sustainability performance to support sustainability environment. Creating sustainability environment is one of the main agendas in Malaysia Plan. The study focuses on examining the effect of knowledge management strategy on eco-innovation; the effect of knowledge management strategy on corporate sustainability performance; the effect of eco-innovation on corporate sustainability performance; and the mediating effect of eco-innovation on knowledge management strategy and corporate sustainability performance. Halal pharmaceutical companies were chosen as a sample in the study. Data were collected using survey questions and were analysed using Smart PLS. Results show that strategic KM contributes significantly to eco-innovation but does not contribute significantly to corporate sustainability performance. Eco-innovation significantly affects corporate sustainability performance and it mediates the relationship between strategic knowledge management and corporate sustainability performance. It is suggested that pharmaceutical companies in the study need to enhance the creating, sharing and utilizing of implicit and explicit knowledge in order to enhance companies' corporate sustainability performance.

Keywords:

Knowledge management, codification, personalization, eco-innovation, corporate sustainability performance.

JEL Classification: M20

Introduction

In the last decade, the importance of knowledge has been highlighted by academics and practitioners (Wu & Lin, 2009). Knowledge is believed to be the strategic source for the company to develop its sustainable competitive advantage (Grant, 1996). However, according to Hannula and Pirttimaki (2003), most knowledgeable companies are not always sustainable since companies are forced to utilize business knowledge more effectively and this is not possible without systematic knowledge management. In particular, effective knowledge management is currently perceived to be 'the key driver of new information and new thoughts' to the innovation process, and to the new innovative products, services and arrangements (Shani & Divyapriya, 2012).

A company must restructure and redesign their products and adapt new technology for processes in order to achieve sustainable development. It is crucial that companies react to these challenges with innovative, eco-efficient and eco-effective innovations, which help conserve and enhance natural, social and financial resources (Shrivastava, 2014). Sustainability has kept on driving innovation and business growth through new product initiatives from many companies.

In acquiring sustainable developments within a company, eco-innovation has turned into one of the vital instruments because of the increasing environmental pressure. Along those lines, most of the companies have begun to utilize eco-innovation practices in their sustainable development. From a corporate perspective, sustainability includes economic, environmental and social issues that have business implications. As indicated by Epstein (2008), it is one of the difficulties for company to coordinate corporate sustainability into regular management decisions.

The objective of this paper is to provide empirical evidence on the antecedents that affect corporate sustainability performance. This study supports Organization for Economic Cooperation and Development's (OECD) initiatives towards sustainability of environment.

Resource-based View

Resource-based theorists (i.e., Barney, 1986; Haanes & Fjeldstad, 2000; Prahalad & Hamel, 1990) view companies as heterogeneous entities characterized by their unique resource base, where manpower, processes and company's network are considered as a company's strategic resource. Knowledge management (KM) strategy is part of KM processes that are used to transform the resources into products or services that create value for customers. These resources contribute to a sustainable competitive advantage if they are valuable, rare, difficult to imitate or hard to substitute (Barney, 1991). That is, the creation of competitive advantage of an company in the knowledge-based economy is not based on market position but rather on the difficulty of replicating knowledge-based assets and the way they are developed (Teece, 1998).

Knowledge Management Strategy

KM strategy is one of the best approaches to drive business performance and fortify the competitive advantage of the company where the adoption and implementation of KM strategy in practice is not so straight forward due to many different internal and external factors to the company (Ng, Yip, Sabariah and Nooh, 2012). Selecting an appropriate KM strategy is significant to the implementation of KM and the combination of various strategies, to ensure the effectiveness of KM strategy and improve company performance (Tseng, 2008). KM strategy is divided into two categories; codification and personalization strategy. The codification strategy involves extracting explicit knowledge from the individual who created it and store it in databases for others to access and reuse (Hansen et al., 1999). Codification can store heavy and large amounts of company's memory (Pham & Hara, 2009). Through this method, it allows every single employee to retrieve the codified knowledge and share their skill and knowledge through electronic devices. The personalization strategy involves tacit knowledge via sharing knowledge to other person (Hansen et al., 1999). This strategy focuses on exchanging ideas between employees (Ng et al., 2012). Hansen et al. (1999) noted that personalization strategy delivers innovative and creative, systematically thorough counsel on vital issues by challenging individual's expertise.

Eco-Innovation

Previously, investing in environmental activities was considered as unnecessary. Nowadays, eco-innovation has turned into one of the important strategic tools to acquire sustainability in business, management, manufacturing and product development because of the increasing environmental pressure. In reducing their activities, companies develop sustainable programs with the purpose of "greening" their own products and processes. It is important for a company to be able to adjust its structure and internal activities to support the technological aspect of eco-innovation (Lam, 2005).

Innovation can be defined as a new method or device or the process of introducing something new, and it also can be stated as a new idea (Rennings, 2000). Sarkar (2013) noted that eco-innovation refers to innovative products and processes where it can reduce environmental impacts. Eco-innovation gives benefit towards environment by reducing the use of natural resources and this can create and develop new business opportunities (Sarkar, 2013). There are three main categories in eco-innovation which are organizational, process and products (Christensen, 2011). Each of these categories has its own attributes, determinants and contributions to environmental performance (Christensen, 2011). However without systematic view, the environmental performance will not be effective in implementing innovation separately (Chou et al., 2012; Xing et al., 2013). It is important for a company to take a holistic approach by developing and supporting eco-innovation programs so that the eco-innovation programs can be more effective (Horbach, 2008).

Corporate Sustainability Performance

According to Hart and Milstein (2003), sustainability can be defined “as the ability to meet the needs of the present without comprising the ability of future generations to meet their needs.” There are three components in sustainability from a corporate perspective which are economic, environmental and social issues (Elkington, 1994). At the company level, economic performance indicates the company’s business impacts on its stakeholders’ economic circumstances, and at the same time, on the economic systems at the local, national, and/or international levels. There are no more guarantees in terms of financial performance and profits to ensure the company’s long term survival. Social activities and environmental protections can be one of the examples of the inclusion of the non-financial performance into decision-making and strategic planning (Orlitzky, 2008). Environmental performance can be defined as how the management of a company affects the environment (ISO, 1999). It addresses a company’s effects on the qualities of the living and non-living system, including, land, air and water. Within the environmental performance, there are four key segments which are material use, energy use, non-product output and pollutant release (Ranganathan, 1998). Cooper (2004) noted that social performance is linked with corporate performance in terms of the operation of a company. There are four key segments in social performance which are occupation, community relations, moral sourcing and social effect of product (Ranganathan, 1998).

Hypotheses

As mentioned in previous study, innovation can be depicted as a component, another structure or managerial framework, a policy, another arrangement or system, a new production process, and a product or new service to the company, which have been gained or produced internally (Daft, 1982; Damanpour & Evan, 1984). According to Gloet and Terziovski (2004), innovation depends on knowledge. Massey et al. (2002) noted that KM strategy helps company to accomplish developments on innovation process and performance. It is hypothesised as below:

H1: KM strategy has a significant relationship with eco-innovation.

KM is vital in achieving corporate sustainability performance, and thus it is essential for a company to have the ability to develop and implement KM strategy (Robinson et al., 2006). When corporate sustainability performance has made its strides, the KM projects can be successful. In this way, it is important to measure KM’s contribution to performance (Tseng, 2008). Lopez-Nicolas and Merono-Cerdan (2011) noted that the effect of KM strategy on company performance may be dissimilar. It is hypothesised as below:

H2: KM strategy has a significant relationship with corporate sustainability performance.

Previous studies acknowledged the contribution of eco-innovation to company performance. Company may meet their sustainability objectives by creating eco-innovation activities through financial, technological or non-technological innovations, or innovations of products, processes or organizational structures (Paraschiv et al., 2012). Eco-innovation plays a key role in reaching global sustainability objectives with significant potential advantages for innovative companies, industry sectors and economies (Paraschiv et al., 2011). It is hypothesised as below:

H3: Eco-innovation has a significant relationship with corporate sustainability performance.

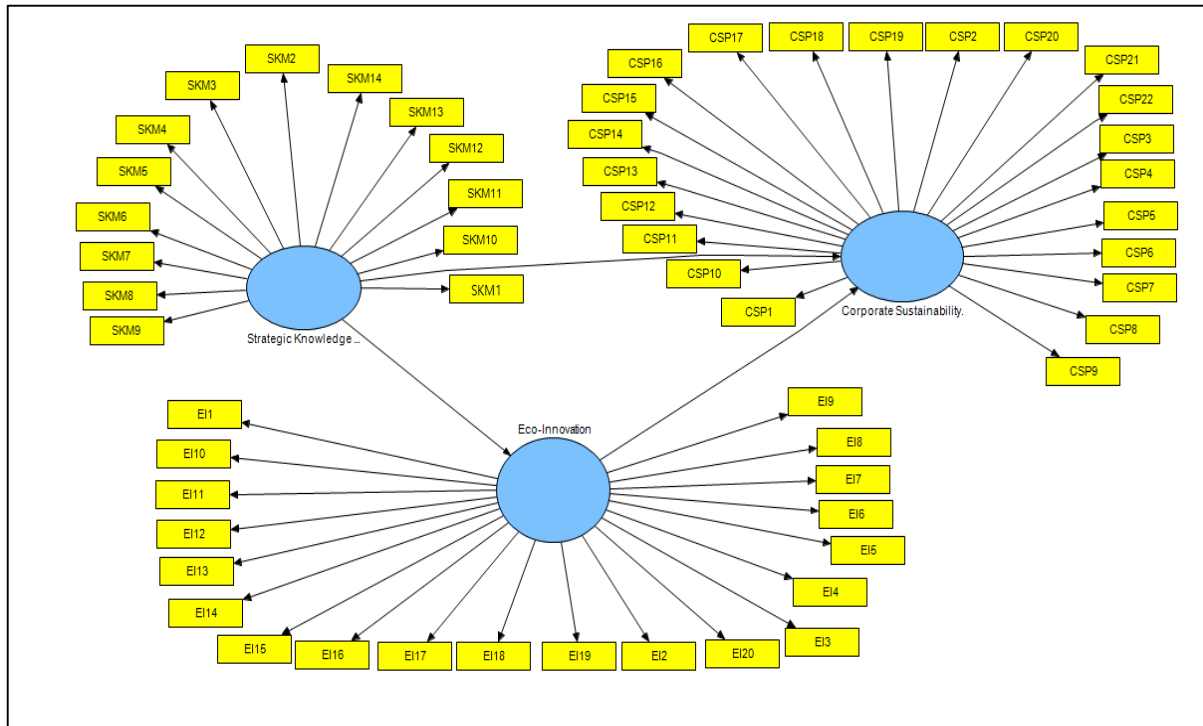
Previous researchers noted that corporate performance and competitiveness can be enhanced by KM indirectly through company's higher ability to innovate (Braganza et al., 1999; Gloet & Terziovski, 2004; Massey et al., 2002; Yang, 2010). The intermediate variable between KM strategies (codification and personalization) and performance, which is innovation, can be considered (Lee & Choi, 2003; Vaccaro et al., 2010; Yang, 2010). Nevertheless, there is still absence of studies in these areas. It is hypothesised as below:

H4: Eco-innovation mediates the relationship between KM strategy and corporate sustainability performance.

Methodology

A cross-sectional study was used in this study and halal pharmaceutical companies located at Klang Valley, Selangor, Malaysia were selected as a sample. A survey instrument with 7-point Likert scale was used throughout the questionnaire. The Partial Least Square analysis (PLS) was used in this study to test and analyse the data. The research model for this study is shown in Figure 1.

Figure 1: Research Model



Findings

A total of 60 survey questions were distributed to conduct a pilot study and only 47 completed survey questions were received (78.3%). Table 1 presents the profile of the samples used in the study. Majority of the respondents were from healthcare products companies, which accounts for 29.8% of the responding companies, while 48.9% of the responding companies had more than 199 workers. These companies are considered as medium size companies.

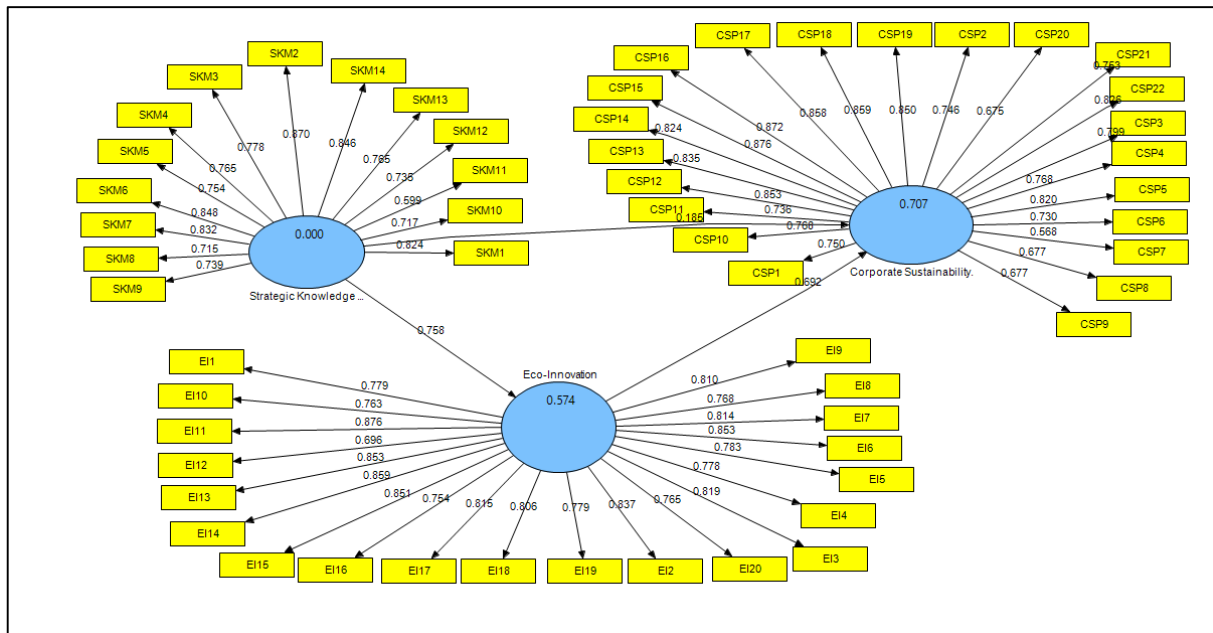
Table 1: Sample Profile

Items		No	Percentage (%)
Type of pharmaceutical company	Drugs	6	12.8
	Health	3	6.4
	Food supplements	11	23.4
	Medical	5	10.6
	Hygiene	3	6.4
	Healthcare products	14	29.8
	Wellness	1	2.1
	Others	4	8.5
Number of workers	Less than 5	1	2.1
	5 – 74	15	31.9
	75 – 199	8	17.0
	More than 199	23	48.9

Validity and Reliability

SmartPLS was used to analyse the measurement model in the study. According to Hulland (1999), the value of outer loadings of the indicators must be more than 0.70 to be valid. Thus if there is indicator with value below 0.40, it must be eliminated from the scale (Hair et al., 2011).

Figure 2: Measurement Model on Outer Loading



From Table 2, only one item of Corporate Sustainability Performance (CSP7) and also one item of Strategic Knowledge Management (SKM11) should be removed because the values were below 0.70 (see the items in bold face). However, analysis of Eco-Innovation showed that all items were greater than 0.70. Thus, all items were acceptable and retained to measure the construct.

Table 2: Initial Values on Outer Loadings

Items	Corporate Sustainability Performance	Items	Eco-Innovation	Items	Strategic Knowledge Management
CSP1	0.750	EI1	0.779	SKM1	0.824
CSP2	0.747	EI2	0.837	SKM2	0.870
CSP3	0.799	EI3	0.819	SKM3	0.778
CSP4	0.768	EI4	0.778	SKM4	0.765
CSP5	0.820	EI5	0.783	SKM5	0.754
CSP6	0.730	EI6	0.853	SKM6	0.848
CSP7	0.568	EI7	0.814	SKM7	0.832
CSP8	0.676	EI8	0.768	SKM8	0.715
CSP9	0.677	EI9	0.810	SKM9	0.739
CSP10	0.768	EI10	0.763	SKM10	0.717
CSP11	0.736	EI11	0.876	SKM11	0.599
CSP12	0.853	EI12	0.696	SKM12	0.735

CSP13	0.835	EI13	0.853	SKM13	0.765
CSP14	0.824	EI14	0.859	SKM14	0.846
CSP15	0.876	EI15	0.851		
CSP16	0.872	EI16	0.754		
CSP17	0.858	EI17	0.815		
CSP18	0.859	EI18	0.806		
CSP19	0.850	EI19	0.779		
CSP20	0.675	EI20	0.765		
CSP21	0.753				
CSP22	0.826				

Then, the measurement model was re-run and the results of outer loadings are shown in Figure 3.

Figure 3: Final Measurement Model on Outer Loadings

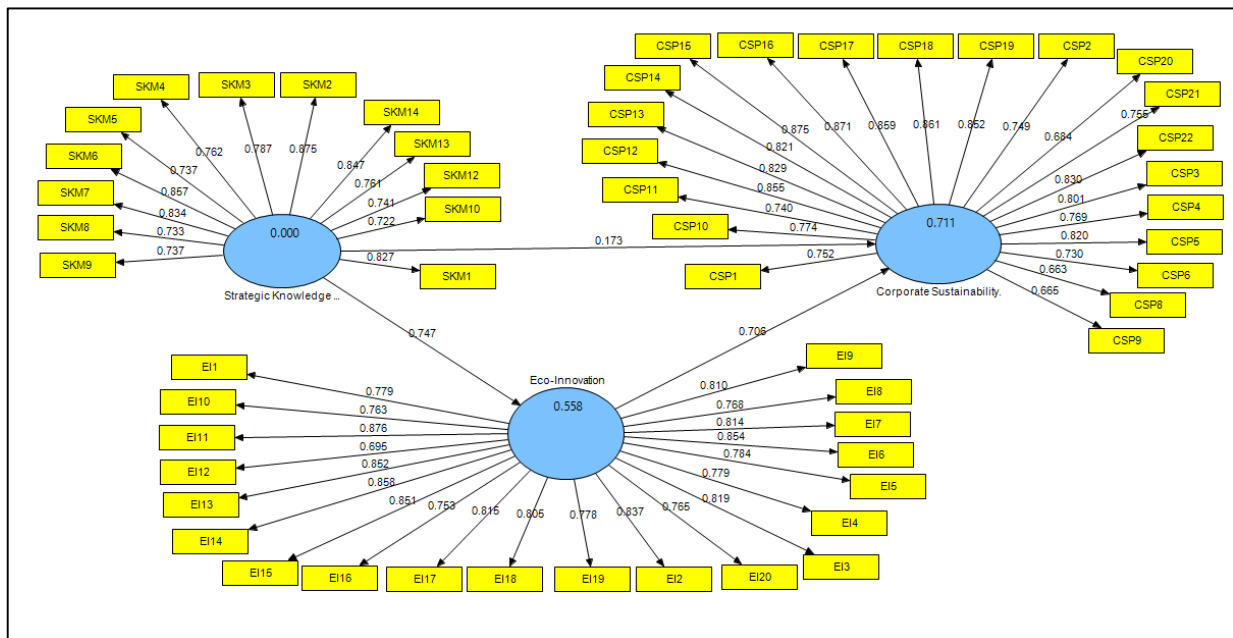


Table 3 shows the final initial values of outer loadings and the results indicate that all the outer loadings exceed 0.70. Thus, it shows that all those questions are related with the construct proposed for measurement.

Table 3: Final Values on Outer Loadings

Items	Corporate Sustainability Performance	Items	Eco-Innovation	Items	Strategic Knowledge Management
CSP1	0.752	EI1	0.779	SKM1	0.827
CSP2	0.749	EI2	0.837	SKM2	0.875
CSP3	0.801	EI3	0.819	SKM3	0.787
CSP4	0.769	EI4	0.779	SKM4	0.762
CSP5	0.820	EI5	0.784	SKM5	0.737
CSP6	0.730	EI6	0.854	SKM6	0.857

CSP8	0.663	EI7	0.814	SKM7	0.834
CSP9	0.665	EI8	0.768	SKM8	0.733
CSP10	0.774	EI9	0.810	SKM9	0.737
CSP11	0.740	EI10	0.763	SKM10	0.722
CSP12	0.855	EI11	0.876	SKM12	0.741
CSP13	0.829	EI12	0.695	SKM13	0.761
CSP14	0.821	EI13	0.852	SKM14	0.847
CSP15	0.875	EI14	0.858		
CSP16	0.871	EI15	0.851		
CSP17	0.859	EI16	0.753		
CSP18	0.861	EI17	0.815		
CSP19	0.852	EI18	0.805		
CSP20	0.684	EI19	0.778		
CSP21	0.755	EI20	0.765		
CSP22	0.830				

Table 4 shows the result for average variance extracted (AVE), composite reliability and Cronbach's alpha. According to Fornell and Larcker (1981), to verify the validity of the data, the value of average variance must be above 0.50. As shown in Table 4, all values of AVE had exceeded 0.50.

Next is the composite reliability, where Fornell and Larcker (1981) stressed that the value must exceed 0.70. Results indicate that the values of all the dimensions were above 0.70. Lastly is Cronbach's alpha where the value must be greater than 0.70 (Nunnally, 1978) and the values of all the dimensions were above 0.70.

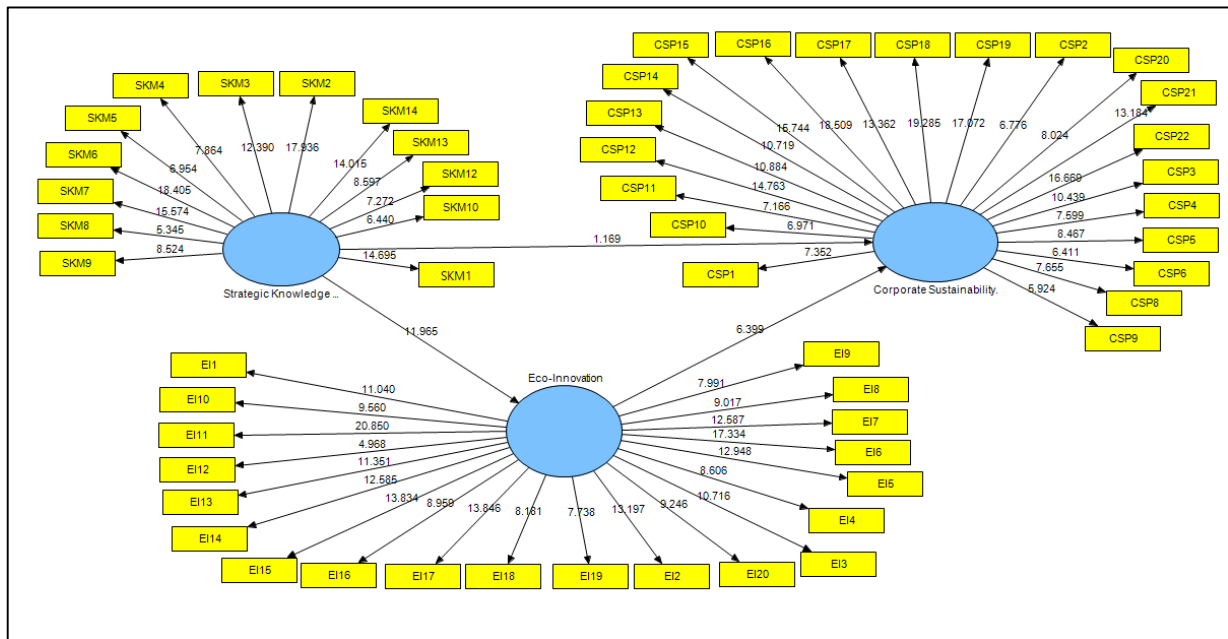
Table 4: AVE, Composite Reliability and Cronbach's Alpha

Dimensions	AVE	Composite Reliability	Cronbach's Alpha
Corporate Sustainability Performance	0.626	0.972	0.970
Eco-Innovation	0.646	0.973	0.971
Strategic Knowledge Management	0.621	0.955	0.949

Hypothesis Testing

To analyse the entire hypotheses, path analysis was used as shown in Figure 4. By using t-value and calculating using the bootstrapping technique, the significance path coefficients can be assessed. Table 5 presents the result of each hypothesis in the study.

Figure 4: Results of Path Analysis



As shown in Table 5, Strategic KM with the t-value of 11.965 is significantly related with Eco-Innovation. Thus, H1 is accepted. However, Strategic KM is not a significant antecedent to Corporate Sustainability Performance because the t-value is below 1.96 which is 1.169. Thus, H2 is rejected. The results also show that Eco-Innovation is significant with Corporate Sustainability Performance where the t-value is 6.399 and H3 is accepted. Test on mediation effect was referred to Preacher and Hayes’s (2004, 2008) bootstrapping tests for indirect effect. The bootstrapping analysis showed that the indirect effect $\beta = 0.623$ (0.746×0.835) was significant with a t-value of 6.470. As indicated by Preacher and Hayes (2008), for the indirect effect of 0.623, 95% bootstrapping confidence interval: [LL = 0.434, UL = 0.812] does not straddle a 0.00 in between indicates that there exists a mediation. Therefore, it is concluded that the mediation effect is statistically significant and H4 is accepted.

Table 5: Results of Hypotheses

Hypothesis	Relationship	Path coefficients	t-value	Results
H1	Strategic KM → Eco-Innovation	0.747	11.965	Accepted
H2	Strategic KM → Corporate Sustainability Performance	0.173	1.169	Not accepted
H3	Eco-Innovation → Corporate Sustainability Performance	0.706	6.399	Accepted
H4	Strategic KM → Eco-Innovation → Corporate Sustainability Performance	0.623	6.470	Accepted

Conclusion and Recommendation

The findings conclude that strategic KM has an effect on eco-innovation where it shows the importance of knowledge to elicit direct or indirect ecological improvement. Companies need to actively employ the personalization and codification approach to enhance eco-innovation in terms of products, process and systems. Results also show that eco-innovation contributes significantly to corporate sustainability performance. The results translate that the eco-innovative products, processes and system assist in minimising the environmental impacts which creates sustainability corporate performance in terms of economic, environmental and social perspectives. Eco-innovation also significantly mediates the relationship between strategic KM and corporate sustainability performance. The significant mediation of eco-innovation shows that it is practically enhancing the creating, sharing and utilizing of knowledge to ensure that the companies are able to sustain their performance excellently in economics, environmental and social position. In contrast, the findings show that there is no significant relationship between strategic KM and corporate sustainability performance which supports Lopez-Nicolas and Merono-Cerdan's (2011) findings. It shows that pharmaceutical companies involved in the study do not emphasise the personalization and codification of knowledge in their companies. The implementation of KM in these companies is at the lower level due to budget constraints. Most of them are medium size companies where the focus is more on profit generation rather than future company's enhancement. It is recommended that these companies enhance their knowledge sharing either through the personalization or codification approach in order to enhance their corporate sustainability performance. The study shall be conducted using bigger sample size to improve the findings.

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