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Factors Influencing *ISO 14001* Firm's Perceived Environmental Performance in Malaysia

S. ROHATI[1], M.N. NORLIDA[2] AND A.N.S.M. SYED JAMAL[3]

The changes in the global environmental conditions have placed great challenges on governments, industries, and societies. Business organizations are often blamed for being the sources of these environmental problems. This study aimed to examine the factors influencing the perceived environmental performance of firms certified under the *ISO 14001* in Malaysia. A total of 268 manufacturing companies responded to the questionnaires. In this study, structural equation modeling was applied to test the hypotheses. It was found that the "environmental policy", "environmental training", "regulatory stakeholder's pressures", and "customer pressures", influence the firm's perceived environmental performance in which "customer pressures", was found to be the dominant factor. The measure of environmental performance was self-reported due to the lack of available data. Therefore, perceived environmental performance was employed for this study which is a perceived measure based on the dimensions of the *ISO 14001* definition. This study provided a model to synthesize both internal (environmental policy and environmental training) and external (regulatory stakeholder's pressure and customer pressures) constructs that influenced a firm's perceived environmental performance. The empirical results and insights from interviews shed lights on the practitioners as to how to enhance a firm's environmental performance through green practices.

Key words: Green practices, environmental strategy, environmental performance, Malaysia; environmental management system

The changes of global environmental conditions have placed great challenges to governments, industries, and societies. Manufacturing and industries were blamed for being the major cause of environmental disasters that led to global warming (Fiksel 1996; Packard & Reinhardt 2000; Levy & Kolk 2002). Changes in global environment conditions will rapidly create an unprecedented economic gap (Margretta 2000, p. 59). Ecology and economy are inseparably interconnected; hence, the protection of the environment is an important part of economy values. Nevertheless, care and preservation of the environment are the responsibility of humans, and they should be accountable for the fate of the earth. According to the report on the *Climate Change Performance Index* (CCPI 2015; CCPI 2014), the environmental quality of Malaysia is declining at the level of 52 in 2015 and 51 in 2014.

These statistics have posed challenges to the nation growth and sustainability. One of the initiatives for Malaysia to manage these environmental challenges is related to the reduction of emission intensity on Gross Domestic Product (GDP). By the year 2020, Malaysia is committed to reducing up to

[1] Faculty of Business Management, Universiti Teknologi MARA, Perak Campus, Bandar Seri Iskandar, 36210 Bota, Perak
[2] Faculty of Business Management, Universiti Teknologi MARA Negeri Sembilan Campus, 70300 Seremban, Negeri Sembilan
[3] Arshad Ayub Graduate Business School, Universiti Teknologi MARA, Shah Alam Campus, 40450 Shah Alam, Selangor
* Corresponding author (e-mail: tishafie@gmail.com)

40% of the carbon emission (*U.N. Climate Change Conference 2009*). While Malaysia has participated in the *United Nations Framework Convention on Climate Change* to address issues of global warming, it is found that both industrial player and community should place a greater commitment towards environmental preservation. A greener perspective towards environmental management should be applied across all business industries as it is aligned with the nation's aspiration for a better and healthier living environment (Najam 1999).

There are numerous studies conducted on environmental strategies in business fields. Hart's article (2000, p. 127) in the *Harvard Business Review* entitled, 'Beyond Greening: Strategies for a Sustainable World', where he diagnosed that the rapid growth in emerging economies cannot be sustained in the face of increasing environmental deterioration, and resource depletion. In the coming years, the responsibility to apply clean technologies and implement strategies that significantly reduce the environmental problem will befall largely to the industry, the economic engine for the future.

This study focused on what influenced the manufacturing firms in Malaysia to take up environmental management. A total of 643 certified firms under *ISO 14000* were chosen from the Federation of Malaysian Manufacturers directory (FMM) year 2013, and Standards and Industrial Research Institute of Malaysia (SIRIM) *Directory of Malaysian Certified online Databases December 2013* (SIRIM 2013) for this study. This small number represented only 1.62% of the total 39,669 (SMEs 2013) manufacturing firms in Malaysia. Through this study, it was evident their strong interests in taking a more strategic approach towards environmental management.

Recognizing the factors for the organizational commitments in environmental management is a must so that Malaysia can achieve both economic growth and ecological sustainability. We know that greater conservative efforts such as using the scientific technology and waste management system could and would contribute to better environmental management, but what drive these business firms to take the initiative towards their environmental performance. The purpose of this paper is to determine the structural relationships of factors affecting *ISO 14001* firm's perceived environmental performance in Malaysia. This paper begins with a literature review related to the firm's discerned environmental performance. Then, we develop the theoretical argument for illustrating this study including the perspective of resource-based view and stakeholder theory. Subsequently, we present a research framework, methodology and discuss findings.

LITERATURE REVIEW

Resource-based Theory

The resource-based view (RBV) can be rare, valuable, inimitable, and have the non-substitutable capability that sustains environmental excellence both in strategies and performance as argued by Bruce and Lynn (2010). RBV claims that source for competitive advantage is derived from organizational capabilities (Voola, Carlson & West 2004). Therefore, internal capabilities of firms are the main causes for its profitability differences (Barney 1991). *ISO 14001* Environmental Management System (EMS) implementation is unique in the sense where firms may group its resources into three categories (i.e. physical, human and organizational) to shape its capabilities that will enrich the value of a resource and further leads to competitive advantage. Additionally, it will bring significant effects on the firm's performance (both operation and business performance).

Stakeholder Theory

According to Freeman and McVea (2001, p.192), the fundamental task in a strategic management

process is to govern and incorporate the relationships and interests of shareholders, employees, customers, communities and other interested parties to ensure the enduring success of the firm. Freeman (1984) outlines how an organization fulfils its internal or external stakeholders through the pressures put forth by them. General conceptualization on Stakeholder Theory cited from Sarkis, Zhu and Lai (2011, p. 5) as follows:

"Stakeholder theory suggests that companies produce externalities that affect many parties (stakeholders), which are both internal and external to the firm. Externalities often cause stakeholders to increase pressures on companies to reduce negative impacts and increase positive ones."

Environmental Policy

According to Puig, Wooldridge, Michail and Darbra (2015), the presence of an environmental policy and environmental legislation are keys for environmental management. Firms that lack capability in business and environmental sustainability may place less emphasis on improving their environmental and economic performance together (Marcus & Anderson 2006).

According to Massoud, Fayad, El-fadel and Kamleh (2010), *ISO 14001* green management system is a certification that demonstrates a firm having a continuous commitment to improve its environmental performance. In other words, management clearly has established its commitment to environmental improvement either through the implementation of an EMS or *ISO 14000* certification. It has been noted that EMS policies and procedures should be monitored by all employees in the firm, hence generating an instinctive and systematic review and feedback programme (Crammer & Roes 1993; Zabihollah & Rick 2000). Also firms that recognize environmental performance need to align the managerial system with the performance evaluation system in their corporate environmental objectives (Epstein & Roy 1998).

Acknowledging the importance of environmental management, the principles outlined in the firm's environmental policy have turned into useful guidelines to drive its green practices to a higher level. In-house programmes are said to be a powerful motivator not only to create green awareness but also to ensure the achievement of its environmental mission. Ramus and Steger (2000) concluded that environmental policy will have a productive relationship to eco-initiatives which will improve company environmental performance. *ISO 14001* attests a company environmental policy and is continuously seeking improvement in its environmental performance (Massoud *et al.* 2010). Therefore, environmental policy enhances the firm's environmental performance.

Environmental Training

Research by Teixeira, Jabbour, and de Sousa Jabbour (2012) found that the themes addressed in the environmental courses are common to all hierarchical levels i.e. environmental policy, environmental management system, environmental auditing process, environmental impacts and aspects for each job position, eco-efficiency, and selective garbage collection. Beard (1996) argued that the environmental education and training for the employee is required for an effective corporate environmental strategy. This is because a new business culture with specific perceptions and value can be developed through environmental training. These new behaviours are needed to execute environmental programmes such as energy saving, efficient use of materials, recycling and reuse of products.

Fernanda, Jabbour and Simone (2012) added that the scopes of environmental, organizational innovation are closely related to the firm's environmental management

strategies. The effect of insufficient training may cause unwillingness of employee to participate in environmental efforts unless the firm exerts forces on the employee to the environmental policy (Nalini & Bonnie 2004). The environmental training provided to all the firms' employees should tremendously boost the general awareness and knowledge of employees on environmental issues. Thus, this leads to better and higher firm's environmental performance. However, some problems were encountered: employees reluctant to follow procedures, the lack of knowledge, including problems with the adoption of the new regulation (Hariz & Bahmed 2013), research findings by Daily, Bishop and Massoud (2012); Daily, Bishop and Steiner (2007); Daily, Bishop and Steiner (2003); Marshall and Mayer (1992) claimed that EMS training has a relationship to environmental performance whilst Hariz and Bahmed (2013) suggested that management commitment and support for EMS training has a relationship to environmental performance. Further study by Cole, Elliott and Strobl (2008) on firms in Ghana found that environmental training has positive influences on the firms' environmental performance.

Regulatory Stakeholder's Pressures

The reaction to the external pressure plays a major role in inspiring the spread on the importance of *ISO 14001* in China (Qi, Zeng, Tamb, Yin, Wu & Dai 2011). These forces from the governing legislation and stakeholders have supported the importance of EMS. The legislation is one of the institutional forces that steered a firm's corporate green responsiveness (Bansal & Roth 2000). According to Rusli, Abd Rahman, Ho and Abdullah (2013), complying with strict environmental regulations, support firms to improve the environmental performance and lead to the firm's competitiveness (Bacallan, 2000). In addition, Porter and Van der Linde (2000, p. 146); Loke, Khalid, Shafie and Sayaka (2014); Huang (2005) reported that the regulatory pressure is believed to be a major force for firm's environmental performance since it forces the firm to respond and react to the environmental findings.

Community Stakeholder's Pressures

The community is known as people who live in the same area or township. On the other hand, communities are composed of diverse individuals and organizations reside in patches of land or occupy the same geographic area (Daly & Cobb 1989, p. 172). The pressures from the environmental non-governmental organizations (NGOs) and local community are found to boost the likelihood of green businesses adoption by a firm (Bluffstone & Sterner 2006). The stimulus uses by NGOs, the community, and local societies act as an effective balance to match with formal regulation at large on pollution (Luken & Rompaey 2007). They observed that the firm's environmental behaviour is likely to be swayed by the trade and business which is linked to clean technologies adoption.

Executives are deemed to have many choices when social pressures are weak (Correa, Reche & Bario 2004). Further, Correa et al. (2004) noticed that in a given situation, the outside forces could sometimes influence how an organization tackle an environmental issue but do not standardize the commitment in the whole organization. Low social pressures may lead to executives having many choices to select from. Governing group of executives thus has more weights for greater environmental commitments. In addition, Boiral and Henri (2012) argued that implementation of EMS demonstrates the firm's responses towards external forces, and at the same time reflecting the firm's positive position for the community and social hope. Thus, this is in line with the previous studies by Shafie and Loke (2015); Walker, Sisto and McBain (2008); Zhu, Sarkis and Lai (2007); Cole, Elliott and

Shimamoto (2006); Huang (2005); Sharma (2000); Christmann (2000); Sharma and Vredenburg (1998); Ilinitch, Soderstrom and Thomas (1998); Lober (1996); Christie, Rolfe and Legard (1995) who demonstrated that community groups and environmental organizations will influence and will positively promote environmental performance of the firms.

Cole, Elliott and Shimamoto (2006) in their study on Japanese firms found that globalization has positive impacts on environmental management. Stakeholders that are exposed to global warming issues on a larger scale compared to waste problems expect firms to do more to improve their corporate image in the future as researched by Iwata and Okada (2011). Normative stakeholder's pressures from community, NGOs, media, and interest groups, generally lead to conformity of behaviour and satisfies a wide range of stakeholder needs rather than a narrow one (Simpson & Sroufe 2014).

Customer Pressures

Customer pressures form the most influential factor why firms impose green practices on their suppliers (Alvarez-Gil, Berrone, Husillos & Lado 2007; Carter & Carter 1998; Carter, Ellram & Ready 1998; Rao 2006). Customer awareness on the importance of environmental conservation had increased over the last decades (Min & Galle 1997). Customer pressures are instilled within the firm's supply chain when green practices are implemented to meet environmental and social needs (Rao 2007). This is particularly true when the manufacturing firms face pressures from stakeholders, involving end customers who have a preference to buy green products, along with an increasing number of legal regulations that form environmental standards for products (Hu & Hsu 2010; Shukla, Deshmukh & Kanda 2009). These regulations and emergent market pressures have urged some firms to find ways to alleviate their environmental impact and develop eco-friendly products (Zailani, Eltayeb, Hsu & Tan 2012). Sakr, Sherif and El-Haggar (2010) suggested that market pressure drives companies to implement the *ISO 14001* to achieve a green public image and to gain a competitive edge in markets that place certification as an entry precondition. External institutions also play a part in influencing the managerial perception of EMS implementation.

METHODOLOGY

Research Design and Sampling

The study was designed to test a structural model whether these variables namely environmental policy, environmental training, regulatory stakeholder's pressures, community stakeholder's pressures and customer pressures, that influence a firm's perceived environmental performance. Through the comprehensive literature review, these variables were identified. These variables have been integrated to yield five specific hypotheses to explore their relationships with the *ISO 14001* manufacturing firm's perceived environmental performance as shown in *Figure 1*.

In this study, the sampling frame represents all *ISO 14001* certified manufacturing firms in Malaysia which were obtained from the directory of Federation of Malaysian Manufacturers (FMM) year 2013 (FMM 2013) and from *SIRIM Directory of Malaysian Certified online Databases* as of December 2013 (SIRIM 2013). All manufacturing firms registered under *ISO 14001* were included in the study. Coincidently, they are all large firms. These 643 firms were selected because they have adopted green initiative and have higher awareness and experience dealing with environmental issues. Manufacturing firms were selected because operations and activities of these industries are commonly related to the environmental impact e.g. pollution, discharges of waste, etc. (IEA 2007; OECD 2009). The executive or manager was the targeted respondent for this study.

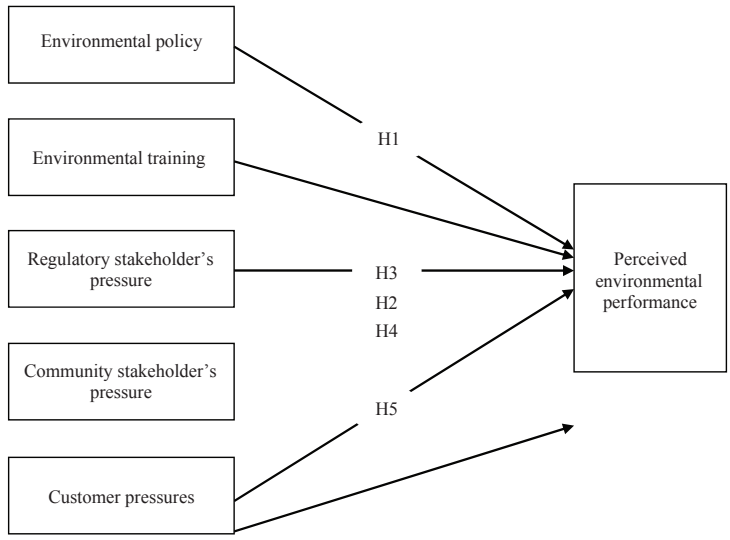

Figure 1. Research framework.

Five interviews were conducted to pretest the survey instrument. The respondents were selected from the environmental management representatives and the panel experts from the *ISO 14001* manufacturing firms. These interviews were carried out prior to the pilot test. The questionnaire was pilot tested on 30 respondents by applying the convenient sampling method from 15 firms to validate the questionnaire items before data collection. Data collection was carried out from February to June 2015.

The total population of the study was 643 firms. Thus, this was a census study; all the 643 firms were used in the study. However, after excluding the 15 firms used for the pretesting of the questionnaire, the population of the study was 628. A total of 628 questionnaires were mailed to the respondents. The help from SIRIM was also sought to deliver the questionnaire to the ISO certified firms when the auditors go for the site audit. A total of 268 of them were found completed and usable, yielding a response rate of 43% which is considered acceptable given the low reply expected from mail survey (Sekaran 2003) and generally low response rate for this type of correlational study in Malaysia (Eltayeb, Zailani & Ramayah 2011).

Profiling of the Participating Firms

Altogether 628 firms (FMM directory and SIRIM directory) from the manufacturing firms were involved in the survey. Coincidently, the participating firms came from large firms with more than 201 employees (SME Corp 2013). The majority of the respondents were from firms catering for both the domestic and international market (60.4%), followed by firms serving the international market (39.6%). The majority of firms have more than RM2 000 000 sales turnover.

In addition, when the responding firms were asked to indicate their certification body of *ISO 14001*, it was found that adoption for EMS was much greater under SIRIM as compared to others certification bodies. Firms that were certified under *ISO 14001* (SIRIM) were the highest (91%) compared to firms that were certified under others *ISO 14001* certification bodies (9%) such as SGS United Kingdom Limited (SGS), Lloyd's Register Quality Assurance Limited (Lloyd's), NQA Certification Ltd (NQA) etc. Thus it was also proven that *ISO 14001* as one of the most evident determinations on a firm's commitment towards adopting green efforts.

DATA ANALYSIS

Model Specification

For specification of the latent constructs, the loading for one of the indicators of each first construct was fixed at 1.0 in the model to create a scale for the latent construct. This process was done automatically with the features in *AMOS 22.0* software. The indicators for each underlying construct were grouped together to perform the confirmatory factors analysis (CFA) using the structural equation modeling (SEM) technique. After all the indicators were loaded to their respective latent variable, each construct was estimated individually prior to of all constructs being simultaneously estimated. In each estimated model, indicators that demonstrate poor loading were dropped, provided that they do not weaken reliability of the alpha coefficient, and then the measurement model was re-estimated. This was done to ensure that the data is a good fit to the measurement models. The cut-off value of 0.5 was used as the threshold of the factor loading assessment as recommended by Hu and Bentler (1999).

Environmental Policy, Environmental Training, Regulatory Stakeholder's Pressures, Community Stakeholder's Pressures, Customer Pressures, and Environmental Performance were each categorized into the following items. POL1 to POL5 for Environmental Policy, ET1 to ET7 for Environmental Training, REG1 to REG5 for Regulatory Stakeholder's Pressures, COM1 to COM5 for Community Stakeholder's Pressures, CUS1 to CUS5 for Customer Pressures, and ENV1 to ENV6 for Perceived Environmental Performance.

For the environmental policy (POL), the poor reliability of the POL4 item indicated that it would not be suitable elements of environmental policy latent variable as initially posited. Therefore, this indicator was eliminated from further analysis. As for the environmental training (EnvTra) latent variable, indicators ET1, ET2 and ET7 were removed due to poor loadings. For the regulatory stakeholder's pressure (REG), the poor reliability of the REG1 item indicated that it would not be suitable elements of regulatory stakeholder's pressure (Regulatory) latent variable as initially posited. Therefore, this indicator was eliminated from further analysis. For the community stakeholder's pressure (Community) latent variable, indicator COM4 was removed due to poor loadings. While for the customer pressure latent variable, indicator CUS4 was removed due to poor loadings. Finally, for the perceived environmental performance latent variable, indicator ENV1 and ENV5 were removed due to poor loadings.

Before conducting the analysis for structural modelling, the validity and the reliability of the survey instrument were generated. Data used for final data analysis was 268. As shown in Table 1, the results indicated that all values for the validity and reliability tests were within the acceptable range. The chi-square value of zero, (0.000) for CFA measurement models indicates a perfect fit (Hu & Bentler 1999). For the badness of fit index when RMSEA value is >0.08, some model modifications are required to ensure the model fits the data. The measurement model could be modified by examining the item reliability and factor loading criteria (Fornell & Larcker 1981; Nunnally & Bernstein 1994; Hair, Ringle & Sarstedt 2011). The composite reliability (CR) and average variance extracted (AVE) were calculated from the CFA loadings. Convergent validity was confirmed for all the constructs with the AVE and CR values above the acceptable threshold level criterion, >0.50 (Fornell & Larcker 1981) and >0.7 (Hair, Black, Babin, Anderson & Tatham 2006) respectively (see *Table 1*). Except for items POL4, ET1, ET2, ET7, REG1, COM4, CUS4, ENV1, and ENV5, all factor loadings for each indicator were >0.5 indicating a high convergent validity. All Cronbach Alpha values were >0.70 demonstrating a high consistency of the items used to measure each variable (i.e. environmental policy, environmental training, regulatory stakeholder's pressure, community stakeholder's pressure, customer pressures and perceived environmental performance). Thus, it was concluded that the survey instrument for measuring the variables was valid and reliable.

Table 1. Results for confirmatory factors analysis loadings, validity and reliability test (n = 268).

Variables and Items	Cronbach's Alpha / Composite reliability	CFA loadings	AVE	CFI	TLI	Model fit indices RMSEA	χ^2	*df*	χ^2/df
Environmental Policy	0.843 / 0.845								
• Publishes an environmental policy (POL1).		0.77	0.580	1.000	1.000	0.000	1.982	2	0.991
• Has specific targets for environmental performance (POL2).		0.87							
• Publishes an annual environmental report (POL3).		0.65							
• Makes employees responsible for company environmental performance (POL5).		0.74							
Environmental Training	0.803 / 0.803								
• Participates in international fairs to exchange good-social environmental practices (ET3).		0.68	0.504	1.000	1.004	0.000	1.555	2	0.777
• Contracts consultants for specialized training (ET4).		0.73							
• Frequently integrates with third parties to exchange environmental knowledge (ET5).		0.71							
• Organizes a workshop to discuss experiences and best green management practices (ET6).		0.72							
Regulatory Stakeholder's Pressure	0.827 / 0.829								
My company formulates an environmental plan to:									
• Prevent of non-compliance penalties (REG2).		0.76	0.549	0.998	0.995	0.033	2.573	2	1.287
• Gain specific subsidies and tax exemptions offered by Malaysian government (REG3).		0.77							
• Gain financial incentive offered by international organizations such as United Nations (REG4).		0.74							
• Avoid the threat of current/future government environmental legislations (REG5).		0.69							

Table 1 (cont.). Results for confirmatory factors analysis loadings, validity and reliability test (n = 268).

Variables and Items	Cronbach's Alpha / Composite reliability	CFA loadings	AVE	CFI	TLI	Model fit indices RMSEA	χ^2	*df*	χ^2 /*df*
Acceptable Threshold Levels	Cronbach's Alpha - >0.60	≥0.50	>0.50	>0.90	>0.90	<0.08	-	-	-
Variables and Items	Cronbach's Alpha / Composite reliability	CFA Loadings	AVE	CFI	TLI	Model fit indices RMSEA	*χ2*	*df*	χ2 /df
Community Stakeholder's Pressure	0.799 / 0.801								
My company formulates an environmental plan to:									
• Minimize the negative effect on the natural environment (COM1).		0.77	0.504	0.996	0.987	0.051	3.379	2	1.690
• Prevent/reduce pollutions (COM2).		0.70							
• Gain trust from the community/public (COM3).		0.74							
• Respond to the promotion of health and safety of the society (COM5).		0.62							
Customer Pressures	0.792 / 0.800								
My firm's major customers:									
• Frequently require my firm to adopt green supply chain initiatives (CUS1).		0.77	0.505	0.994	0.983	0.058	3.821	2	1.911
• Withhold their contracts if my firm did not meet their environmental requirements (CUS2).		0.84							
• Have a clear policy statement regarding its commitment to the environment (CUS3).		0.62							
• Frequently encourage my firm to adopt green supply chain initiatives (CUS5).		0.58							

Table 1 (cont.). Results for confirmatory factors analysis loadings, validity and reliability test (n = 268).

Variables and Items	Cronbach's Alpha / Composite reliability	CFA loadings	AVE	CFI	TLI	Model fit indices RMSEA	χ^2	*df*	χ^2/df
Perceived Environmental Performance	0.800 / 0.804								
• Significant improvement in its compliance with environmental standards (ENV2).		0.63	0.508	0.991	0.973	0.074	4.889	2	2.444
• Significant reduction in emission of air pollutants (ENV3).		0.67							
• Significant reduction in energy consumption (ENV4).		0.76							
• Significant reduction in consumption of hazardous materials (ENV6).		0.78							
Acceptable Threshold Levels	Cronbach's Alpha - >0.60	≥0.50	>0.50	>0.90	>0.90	<0.08	-	-	-

Structural Model Evaluation

Using the SPSS AMOS (see *Figure 1*), the structural model was generated to examine these critical factors: environmental policy, environmental training, regulatory stakeholder's pressure, community stakeholder's pressure; and customer pressures performance on the firm's perceived environmental performance. In this study, multiple fit indices such as: (1) chi-square ($\chi 2$); (2) statistics to the degree of freedom (df); (3) the comparative fit index (CFI); and (4) Root mean square error of approximation (RMSEA) were used as suggested by Hair, Black, Babin and Anderson (2010). The goodness of fit index measures of the model was adequately fit.

In structural model (*Figure 1*), this model was improvised and tested by dropping the affective Community Stakeholder's Pressures variable and maintain other variables such as environmental policy, environmental training, regulatory stakeholder's pressures, customer pressures and perceived environmental performance. Two links connected the relations between, (1) Regulatory Stakeholder's Pressures and Environmental Policy; and (2) Regulatory Stakeholder's Pressures and Environmental Training. The structural model was analyzed for model fit.

The minimum acceptable value was achieved in reaching a convergent solution, thus yielding a $\chi 2=328.757$ with 164 degree of freedom, $p<0.001$. The selected goodness-of-fit statistics related to the hypothesized model were examined (*Figure 1*). In this structural model, the modifications were included: (1) removing the Community Stakeholder's Pressure (H4) variable; (2) adding a link between Environmental Policy and Regulatory Stakeholder's Pressure; and (3) a link between Environmental Training and Regulatory Stakeholder's Pressure. This structural model had greatly improved the goodness-of-fit indices (CFI=0.921, TLI=0.908, RMSEA=0.061, df=164, $\chi 2=328.757$, $\chi 2$/df=2.005). The evidence indicated that the model fitted the data well.

Exclusion of Community Stakeholder's Pressures (H4)

Earlier in the model research, community stakeholder's pressure was identified as one of the independent variables. Later, this variable was removed from the structural model after the test of good fitness indices showed poor results. This gave the indication that the community stakeholder's pressure shall not be integrated within the research model. The possible justification is that within the Malaysian environment, community and the NGOs have little influence over the firm's environmental performance. The researcher had explored such observation from the practitioner's perception. During the interview, the senior manager of the semiconductor firm revealed that the local community who stayed adjacent to or close to the industry premises was not disturbed by the firm's activities unless they have direct impacts on their health. She stated that:

"Since I joined this company in 1999, there's hardly any complaint received from the local community on our activities."

Comment 1.0

"Department of Environment (DOE) will come whenever there is a complaint made by the industries or the local community. For instance, a complaint from the neighborhood such as noise generated by the industries, DOE will not directly issue warning letters but will monitor and observe the problems together with the company. DOE will check our effort in solving the problems. The officers from DOE are very supportive and provide us with necessary guidelines."

Comment 2.0

Unlike in America or Japan, the community demands assurance from the industry that the company's operations would not affect their daily lives and activities. The local community also has greater power to question the activities of the local industry due to the accessibility of related environmental information. The local community in these countries involves actively in their national environmental agenda.

Thus, community stakeholder's pressure was found not significant related to environmental performance. Although the studies conducted by Sarkis, Gonzalez-Torre and Adenso-Diaz (2010); and Huang (2005) related to community stakeholder's pressures, showed a positive relationship between this factor to environmental performance. The results showed otherwise, and that this variable shall not be integrated within the research model. One possible justification is that within the Malaysian environment, community and the NGOs have little influence over the firm's environmental performance.

Effects of *ISO 14001* on Firm's Perceived Environmental Performance

The results revealed that only four variables: (1) environmental policy; (2) environmental training; (3) regulatory stakeholder's pressures; and (4) customer pressures had significantly impacted the *ISO 14001* firms perceived environmental performance. However, relationships between community stakeholder's pressures and the perceived environmental performance (H4) were found to be not significant. A further two new relationships were uncovered:

i) Regulatory Stakeholder's Pressure is positively and significantly related to Environmental Policy; and

ii) Regulatory Stakeholder's Pressure is positively and significantly related to Environmental Training.

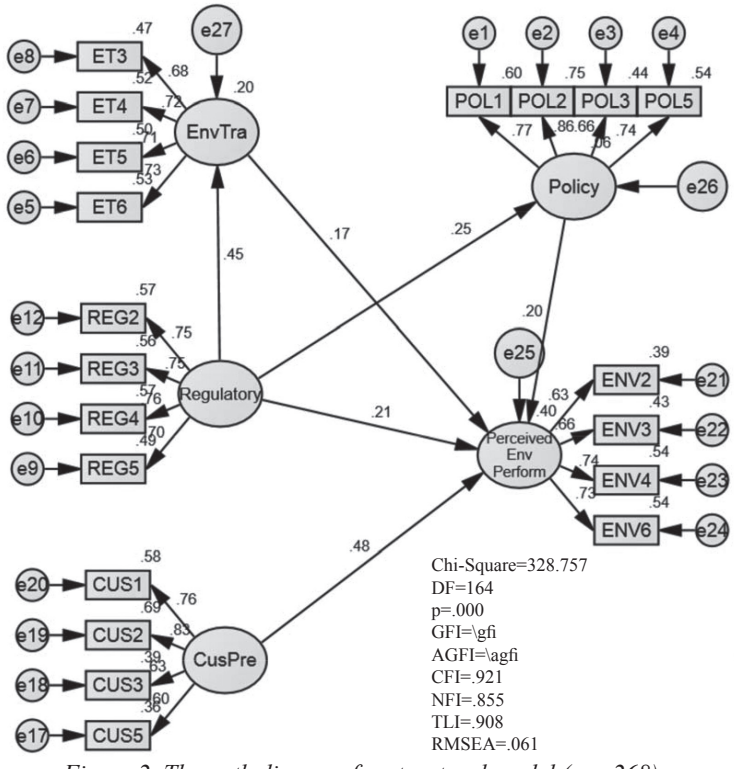

Figure 2. The path diagram for structural model (n = 268).

DISCUSSION AND RECOMMENDATIONS

This study aimed to identify the factors influencing the *ISO 4001* firm's perceived environmental performance. It had implications for the academics, practitioners and policy makers. It adds to the body of knowledge on green practices particularly within the manufacturing settings in Malaysia. The results could be valuable to the managers by providing greater insights into green practices in Malaysian firms.

In this study factors that influence the *ISO 14001* firm's perceived environmental performance was identified. Based on the research findings, it was found that environmental policy, environmental training, regulatory stakeholder's pressures and customer pressures play an important role in the firm's perceived environmental performance. Findings in this study revealed that these underlying factors were proven important to motivate firms to go green.

The firm's adoption of green environment agenda is motivated by internal and external factors. However, most researchers agreed that achieving high success rate on the implementation of the environmental strategy is not an easy task (Gonzalez 2005; Sinding 2000). This research aimed to determine the factors that influence the *ISO 14001* firm's perceived environmental performance. A research model with five hypotheses was constructed. Understanding these relationships is important as it can accelerate the firm's progress toward a more competitive environmental approach. It would subsequently affect its long-term profitability and sustainability in the market.

Overall, the findings from this study motivated firms to include environmental agenda into their corporate strategy as this empirical results have demonstrated that the firm's environmental performance could be enhanced by being green. In addition, this study provided aspiration to firms that have yet to implement EMS practices and to encourage them to be more eco-friendly. This is to minimize the environmental harms in order to preserve the ecosystem. Thus, in order to motivate companies to go green, a more concerted effort on environmental concerns is needed to revive the nation's economic growth, social cohesion and ecological balances (Loke *et al.* 2014). Practitioners, including environmental management representatives, could apply the ideas presented in this study to guide EMS practices.

CONCLUSIONS

The objective of this study was to investigate the factors influencing the *ISO 14001* manufacturing firm's perceived environmental performance in Malaysia. The study found that environmental policy, environmental training, regulatory stakeholder's pressures and customer pressures were the factors influencing the *ISO 14001* firm's perceived environmental performance.

The statistical results supported some of the previous research hypotheses. Employee policy, employee training, regulatory stakeholder's pressures, and customer pressures were found positively and significantly related to perceived environmental performance thereby supporting hypothesis H1, H2, H3, and H5. The results of H1 and H2 hypothesis were in continuity with the studies conducted by AnuSingh and Shikha (2015); Harjeet (2011) whilst H3 and H5 hypothesis results were similar to the studies by Sarkis, Gonzalez-Torre and Adenso-Diaz (2010). The results revealed that the firm's perceived environmental performance was linked to environmental policy, environmental training, regulatory stakeholder's pressure, and customer pressure. One of the hypotheses i.e. H4 failed to receive support. Community stakeholder's pressure was found not significantly related to environmental performance. Although the studies conducted by Sarkis, Gonzalez-Torre and Adenso-Diaz

(2010); Huang (2005) related to community stakeholder's pressures showed a positive relationship between this factor to environmental performance, the results showed otherwise and that this variable should not be integrated within the research model. One possible justification was, that within the Malaysian environment, community and the NGOs had little influence over the firm's environmental performance. This study discovered two new statistically significant relationships between: (1) regulatory stakeholder's pressure and firm's environmental policy; and (2) regulatory stakeholder's pressure and firm's environmental training. Sarkis, Gonzalez-Torre and Adenso-Diaz (2010) support the statistical results of this study. However, there is a lack of statistical evidence to support both of these new findings.

Overall, the qualitative findings supported the survey finding in which the environmental performance of the participating firms in Malaysia was influenced by the following factors: the firm's environmental policy and training, regulatory and customer pressures. It was also found that the pressure from regulatory stakeholders had exerted a strong impact on the firm's environmental policy formulation and implementation as well as related environmental training. This study employed underpinning theories such as resource-based view and stakeholder theory and specifically synthesized both external (regulatory stakeholder's pressure and customer pressures), and internal constructs (environmental policy and environmental training) in influencing the *ISO 14001* firm's perceived environmental performance. The research model presented a synthesized model that gave insights to policy makers and managers on environmental management and sustainability. The findings provided strong support for this study, as well as valuable insights about predictors of firm environmental performance.

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