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# Stakeholders' involvements in the implementation of proactive environmental practices

## Linking environmental practices and environmental performances in SMEs

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## Abstract

**Purpose** – The purpose of this paper is to investigate key causal linkages of proactive environmental practices of small and medium enterprises (SMEs). Specifically, this paper studies the ways that the interactions between different stakeholders such as suppliers and customers could intensify the widespread diffusion and implementation of green technologies. Understanding these linkages provide an opportunity to develop a framework that integrates stakeholders' involvement, environmental practices and environmental/operational performances.

**Design/methodology/approach** – This paper adopts the quantitative methodology. It uses the survey data collected from 232 Malaysian SMEs. The structural equation modelling (SEM) via AMOS 19 was employed to test the hypotheses.

**Findings** – The empirical results suggest that decisions on environmental practices are influenced significantly by interactions between stakeholders but notably in different ways. While customers and employees involvements are targeted at process based changes, senior managers are interested in internal management improvements. Suppliers' interactions, on the other hand, influence SMEs to improve on operations for product and process based changes at the same time. Interestingly, we did not observe any significant achievement on government partnership programmes aimed at improving SMEs' environmental practices.

**Originality/value** – The finding in this paper adds to the literature on corporate environmental practices (CEPs), by applying two stages SEM analysis to a survey data for a single industry (electronic and electric industry). The gap of the mainstream CEP literature is bridged by focusing on different types of CEP, namely, internal management systems, process-based changes and product-based changes.

**Keywords** Performance, SMEs, Environmental management, Process-based changes, Product-based changes, Stakeholder's involvement

**Paper type** Research paper

## 1. Introduction

This paper focuses on the roles of stakeholders and their influence on environmental practices in small and medium enterprises (SMEs). As in any organization, stakeholders in SMEs may have significant power to influence the efficiency and effectiveness of

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corporate activities. The stakeholder's involvement with the SME may induce a strong influence to the development of proactive environmental practices. Such engagement may facilitate SMEs conceptual and technical development, as well as gain financial support that may improve their capability to implement green technologies.

The term stakeholder became popular in 1980s. Freeman defines stakeholders as "any group or individual who can affect or is affected by the achievement of the organization's objectives". Another researcher, Carroll (1996) defines stakeholders as "any individual or group who can affect or is affected by the actions, decisions, policies, practices, or goals of the organization". When employing the stakeholder theory, any group internal and external of the organization is a stakeholder. Stakeholders relationships ensure that any decisions made by an organization are take into account the interests of stakeholders. Strategically, the central idea of the stakeholder theory is to manage and incorporate the relationship and welfare of shareholders, customers, suppliers, employees and other groups in a way that guarantees the organization's long-term success (Freeman *et al.*, 2007).

In the case of corporate environmental practices (CEPs), stakeholder theory is useful to explain organizational decisions about adopting various environmental strategies (Hart, 1995). Its extensive definition encompasses all stakeholders, therefore, preventing any exclusion of possible stakeholders. This is particularly important since each organization may have different significant stakeholders to consider. The inclusion of all stakeholders in their strategic plans is important, as each stakeholder may have particular needs.

For the purpose of this study, the following research questions are examined:

(1) What is the relationship between stakeholders' involvement in SMEs' and SMEs' environmental practices?

(2) Is there any correlation between environmental practices and environmental performances of the SMEs?

## 2. SMEs and environmental issues

*2.1 The need for holistic approaches*. Mainstream study on environmental management has been useful for defining key drivers and the problems of environmental challenges faced by SMEs (Rowe and Enticott, 1998; Lefebvre and Lefebvre, 2003; Baden *et al.*, 2009; Gadenne *et al.*, 2009; Cordano *et al.*, 2010). Stakeholders are one of the significant drivers that influence managers' decisions on environmental strategies. The two main schools of thought about stakeholder theory offer variations on the relationship between stakeholders and the organization.

The first school of thought, focuses on ethical management where the organization is assumed to have a responsibility to conduct operations that benefits all the stakeholders, regardless of their intrinsic power (Craig Michael and Deegan, 2010). The general tenet of the idea is that the stakeholders have an absolute right over the organization, and these rights must not be violated. This approach assumes an extremely benign and caring view of developing inter-organizational relationships. However, such relationships are often difficult to realize. While the approach might be suitable for certain organizations under certain conditions, the approach is unlikely to fit all organizations due to the complexity and the nature of the organization as well as the environmental issues.

The second school of thought, emphasizes on the managerial view where the organization is assumed to manage their stakeholders relationships with the emphasis on the stakeholder power (Craig Michael and Deegan, 2010). Most environmental

management literature falls into this category, where organizations distinguish their stakeholders based on the power that the stakeholders hold (Mitchell, 1997). Stakeholder power, however, may be viewed from a different perspective. Gunningham *et al.* (2003) conceptualizes the stakeholder power into three types of pressures, which act as "license to operate". These three licenses are:

(1) Regulatory license – is the fundamental factor for every organization's environmental performances, all organizations must comply.

(2) Economic license – is important because it imposes limits on how much organizations can spend on innovation beyond-compliance measures.

(3) Social license – is the primary source of voluntary initiatives that go beyond compliance measures. The pressure from social stakeholders influences organizations not only to fully comply with laws and regulations, but also to invest proactively in beyond compliance activities.

Many of the previous studies, however, tend to explain organization-stakeholder relationships based only on an implicit assumption of "regulatory license" causality (Hall, 2000; Céspedes-Lorente *et al.*, 2003; Gonzalez-Benito and Gonzalez-Benito, 2006; Sarkis *et al.*, 2010). Although, "regulatory license", which acts as a coercive pressure, is relevant to determining organizational responsiveness towards environmental concerns and practices, it should not be a solitary mechanism for approaching environmental initiatives. Some organizations, especially small businesses, may find this mechanism too demanding and may find ways to avoid such pressures. Arguments then arise concerning the appropriateness of stakeholders' coercive powers on whether an organization fulfils the stakeholders' requirements for a monetary basis or merely because of ethical values of such requirements (Donaldson and Preston, 1995). There is also an argument about whether stakeholders' "command and control" approach can undermine genuine motivation which can lead to "pretend compliance" and "mitigating deterrence" (Baden *et al.*, 2009).

Literature in 1980s and 1990s on sustainability advance the notion that organizational responsiveness on environmental issues evolves through stages (Wartick and Cochran, 1985; Hunt and Auster, 1990; Roome, 1992; Kopicki *et al.*, 1993). The evolution appears as organizations continuously adopt environmental initiatives in response to demands from the government, customers, suppliers and/or financial markets (Shrivastava, 1995). Hence, there is a unique relationships between the stakeholders, laws and CEPs (Coglianese, 2001). Such relationships may develop and enhance the interplay between the organizations and the stakeholders, from which the environmental approach evolves from merely a "command and control" to a more holistic approach. Such approaches may be described as "social licenses" that encourage organizations to invest in practices that "are not justified in terms of traditional, quantitative analyses for assessing likely profitability" (Gunningham *et al.*, 2003). The social approach may also relate to the mimetic mechanism suggested by DiMaggio and Powell (1983). Mimetic isomorphism results from dedicated imitation of partners and other organizations or networks in the organizational field. The motivation to voluntarily act beyond regulations is a set of institutional norms, values, rules and external pressures (Bansal and Roth, 2000) as well as obtaining legitimacy or credibility from stakeholders (Tina Dacin *et al.*, 2007).

As such, the important roles of stakeholders must be viewed from different perspectives by recognizing the environmental collaboration and the inter-related

nature of industrial structures and their environmental impacts. According to Wood and Gray (1991), collaboration between stakeholders occurs when a group of stakeholders interactively engage with each other to act or decide on problems in their domain. This dimension could explain the success of the dynamic interactions between SMEs and their stakeholders, through which the stakeholders try to influence the SMEs' operations system.

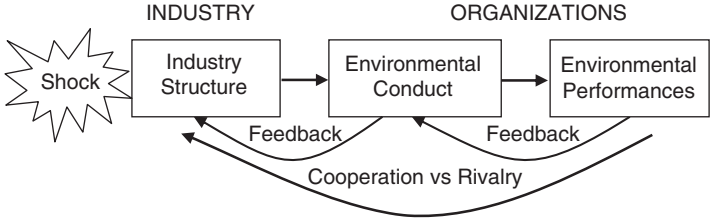
*2.2 Inter-firm collaboration and partnership for CEP*

A major argument of this paper is that the best medium for SMEs to change their CEPs is through inter-firm collaboration. Specific to this study is the need to explore how inter-firm collaboration between significant stakeholders can serve as a strategic mechanism to achieve improved environmental practices. Inter-firm collaboration includes close relationships between significant stakeholders internal and external to the organization. However, it is important to acknowledged constrains and organizational limitations of the SMEs to balance and manage the different interests of various stakeholders (Ansoff and Ansoff, 1990). Hence, this study focuses on key stakeholders of SMEs that have formal relationships with the SMEs (i.e. customers, suppliers, the government, senior manager and employees) (Buysse and Verbeke, 2003). These stakeholders may act as a "decisions structure" of the firms as described in the Structure-Conduct-Performance (SCP) model (Bain, 1956) and the Pressure-State-Response model (Organization of Economic Cooperation and Development, 1994) (see Figure 1). These two models explain how industry structures determine the actions or conduct necessary for organizations to survive within an industry. SCP assumes that the environmental performance of an organization is the result of its environmental competitive conduct and the structure of the market (Abreu, 2009).

Here, "industry structure" is featured as an integration of stakeholders' demands for environmental concerns that is passed to the SMEs through strategic partnerships – or involvement with their stakeholder. The stakeholder demands considered here are the demand from both internal and external stakeholders. Although SCP predominantly describes the external features of the organization, the existence of internal feedback is also important (Abreu, 2009). When such relationships occur, organizations can then develop a sense of understanding and responsibility for the effective adoption of "environmental conduct" and may govern their own initiatives to achieve "environmental performances" (Biondi *et al.*, 1998).

*2.3 The involvement of external and internal stakeholders*

*The government*. Earlier studies on the role of the government have focused on its coercive power by means of rules and regulations (Henriques and Sadorsky, 1999; Delmas and Toffel, 2004; Studer *et al.*, 2006). Such mechanisms are believed to be an




**Source:** Adapted from Abreu (2009)

**Figure 1.**
Environmental strategic evaluation model

effective way to impose environmental practices within SMEs, especially in the cases that involve mandatory emission standards (Delmas and Terlaak, 2002). However, the studies that examine environmental management initiatives through "command and control" mandates show mixed results (Zhang *et al.*, 2008). While studies by Frondel *et al.* (2003) and Hillary (2004) show a significant effect of the government on SMEs' general environmental practices, other studies claim some contradictory outcomes (Andrews, 1998; Ytterhus *et al.*, 1999; Zhang *et al.*, 2008). Later, studies on the government-firm relationships started to explore further the elements of the relationships to include cooperation and assistance. The partnership relationship between SMEs and the government are found to be a very effective approach to improve SMEs' environmental performances (Rowe and Enticott, 1998). Collaborative relationships with the government are not limited to financial assistance but may include guidance and profile-raising.

*Supplier-customer relationships*. Environmental studies recently started to examine the effect of broader networks that include suppliers and customers. Customers-supplier involvement is believed to be the most dominant power for SMEs' CEP. The focus of this relationship is to plan together the reduction of environmental impact from production processes and products. Such relationships actually provide more than just contractual engagement to include information sharing and ad-hoc innovation (Grewal and Dharwadkar, 2002), exchange of technical information (Vachon and Klassen, 2007) and a facilitating role for context specifics and complex systems such as life cycle analysis, product stewardship, recycling and reuse (Geffen and Rothenberg, 2000). Again, interaction and a closer bond between organizations and their stakeholders may provide an unexplored opportunity for generating innovative products or processes (Zhu and Sarkis, 2004; Rao and Holt, 2005).

*Internal stakeholders*. Besides the external stakeholders, internal stakeholders such as employees and senior managers, play significant active roles for environmental concerns. Senior managers' solitary main obligation is to ensure the maximization of profit for the shareholders through their leaderships, visions and strategic intents (Hamel and Prahalad, 1989). Such commitment is a basic foundation to a successful implementation of environmental practices and may bring better environmental performances (Zhu and Sarkis, 2004). Employees' roles may be seen as "hands-on" contributions as they are the closest to the sources of pollution and they probably know the most about pollution and waste occurring along the manufacturing processes (Kitazawa and Sarkis, 2000). Hence, their involvement in environmental planning could be useful.

## 3. Performance: the resources-based view (RBV) of the firm

The theory of RBV posits that organizations might sustain competitive advantages if they own resources and capabilities that are valuable, non-substitutable, rare and not imitable by their competitors (Barney, 1991; Hart, 1995). In terms of resources owned by the organization, Das and Bing-Sheng (2000) suggest that there are two types of resources available: property based and knowledge based. The former refers to the tangible properties owned by the organization, including physical assets, financial and human capital, while the latter is the organization's intangible skills and knowledge that are difficult to imitate due to the knowledge and information barriers.

Borrowing from the RBV theory, a unique resource gained from a proactive activity can provide inimitable information and knowledge to improve the operations (e.g. quality, speed, flexibility and costs). For example, cost advantage can be enjoyed by the organization as a result of adopting proactive environmental practices that focus on process-based changes (Hart, 1995).

These environmental practices include activities related to process improvement, such as redesigning production processes, recycling manufacturing's by-products and innovating green manufacturing processes (Hart, 1995; Florida, 1996). Ample evidence shows that these practices can reduce the operating cost (Hart, 1995; Vachon and Klassen, 2006b). The benefits of these practices are not limited only to manufacturing cost; they also help to reduce other types of cost, such as potential cost of legal fees and liability fees (Shrivastava, 1995), and allow the possibility of end-of-life, take-back cost. Improvement in the processes of manufacturing and operations also develops an organization's ability to provide prompt and flexible delivery of products.

## 4. Conceptual framework and hypotheses development

The discussion provided above and available empirical evidence suggests that stakeholders' involvement is associated with better implementation of proactive environmental practices. Figure 2 depicted the environmental conduct of an organization that is influenced by the organization's stakeholders. Ultimately, environmental conducts will affect the organization's environmental performances. The hypotheses involving all the relationships developed for this study are listed:

*H1*. The involvement of stakeholders in an organization's operations positively influence the adoption of environmental practices.

*H2*. The impact of stakeholder involvement in CEP of SMEs is varies.

*H3*. There is a positive association between environmental practices implementation and environmental performance.

*H4*. There is a positive association between environmental practices implementation and operations performance.

## 5. Methodology

### *5.1 Sample*

This study employed a survey to collect quantitative data for statistical analysis of the hypotheses. The survey was conducted based on the Dillman method (Don and Dillmon 1978) via mail questionnaires. Mail surveys were selected for this study as it can cover a wide span of geographical area in minimum time and cost. The sample of this study were senior managers or owners of the SMEs in the electric and electronic industry. The senior managers and owners are chosen as a respondent as to ensure that only person that is familiar with the environmental issues and holistic ideas of the business unit's strategies are answering the questionnaires. The list of the SMEs was obtained from The Small and Medium Development Corporation, a specialized bureau that is established exclusively to

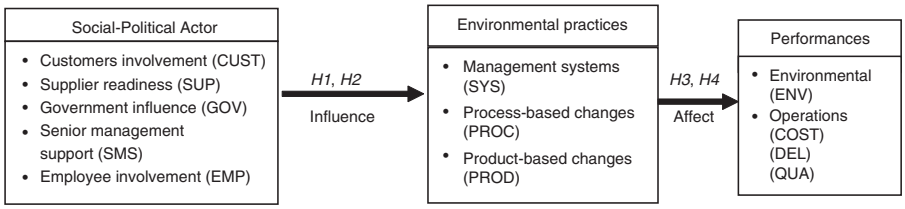



**Figure 2.**
Conceptual model

support the development of SMEs in Malaysia. The questionnaires are designed to ensure confidentiality. A total of 1,000 survey packs are distributed and 248 usable responses were received (24.8 per cent response rate). Prior to actual study, a pilot test was executed to identify problems in the research instrument and methodologies.

*5.2 Data analysis*

The first phase of the empirical data analysis begins with the data screening process, which is run to ensure the accuracy of data entry; and to check and deal with missing values, outliers and normality issues. Descriptive analysis is also carried out to obtain broad information and to understand the general characteristics of respondents and background of participating organizations. Once the data have been processed to determine and ensure their basic characteristics, accuracy and normality, the second phase of analysis proceeds. In the second phase, the data are analysed using a structural equation modelling (SEM).

The approach used in SEM analysis here adopts the two-step technique proposed by Anderson and Gerbing (1988). The SEM analysis for the study was employed via the AMOS 19.0 programme. The two-step approach basically involves:

- Stage 1: specification and validation of a measurement model (Figure 3) using confirmatory factor analysis (CFA) to test for unidimensionality, reliability, convergent validity and discriminant validity (Garver and Mentzer, 1999).
- Stage 2: estimation and assessment of a full structural model to analyse the research hypotheses.

As depicted in Figure 3, this study has 12 measurements constructs. Five of the measurement constructs are to measure stakeholders' involvement. The measurement constructs are customers (CUST), suppliers (SUPP), the government (GOV), employees (EMP) and senior managers (TMS). Three measurement constructs are to measure organizations' environmental practices: internal environmental systems (ENVSYSTEM), product-based changes (PROD) and process-based changes (PROC). Four measurement constructs are developed to measure performances: environmental performance (ENVPerf), cost (COST), quality (QUALITY) and delivery (DELIVERY). The first stage of SEM analysis as discussed below describes the validation process for the measurement model.

The confirmatory analysis was run using AMOS version 19 to analyse the measurement model comprising all 12 measurement constructs. The CFA allows estimating the standardized regression weights of each link (arrow). The convergent validity is assessed by examining composite reliability and average variance extracted (AVE) (Hair *et al.*, 1998). Model re-specifications are made by deleting misfit items one at a time until the model shows a good fit of data. The overall model fit is determined by indicators such as the $p$-value ( $\chi^2$/degrees of freedom) and $\chi^2$ value. Other indicators such as goodness of fit index and adjusted goodness of fit index (AGFI) were also used to assess the validity of the measurement model. Finally, the model $\chi^2$ to degree of freedom (cmin/df) was 1.130, $p$-value = 0.010, AGFI = 0.840 and root mean square error of approximation (RMSEA) = 0.024.

## 6. Results and data analysis

*Stage 1: measures reliability and validity*

Reliability and validity of each construct and the measurement model are assessed by analysing its composite reliability, AVE and discriminant validity. Table I shows composite reliability and AVE of the construct. Composite reliability measures the

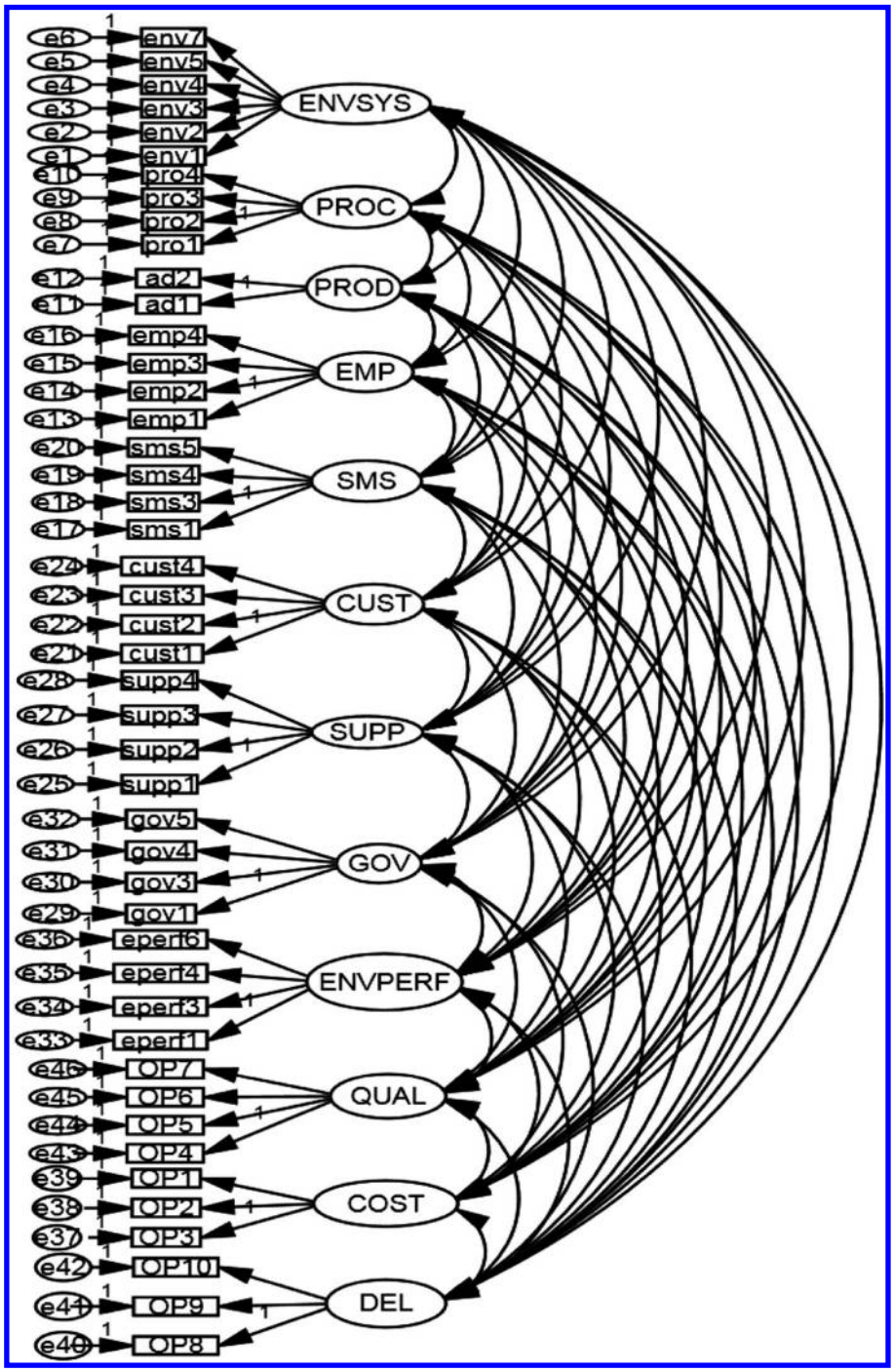



**Figure 3.**
The measurement model

| Construct | Composite reliability[a] | Average variance extracted (AVE)[b] | No. of items |
|---|---|---|---|
| ENV system | 0.889 | 0.669 | 4 items |
| PROC | 0.757 | 0.511 | 3 items |
| PROD | 0.709 | 0.552 | 2 items |
| CUST | 0.816 | 0.526 | 4 items |
| EMP | 0.895 | 0.681 | 3 items |
| GOV | 0.842 | 0.574 | 4 items |
| TMS | 0.920 | 0.698 | 5 items |
| SUP | 0.830 | 0.620 | 3 items |
| ENVPERF | 0.858 | 0.548 | 5 items |
| QUALITY | 0.807 | 0.512 | 4 items |
| COST | 0.816 | 0.597 | 3 items |
| DELIVERY | 0.830 | 0.619 | 3 items |

**Notes:** [a]Composite reliability = (square of the summation of the factor loadings)/(square of the summation of the factor loading) + (square of the summation of the error variances); [b]AVE = (summation of the square of the factor loadings)/(summation of the square of the factor loading) + (summation of the error variances)

**Table I.**
Result of CFA for measurement model

consistency of multiple attempts to determine whether they are measuring the same concept. Composite reliability values for all constructs are good indices as suggested by Hair *et al.* (1998). Next, the AVE is examined, which depicts the sum of variance in the indicators accounted for by the latent construct. The AVE values were in the range of 0.511-0.698, which exceeded the recommended value of 0.50 (Hair *et al.*, 1998).

Table II shows the discriminant validity of the measurement model. Discriminant validity explains the degree to which each operational construct is different from other constructs. If discriminant validity is not evident, then deductions or assumptions made, based on the constructs, might be incorrect (Farrell, 2010). The discriminant validity can be analysed by comparing the squared correlations between constructs and variance extracted for a construct. As shown in Table II, for each construct, the squared correlation is less than the AVE indicating sufficient discriminant validity.

| Construct | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QUALITY | 0.715 | | | | | | | | | | | |
| DELIVERY | 0.077 | 0.787 | | | | | | | | | | |
| COST | 0.285 | 0.163 | 0.773 | | | | | | | | | |
| ENVPERF | 0.034 | 0.356 | 0.143 | 0.740 | | | | | | | | |
| GOV | 0.115 | 0.14 | 0.294 | 0.104 | 0.756 | | | | | | | |
| SUPPLIER | 0.115 | 0.255 | 0.061 | 0.399 | 0.042 | 0.787 | | | | | | |
| CUSTOMER | 0.049 | 0.347 | 0.115 | 0.541 | 0.11 | 0.435 | 0.725 | | | | | |
| TMS | 0.474 | 0.153 | 0.499 | 0.083 | 0.482 | 0.051 | 0.172 | 0.836 | | | | |
| EMPLOYEES | 0.28 | 0.163 | 0.275 | 0.293 | 0.322 | 0.174 | 0.22 | 0.537 | 0.825 | | | |
| PROD | 0.135 | 0.184 | 0.07 | 0.325 | 0.075 | 0.717 | 0.361 | 0.007 | 0.128 | 0.743 | | |
| PROC | 0.028 | 0.474 | 0.111 | 0.529 | 0.113 | 0.528 | 0.614 | 0.081 | 0.35 | 0.391 | 0.715 | |
| ENVSYS | 0.094 | 0.061 | 0.565 | −0.062 | 0.41 | 0.097 | 0.004 | 0.57 | 0.328 | 0.001 | 0.043 | 0.818 |

**Note:** Diagonals represent the average variance extracted while the other entries represent the squared correlations

**Table II.**
Discriminant validity of constructs

Overall, the measurement model established adequate convergent validity, reliability and discriminant validity.

*Stage 2: full SEM*

The structural model was estimated using AMOS software version 19. The model was analysed using maximum likelihood estimate. The final structural model shows an overall model fit with $x^2 = 1018.9$, degree of freedom is 821 and $x^2/\text{df} = 1.241$ with $p$-value $= 0.000$. Kline (2010) suggests that a good fit model should have a non-significant $p$-value of more than 0.05. However, many researchers argue that $p$-value is highly sensitive to large sample sizes that involve more than 200 respondents such as in this research (Garver and Mentzer, 1999; Kline, 2010). Further analysis using Boolen-Strine bootstrap analysis was run to estimate the model fit. The result of Boolen-Strine bootstrap was $p = 0.348$. Table III shows other recommended fit indices for the structural model and value of the indices in the present study. The AGFI was 0.817, the RMSEA was 0.032 and the comparative fit index, the index that is most stable and robust as identified by Anderson and Gerbing (1988), was 0.96. Hence, the model was deemed acceptable.

*Path coefficients and explanatory power*. As can be seen in Table IV, the involvements of four stakeholders have statistically significant path coefficients. These stakeholders are the employees, senior managers, customers and suppliers. A path coefficient represents the direct effect of X to Y (Kline, 2010). The line with single-headed arrow in Table IV represents the relationship, which depicts statistical estimates of each construct. The suppliers' role yielded two significant paths linked to both environmental practices associated with product-based changes (PROD) and process-based changes (PROC). Senior managers, have a significant influence on one path only, which is ENVSYSTEM, but they are also associated with operational performance in quality. Both customers and employees have a significant impact on process-based changes.

In terms of environmental and operational performances, only internal environmental system (ENVSYSTEM) and process-based changes activities have significant path coefficients related to the environmental and operational performances. ENVSYSTEM was only significantly related to cost performance. Environmental activities associated with process-based (PROC) changes have a positive relationship with the delivery performances (DELIVERY). PROC also had statistically significant effects on environmental performances. The final analysis of the model suggested two additional paths to be added to the model. The first path is from TMS to quality and the second path is from quality to cost. Both paths show statistically significant relationships with explanatory power of 50.9 and 25.2 per cent, respectively.

| Fit index | Study | Recommended value | Sources |
|---|---|---|---|
| $X^2$/df | 1.221 | $<3.00$ | (Kline, 2010, Cunningham, 2008) |
| $p$-value | 0.000 | $>0.05$ | (Kline, 2010) |
| CFI | 0.960 | $>0.90$ | (Kline, 2010, Anderson and Gerbing, 1988) |
| AGFI | 0.817 | $>0.80$ | (Kline, 2010) |
| RMSEA | 0.032 | $<0.10$ | (Kline, 2010, Garver and Mentzer, 1999) |

**Table III.** Structural model and fit indices

| Latent constructs | | | Regression weight | Sig. | Finding |
|---|---|---|---|---|---|
| *The maximum likelihood estimates* | | | | | |
| PROC | ← | EMP | 0.221 | *** | Accept |
| PROC | ← | TMS | −0.18 | 0.036 | Reject |
| PROC | ← | CUSTOMER | 0.399 | *** | Accept |
| PROC | ← | SUPP | 0.233 | *** | Accept |
| PROC | ← | GOV | 0.064 | 0.375 | Reject |
| PROD | ← | EMP | 0.024 | 0.794 | Reject |
| PROD | ← | TMS | −0.038 | 0.698 | Reject |
| PROD | ← | CUSTOMER | 0.048 | 0.61 | Reject |
| PROD | ← | SUPP | 0.513 | *** | Accept |
| PROD | ← | GOV | 0.014 | 0.872 | Reject |
| ENVSYSTEM | ← | EMP | 0.036 | 0.653 | Reject |
| ENVSYSTEM | ← | TMS | 0.409 | *** | Accept |
| ENVSYSTEM | ← | CUSTOMER | −0.052 | 0.521 | Reject |
| ENVSYSTEM | ← | SUPP | −0.11 | 0.193 | Reject |
| ENVSYSTEM | ← | GOV | 0.199 | 0.008 | Weak sig. |
| QUALITY | ← | TMS | 0.509 | *** | Accept |
| DELIVERY | ← | PROC | 0.707 | *** | Accept |
| ENVPerf | ← | PROC | 0.626 | *** | Accept |
| COST | ← | ENVSYSTEM | 0.54 | *** | Accept |
| COST | ← | QUALITY | 0.252 | *** | Accept |

**Note:** *** Significance $<0.001$

**Table IV.**
The maximum likelihood estimates

## 7. Discussion

### *7.1 H1: the involvement of stakeholders in an organization's operations positively influences environmental practices adoption*

Departing from the stakeholder theory and social-conduct-performance theory, the purpose of this study is to examine the roles of stakeholders in influencing proactive environmental practices within the Malaysian context. From the results presented in Table IV, the evidence suggests stakeholders do lead to improved proactive environmental practices where each of the stakeholders have their own roles in initiating different environmental practices. Therefore, *H1* is supported. All stakeholders that were examined in this study, clearly contribute to significant changes for environmental improvement. This establishes the linkage between stakeholders' involvement and environmental competitiveness.

Nevertheless, the role of the government was found to have only weak correlation. This indicates that, although the government do not have strong influence on the implementation of environmental practices of SMEs, their role as an authority should not be ignored. The enforcement of the government mandates through it compliance mechanisms, should be anticipated.

### *7.2 H2: the impact of stakeholder involvement varies depending on the partners chosen*

Overall, the results provide ample evidence to support *H2*. A positive link between involvement of suppliers, customers, employees and senior managers with environmental management practices was found. In particular, the evidence suggests that the involvement of customers and employees was positively linked to the environmental practices improvement in process-based changes. It is believed that since customer was to ensure their credibility in the local and international market,

systematic and comprehensive guidance are established along their supply network. Such guidance and involvement includes a discussion regarding production issues related to design changes and sharing of informal information (Vachon, 2007).

Similarly, employees may assist in the improvement of process-based changes since they are the individual that is closest to the pollution problems and are technically expert in core activities of an organization. Employee involvement is one of the strengths of the success of ISO 14001 (Zutshi and Sohal, 2004). This further concurred with the study by Hanna *et al.* (2000) that there is a positive relationship between employee involvement and operation management associated with pollution prevention systems. On a similar note, Henriques and Sadorsky (2007) used concepts developed by Daft (1978), and also suggest that employees have a positive impact on the process-based technologies as this technology is associated with bottom-up processes.

In addition to that, senior managers only influence internal management systems (Carter *et al.*, 1998). The system may include environmental management systems, specific environmental goals, ISO 14001 and environmental training and audits. Using the same idea proposed by Daft (1978), internal management systems are the domain of senior managers who adopt a top-down implementation process. According to Evan (1966), the origin of managerial aspects would be near the top hierarchy of the organization and pass down to the employees.

Remarkably, suppliers' involvement has the most influence in the SMEs' environmental practices. The suppliers have a direct positive impact in both product and process based changes. Since suppliers have expertise with the material and obtain experiences and technical knowledge from different customers, they may contribute towards operational improvement. This finding is consistent with the study of McGinnis and Vallopra (1999) and Geffen and Rothenberg (2000), who suggest that supplier involvement is crucial to facilitate the introduction of environmental product innovation and process development in manufacturing firms. They also state that the techniques of supplier involvement are similar in both process and product development.

### *7.3 H3: there is a positive association between environmental practices implementation and environmental performance*

The results show that *H3* is only partly supported. Table IV shows that, when examining all three environmental practices: ENVSYS, PROD and PROC, the only significant relationship was PROC. This study suggests that environmental activities focused on process-based changes lead to better environmental performances. Process based changes are associated with manufacturing activities designed to reduce the environmental impact. These include activities such as: filter and control for emissions and discharges; systematic control of energy; recycling water; and use of ecological ingredients in the products. Hence, improvement in process-based changes results in the minimization of pollution. Study by Levy (1995) in transnationals corporations found same results that indicates the relationship between environmental practices and performance is weak.

The result of this study also reinforced the question of whether SMEs' environmental practices are implemented to truly realize environmental improvement or the implementation is merely window-dressing targeted to satisfy the stakeholders. Earlier analysis of this large study reveals that the implementation of SMEs' environmental practices mostly disseminates around infrastructural practices, i.e. internal management systems (Rasi *et al.*, 2010). The management practices, however, are not translated properly into their manufacturing activities. Implementation of structural practices

(i.e. process-based changes and product-based changes) are at moderate level, with product-based changes the lowest one.

These earlier findings suggest that, more profound implementation is needed to actually achieve the environmental performance goal. SMEs should bridge the gap between infrastructural and structural practices. It also indicates that collaboration activities between SMEs and their stakeholders are not fully integrated. Since SMEs mostly implement environmental practices at management level, it shows that the association of the SMEs with the manager are high, and the association of the SMEs with other stakeholders can be further improved.

*7.4 H4: there is a positive association between environmental practices implementation and operations performance*

The results in Table IV support *H4*, that operational performances are controlled by environmental practices. The variables representing internal environmental systems and process-based changes do have a significant effect on most of the operational performances. However, product-based changes do not exhibit such relationships. The number of internal management activities is a significant explanatory variable for the degree of operational performance in cost. The activities in process-based changes had the expected positive effect on delivery performances, but activities in product-based changes are not associated with any operational performances. However, no environmental practices can directly explain the relationship with the operational performance in quality. Nevertheless, quality performances can be explained by senior manager involvement. Another significant path in the study is the path from quality to cost. This path suggests that quality performance is significantly influenced by cost performance of the firm.

## 8. Conclusion

The response of SMEs to environmental challenges has progressed as a result of encouragement and pressure from several stakeholders. Stakeholders are claiming greater accountability on sustainability issues. In spite of the stakeholders' dominant position, most SMEs have slight interest in environmental issues and generally require tools and methods for incorporating environmental practices in their operations or handling the environmental problems.

This paper seeks to develop an SMEs' stakeholder model that can be used by the manager and relevant stakeholders such as the government as a guide to enhance implementation of environmental practices. Stakeholders may provide implicit and explicit assistance and support to SMEs and thereby may help SMEs to overcome the barriers. For an effective implementation of environmental practices, it should involve relevant internal and external stakeholders to monitor, guide and facilitate the implementation of environmental practices. A commitment from various stakeholders will be a determining factor in the success of the implementation of proactive environmental initiatives and the advantages derived from such practices. Suppliers are the most significant stakeholders for SMEs as they facilitate both process-based changes and product-based change activities.

The survey indicates that different systems and perspectives exist among partners and these could control or determine how the relationship is managed and what type of improvement can be achieved. Precisely, there are substantial differences in how SMEs liaise with their stakeholders. SMEs appear to be more aware of the requirement from the stakeholder that they perceive as significant to the business's survival (i.e. customers and suppliers). Furthermore, customers-suppliers cooperation allows

SMEs to obtain tacit knowledge on environmental technologies and systems. Eventually, as this kind of focus is typical in SMEs, they generally use their customers and suppliers as a principal source of environmental information.

In general, the results are consistent with the theory of RBV and other studies of environmental management implementation (Zhu and Sarkis, 2004; Rao and Holt, 2005; Vachon and Klassen, 2006a; Zhu *et al.*, 2007). There is evidence that environmental practices have impact on both environmental and operational performances of the organization. Yet, different practices lead to different improvements. Process-based practices seem to have the greatest impact on environmental performance and delivery performance. On the other hand, product-based change activities have received less attention from the SMEs and have no influence on both environmental and operational performance. Future research might want to investigate further this issue. Internal environmental systems have been shown to reduce operational costs (Zhu and Sarkis, 2004; Zhu *et al.*, 2007).

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## Further reading

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