

An examination on the influence of small and medium enterprise (SME) stakeholder on green supply chain management practices

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Abstract. In this paper, climate change and global warming are the biggest current issues in the industrial sectors. The green supply chain managements (GSCM) is one of the crucial input to these issues. Effective GSCM can potentially secure the organization's competitive advantage and improve the environmental performance of the network activities. In this study, the aim is to investigate and examine how a small and medium enterprises (SMEs) stakeholder pressure and top management influence green supply chain management practices. The study is further advance green supply chain management research in Malaysia focusing on SMEs manufacturing sector using structural equation modelling. Structural equation modelling is a multivariate statistical analysis technique used to examine structural relationship. It is the combination of factor analysis and multi regression analysis and used to analyse structural relationship between measure variable and latent factor. This research found that top management support and stakeholder pressure is the major influence for SMEs to adopt green supply chain management. The research also found that top management is fully mediate with the relationship between stakeholder pressure and monitoring supplier environmental performance.

1. Introduction

The fastest growing of manufacturing industries worldwide has led to the various environmental problem such as global warming, acid rain, release of greenhouse and toxic gases such as CO₂, SO₂, NO₂ and other pollutants [1]. To overcome these problems, industrial awareness towards environment is very important. Green supply chain management (GSCM) is one of the concept that can be implemented in the industry to initiate the environmental awareness and innovation. In this approach, the sustainability of the environment is consider from combination of the intra-firm management, inter-firm management of the upstream and downstream supply chain [2] Green supply chain management (GSCM) is very crucial in organization's operation management whether in it marketing strategy, operations, logistics or distributions. In recent years, the interaction between supplier and end users are important to achieve the objective of green supply management. The big and well-known companies usually have sustainable strategies such as Panasonic Malaysia, Toyota Malaysia and others which had launched the green supplied chain program to promote and give education to the consumer [3]. Green supply chain managements is the involvement of various parties in the organization towards environmental sustainability managements which include suppliers, materials, process, organization



managements, consumers and product life cycle. The influence of stakeholder in implementing the GSCM in the market is very significant. It is because; they have the ability to push the company to produce green products in order to become their supplier. Large companies such as Intel and Apple have the ability and power to ask the vendor to adopt GSCM practices in the firm's [4]. Furthermore, many non-governmental organization (NGO) given environment education to the society in how the functionality of environment and how human can manage the environment and maintain the sustainability. When more and more people concern about the environment and the eco-friendly products, it will push the company to take one-step forward towards environmental sustainability due to consumer pressure. This project emphasize on exploring the relationship between stakeholders pressure and company green supply management and to study the either the stakeholder pressure will gives positive influence towards company green supply managements. Successful implementation of GSCM will be the key to improve products environmental performance and management systems toward facilitate a better environmental future.

2. Experimental procedures

The hypothesis was carefully choose by intensive literature review and research to answer all the objectives of this study. In this paper, the hypothesis will cover all the stakeholder pressure and top management supports in influencing SMEs to adopt green supply chain management. Stakeholder has greater influence in changing the mind of top managements because of internal and external pressure given. Stakeholder comprehend of employees, clients/ customers, governments, shareholders, nongovernmental organization and the community [5]. This groups of people and organization have the biggest influence on company, the research understand that stakeholder can give different strategies in influencing SMEs in making judgments [6]. Top management is the key players in implementing the GSCM on the firms. The influence and pressure of stakeholder to the top managements is higher so the stakeholders is the key players in push the top managements to implementing GSCM in SMEs. There are many example of research and company that success by implementing this green supply managements practices such as Apple will change the material use in they are products and becoming more prior compare to his rivals Dell [7]. By adopting this environmental managements company can improve the managements and boost company capital. Thus, the highest managements should consider deeply on the stakeholder pressures. Hence, we believed that:

H1: The greater the stakeholder pressure to implementing green supply chain management, the greater top management support for green supply chain management initiatives.

SMEs believe that by following the internal and external pressure can make them more competitive in the markets. Employee is the internal stakeholders, they have the power to make move and give the pressure to SMEs in making more environmental friendly managements [8]. The company must give input and education to the employee to make them talented and have concern about the environments in supply chain, company also need to create proactive work place and promote new innovation and ideas in the company.

This research believe that without the support and point of views of the top managements toward the implementing green supply chain managements it is difficult to make it success in the firm's or organizations. Thus, we believe that:

H2: The greater the top management support of green supply chain management initiatives, the greater the firm's monitoring supplier's environmental performance.

Target population (n) in this study involved only the Manufacturer sector of the Small and Medium Enterprises (SMEs) in Malaysia. Manufacturer sector definition for SMEs has a turnover 1 not acceding RM50 million or full-time employee not acceding 200 people [9]. The positive aspects of Manufacturing SMEs, there are plenty of room for improvements, innovation and growth to compete with larger manufacturing industries. This organisation can make major improvements without

spending a lot of money compare to larger industries in term of innovation and improvements because of normally SMEs focus only in one productions and small target market. The SMEs industry will make a breakthrough in the market in term of innovation, sustainability and health economical developments [10]. This study focus on manufacturing sector because its play an important role in Malaysia economy, the production of raw material and finish product is crucial. Eventhough the effect of SMEs on the environment is still doubtful but we believe it will be accurately measure in the future research. However, because it high in number the environment impact is still huge. Thus, this research believe that it is a stepping stone for manufacturing sector in SMEs to implement GSCM in the company to remain competitive.

3. Result and Analysis

Evaluating validity in construct is an important aspect in this project. Validity defined as the ability of the instrument to measure what its intended to measure [11]. The validity test is convergent validity, discriminant validity and common method bias. For convergent validity it measure the items of each construct should agree with each other and for discriminant validity each construct should disagree with measure of other construct [12]. After removing the item with loading factor less than 0.60, Cronbach's alpha reliability test, convergent validity and discriminant validity conducted. Convergent validity happen when group of items measure one common factor. Convergent validity shows by statistical significant at alpha (eg. $p=0.05$). The reliabilities of this model is range from 0.760 to 0.842 (see table 1). The reliability result of composite reliability (CR) is above the cut-off point of 0.7. The average variance of the data is 0.619 and above. Cronbach's alpha values of all the construct are well over 0.7, as shown in table 1 with all the value for convergent validity. Discriminant validity was tested by assessing whether the intercorrelation within the construct is less than 0.7 which suggest the construct have less than half of their variance in common. All of this construct meet the threshold. Furthermore for discriminant validity it been tested by comparing the average variance extracted (AVE) for each construct with all possible pairs of construct. In this analysis, the AVE greater than square of all the correlation between all possible pairs off construct (table 1). Overall, the results shows positive discriminant validity within the construct.

Table 1. Convergent validity and reliability.

	CR	AVE	MSV	MaxR(H)	stake	supp	top
stake	0.842	0.728	0.143	0.843	0.853		
supp	0.760	0.619	0.420	0.913	0.378	0.787	
top	0.841	0.726	0.420	0.942	0.334	0.648	0.852

Common method bias also known as common method variance or mono-method bias frequently occurs when same method used to measure correlation between construct. For example, in ordinary survey an individual responds to items at one particular survey at one point in time, this will expose to common method bias. In this research, we analyse common method bias by using Harmon's single factor test for survey data using confirmatory approach to assess the degree of common method bias. The factor is fully introduce for the analysis. Table 2 shows that single factor explain 38.744% of the total variance, which is below the 50% cutoff value. Thus, the following factor does not effected by common method bias.

Table 2. Harmen's single factor test.

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.941	49.021	49.021	2.325	38.744	38.744
2	1.299	21.643	70.664			
3	0.840	14.008	84.672			
4	0.379	6.309	90.982			
5	0.290	4.829	95.810			
6	0.251	4.190	100.000			

Hypothesis Testing: Then, we examine our hypothesis using structural equation modeling. Structural equation modelling is a multivariate statistical analysis technique used to examine structural relationship. It is the combination of factor analysis and multi regression analysis and used to analyze structural relationship between measure variable and latent factor. The measurement model of fit indices in this project meet the cutoff point given.

All the hypothesis in this project are proven to be positive. As expected, shows in table 3 stakeholder pressure are positively related ($\beta=0.299$, $p=0.006$) to a firm's top managements support for implementing green supply chain management initiative (H1). Secondly, top management support for implementing green supply chain management initiative have positive significant impact ($\beta=0.499$, $p=0.000$) on monitoring supplier environmental achievement.

Table 3. Model fit measure.

Measure	Estimate	Threshold	Interpretation
CMIN	4.719	-	-
DF	7.000	-	-
CMIN/DF	0.674	Between 1 to 3	Excellent
CFI	1.000	>0.95	Excellent
SRMR	0.030	<0.08	Excellent
RMSEA	0.000	<0.06	Excellent
Pclose	0.797	>0.05	Excellent

Next, in this model the top management support on green supply chain management initiative fully mediates the relationship between stakeholder pressure on environmental initiative and monitoring supplier environmental initiative. To test mediation analysis we conducted two more statistical analysis using two different model M1 and M2 by constructing two structural equation-modelling models. Firstly, M1 we concentrate on the relationship of dependent variable monitoring supplier green supply chain initiative towards independent variable stakeholder pressure. Secondly, M2 we include the second independent variable of top management support. According to the result in Table 4, M1 the independent variable stakeholder pressure have positive significant to the dependent variable monitoring supplier to implement green supply chain initiative. After that, we control the mediator by adding top management support as independent variable mediator; the result is stakeholder pressure to monitoring supplier environment initiative is not significant. Thus, the results is top management is fully mediate.

Table 4. Mediation test.

PATH	M1	M2
Stakeholder pressure to monitoring supplier	0.287***	0.115
Stakeholder pressure to top management support		0.265***
Top management support to monitoring supplier		0.469***

***significant at 0.001 level

4. Conclusion

Overall results of this study show that stakeholder pressure influence the implementation of green supply chain management initiative in SMEs by the important of top management support of environmental management initiative. Top management support plays an important role to secure crucial resources and to give leadership in risky environment. To achieve and maintain effective response to the environmental initiative and stakeholder pressure top management support is required. In addition, the research finding shows that the top management supports is fully mediate with stakeholder pressure and monitoring supplier environmental performance. We find that stakeholder pressure have significant influence for SMEs company to adopt green supply chain management same as top management support. We also find that top management support influenced company to monitor suppliers' environmental performance.

Acknowledgement

This research is supported by International Islamic University Malaysia (IIUM), SME Corporation Malaysia and funded by Fundamental Research Grant Scheme (FRGS16-019-0518), Ministry of Higher Education Malaysia to which the authors are grateful.

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