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Environmental Management Elements and Corporate Environmental Performance of SMEs in Malaysia

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ABSTRACT

This research examined the existence of environmental management practices within private limited manufacturing companies in Malaysia, and the impact on corporate environmental performance. The study examined environmental management elements that include environmental leadership, environmental process management, top management commitment, employee involvement, reward and recognition, environmental quality management programs, and pollution prevention technologies, and their relationship to corporate environmental performance. Thus, the research objective is to investigate the relationship between the firms' environmental management elements and corporate environmental performance. This research has utilized the survey research strategy as an alternative research strategy within the field of environmental management. Questionnaires were sent to 700 private limited companies listed in the Federation of Malaysian Manufacturers (FMM) 2007 directory, and the response rate was 28 percent. These research findings indicate that the companies had environmental management elements in their everyday operations to undertake the problems of environment that is environmental leadership, environmental process management, top management commitment, reward and recognition, environmental quality management program, and pollution prevention technologies. However, employee involvement was not a concern to environmental performance improvement. This research has contributed to the following knowledge: (1) the importance and usefulness of the survey research strategy in investigating environmental management practices within the manufacturers, (2) the

significance of responding to environmental agenda by having environmental management elements in the everyday operations, and (3) the existence of informal environmental management within the private limited manufacturing companies in Malaysia, although not many companies are certified with the formal ISO 14001 standards.

Keywords: *Environmental Management; Corporate Environmental Performance*

Introduction

Over the past decade we have witnessed the meaning of the word “environment” taking on a new meaning and definition, now incorporating the crucial ecological issues. Thanks to the growing community awareness of the environmental accidents and disasters and the media coverage of issues such as Chernobyl, the Bhopal gas tragedy or simply pollution created by manufacturing plants on our door-steps. Organizations¹ have now been forced to develop and implement “earth-saving strategies” if they are to survive in the dynamic competitive market. The trend to adopt these strategies can be found across all the industrial sectors and countries, without exceptions. Accordingly, the review of the literature shows enormous documented information on the measures being adopted by European and US organizations to “do the right thing” and be “environmentally friendly”. These measures were supported by Watson and MacKay (2003) as they noted that businesses were well represented at the 2002 World Summit for sustainable development. There was an emerging consensus that companies carried out social and environmental responsibilities. However, these responsibilities are less observed in the Malaysian organizations. For this reason the researcher wanted to examine and document the awareness and responsiveness of environmental management in the Malaysian firms.

Prior research on the relationship between environmental performance and environmental disclosure indicated that the effects of environmental management systems (EMS) on environmental performance and environmental disclosure have not been examined. In Malaysia, reporting about environmental issues within a company’s annual report remains predominantly voluntary. In the absence of specific environmental reporting requirements, companies may elect to present that information only if it is favourable to them.

Nevertheless, many companies are aware of their responsibility towards environmental issues but their response in this area is questionable. The terminology for social responsiveness has been popularized as a replacement for social responsibility (Arlow & Gannon., 1982). Frederick’s (1994, p. 150) original definition states that social responsiveness “refers to the capacity of a corporation to respond to social pressures”. Carroll (1979, p. 502) claimed that

“...corporate social responsiveness, which has been discussed by some as an alternative to social responsibility, is rather, the action phase of management responding in the social sphere”.

Nasi, Nasi, Philips, and Zyglidopoulos (1997) operationalised the term “corporate social responsiveness” as the willingness of upper management to attend to a social issue. A corporation must be responsive to an issue before it can respond in a meaningful way. However, simply attending to the issue does not necessarily lead to high degrees of social performance (Nasi et al., 1997).

Therefore, the intention of this study is to examine the relationship between social responsiveness and environmental performance of related firms, where the measurement of social responsiveness is based on the application of environmental management and how it improves the corporate environmental performance (CEP). Managers need frameworks or guidelines so that they can understand better what are EMS and its components. However, a great deal of the information surrounding environmental issues is very vague and either legally based or derived from anecdotal stories and case studies (Piet, 1994; Porter & van der Linde, 1995a; Walley & Whitehead, 1994). Managers face difficulty in assessing EMS and the impact of EMS programs because of the lack of appropriate measures. From the literature, there are many opinions and knowledge of EMS, yet proof of the relationships to other constructs is lacking. In order for EMS to be given serious consideration by a firm, a process is required to evaluate what constitutes an EMS. Finally, the researcher proceeds to address the general problem in this current study as:

Does environmental management elements (EME) contribute to the CEP of private limited manufacturing companies in Malaysia?

Literature Review

How can a firm maximize its environmental performance? Some companies have taken their first step towards transforming the nature of their processes and products to be proactive in environmental management (Quazi, 2001). An initiative to improve environmental performance requires a systematic approach to environmental management (Feldman, Soyka, & Ameer, 1996). A growing body of literature stresses the importance of environmental management at both the company and the society levels. For instance, the following lines of research are evident: Identification of the success factors on EMS adoption and implementation (Chin, Chiu, & Pun, 1998), and investigation of the relationship between manufacturing strategy and environmental management (Angell & Klassen, 1999; Newman & Hanna, 1996).

Environmental Leadership (ENVLDR)

Berry and Gordon (1993, p. 3) defined environmental leadership (ENVLDR) as “the ability of an individual or group to guide positive change toward a vision of an environmentally better future”. They contended that the unique characteristics of environmental problems that is, long-term, complex, multidisciplinary, and emotion-charged, require that ENVLDR be “different” from traditional leadership. Previous case study research (for example, Flannery & May, 1994; McCormick, 1989; Sale, 1993; Westley, 1997) has suggested that ENVLDR involves advocating significant changes in current societal and organizational values and in ecologically unsustainable practices.

Also, in review of the ENVLDR literature, the researcher found several case studies of visionary leaders in the environmental movement (Berry & Gordon, 1993; McCormick, 1989; Sale, 1993; Snow, 1992; Westley, 1997), and in for-profit green industrial sectors (Flannery & May, 1994; Schmidheiny, 1992; Scott & Rothman, 1992). Although transformational leadership theory did not explicitly inform these analyses, the researcher found that many of these rich descriptions of environmental leaders were descriptions of transformational leaders. By definition, transformational leaders inspire others with their vision, promote this vision over opposition, demonstrate confidence in themselves and their mission, and inspire others to support their mission (Bass, 1985; Yammarino, Spangler, & Dubinsky, 1998). These leaders create excitement. Working from high-risk positions, they seek out risks, especially where opportunity and rewards appear high (Egri & Herman, 2000).

The alternative leadership style in transformational leadership theory is transactional leaders. From the relevant literature, the researcher understood that transactional leaders are those primarily concerned with subordinates’ task performance in pursuit of meeting organizational goals and objectives. In contrast to transformational leaders, transactional leaders gain the commitment of followers through the processes of contingent reward (reinforcement of desired behaviours) and management by exception (identifying and punishing subordinates’ errors) (Bass, 1985; Bryman, Stephens, & Campo, 1996; Egri & Herman, 2000).

In this study, the researcher attempted to determine the relationship between ENVLDR and organizational internal context, specifically on environmental performance. Bryman et al. (1996) and Pawar and Eastman (1997) proposed that a relationship existed between internal organizational context and leadership, since leadership was embedded within organizations and included an adaptive or context-determined component. Pawar and Eastman (1997) also proposed that some organizations were more likely than others to foster the emergence of transformational leaders, defined as those who created vision and inspired and empowered followers.

Environmental Process Management (PMGT)

Processes have been identified and defined as part of the requirements of ISO registration, and also by flowcharting (Sinclair & Zairi, 1995). This information is documented in the quality system. According to Tenner and DeToro (1992), quality process management offers an inherent competitive advantage over alternative practices because it permits the improvement of quality while simultaneously reducing waste and costs. Similarly, quality improvement as an operations management objective is accepted where quality improvement is also thought to provide the additional benefit of cost reduction as waste is eliminated (Crosby, 1979; Deming, 1986).

Top Management Commitment (TPMGT)

A firm's TPMGT will be more proactive in their environmental effort if their value systems reflect environmental concerns (Anderson & Bateman, 2000; Dutton & Ashford, 1993). Dutton and Ashford (1993) suggested that lack of support from TPMGT posed a substantial barrier to environmental efforts and initiatives.

Therefore, TPMGT commitment is even more crucial in environmental protection than for quality (Chandrashekar, Dougless & Avery, 1999). Ahmed, Montagno and Naffziger (2003) investigate the relationship between environmental concern, environmental effort and their impact on company performance. Their results based on a survey data from sixty companies indicate that there is a positive correlation between environmental concern and effort. In addition, positive correlations between effort and operations efficiency and company image were found. No significant correlation between environment effort and profit was found. It was observed also that TPMGT concern is a key to environmental initiatives.

Given the challenges of communicating and educating the workforce about environmental importance, it is critical to have TPMGT commitment in implementing an environmental strategy to facilitate the education process (Chinander, 2001). Accordingly, TPMGT plays a critical role in how quality values are projected in a consistent manner, and how adoption of the values through the company is determined and enforced (Abas, 1999). Also, the theoretical and empirical quality management literature acknowledges the importance of TPMGT support for the achievement of high levels of quality performance and quality management practices (Crosby, 1979; Elkington & Burke, 1989; Garvin, 1983; Gibson, 1990; Gilbert, 1990; Gryna, 1991; Leonard & Sasser, 1982; Puffer & McCarthy, 1996). The extent to which TPMGT participates in quality activities can be considered as a measure of the organization's commitment to quality (Dahlggaard, Kristensen, Kanji, Juhl, & Sohal, 1998). This must go beyond its participation in the development of a quality mission and

quality policy. Hence, key leaders shape the nature of organizations, and can bring or indeed remove relevance to any particular issue. Therefore, the role of leadership is rightly identified as being a key influence upon environmental strategy (James, Ghobadian, Viney & Liu, 1999). In terms of modes of communication of environmental policies, firms should have Environmental Awareness Program to all employees, whereby management at the corporate office and TPMGT at the business unit facilitate the program as they have to be the first undergo the program.

Employee Involvement (EI)

Social issues are also related to the movement from measuring performance against standards to performance management, and 'quality of working life'. The concepts of employee participation and co-operative management-worker relations underpin the quality working life, and in some cases much of the responsibility for task decisions is moved from managers/supervisors to teams of workers (Pendleton, 1989). Accordingly, employees are one of the key resources of any organization and can have a significant impact on how the organization operates (Zutshi & Sohal, 2003).

Hayes (1994) is amongst those to suggest appropriate techniques to measure empowerment. The paradigm of the "upside down organization" put forward by Albretcht (1988) is essentially about empowerment. According to him, this new model turns the structure of authority upside down and gives greater authority and power to the mass of staff working in organizations (Albretcht, 1988). Given that, along with this empowerment goes greater responsibility for the achievement of quality goals for customers and clients (Abas, 1999).

Accordingly, firms are well equipped to implement pro-environment actions (Takala & Pallab, 2000). Given the abundance of resources at its disposal and its capacity to mobilize a large group of people, the firm as a collective unit is more efficient and effective than any one individual. To enable appropriate actions, the firm needs to inspire all the employees a moral consciousness and responsibility towards the environment. On the other hand, once employed by an organization, an individual has to make sense out of conflicting cues (Viswesvaran, Deshpande, & Milman, 1998). Every member of the firm, not simply the 'employers/owners', definitely stands to gain from such an initiative. Research has shown that individuals attend to the procedural and distributive justice aspects of encounters (Greenberg, 1992).

There would be short-term gain of enhanced social image and profitability that accompanies it. In many organizations, empowerment is given organizational substance by formation of semi-autonomous teams (Abas, 1999). For many organizations, the driving force for total quality is about releasing energies and potential in their staff. The empowered team typically has delegated

responsibilities, shares information, makes decisions within their areas of responsibility, decides between alternative strategies, and generally assumes greater responsibility than under traditional hierarchical structures. According to Abas (1999), empowerment is not unfettered freedom. Self-managed teams have to work within an organization framework where the leadership of that organization has already set the broad strategy and direction.

Thus, in the long run, a safe environment will ensure that there is natural abundance and a constant supply of raw materials required for manufacture of products and a thriving human community to purchase that product. But beyond the objective of making such tangible gains, one has to remember that moral value and action are intrinsically valuable and need to be fostered irrespective of material gains. Again given the ambiguities in any particular encounter, a general perception that their employer is socially responsible may induce employees to desist from counterproductive behaviours. Counterproductive behaviours include rule breaking, daydreaming on the job, withholding effort, damaging property, theft, and padding expense accounts. If the employees view their organization as caring and socially responsible, it may affect their self-concept such that they may desist from counterproductive behaviours (Viswesvaran et al., 1998).

In relation to that, one of the questions of the past decade is how individual environmental concern shapes corporate environmental actions (Avila & Bradley, 1993; Starik, 1995). Starik (1995) argued that ownership empowers executives and enables them to create new businesses, increase innovation, and respond more effectively to changing environments. Ramus and Steger (2000) concluded that employees responded positively with creative ideas in the environmental areas if they perceive strong organizational commitment to the environment. However, a firm cannot possibly promote a pro-environment attitude that would benefit society and the business world, without full support from its employees across all ranks. Positive and confirmatory action within a firm can be achieved only when individuals are committed to the goals and values of the organization (Takala & Pallab, 2000). To ensure commitment, the organization has to recognize its employees into its dominant ideas. Employees have to be socialized into the fact that along with the firm, they are equally responsible for morally right, pro-environmental actions. The firm definitely benefits from cultivation of moral values (Takala & Pallab, 2000).

According to MacLagan (1999), a better alignment of organizational policy and employee's values holds possibilities for enhanced motivation and work performance. To achieve this synchronization of values, the firm can resort to informal insemination of moral values. In that case, group dynamics of informal friendship networks through peer pressure and codes of loyalty would ensure that every individual within the firm would consciously evaluate their moral positions. The firm can also resort to formal processes to announce the fact that it consciously solicits and supports ethical behaviour even if it goes against

its economic interests. Formal means of establishing moral values could include development of formal incentive programs (financial and otherwise) and the conducting of educational seminars and workshops (Takala & Pallab, 2000).

Thus, for the firm to make collective moral action feasible, it also needs the compliance of all the individuals who participate in its collective identity. Compliance is secured not merely through enticing financial incentives but also by cultivating a desire to do the right thing. A firm cannot possibly promote a pro-environment attitude by merely luring or forcing its employees to follow legally defined standards of environmental safety.

According to Takala and Pallab (2000): (1) the legal restrictions on exploitation of the environment are often not sufficiently protective measures; (2) in the case of absence of a moral conscience among individuals of the firm, laws will not be sufficient restrictors of or guides to individual actions. Hence, it is not sufficient for the firm's employees to align themselves to the moral agenda of the firm simply because the firm dictates it.

Therefore, the employees have to be given sufficient flexibility and autonomy to avoid 'herd mentality', take initiative, responsibility and make a choice about doing the right thing (Takala & Pallab, 2000). Self-selected goals are easier to achieve, and when individuals are conscious of the responsibility bestowed on them, they are more likely to adhere to the path of justice. If the firm ignores ethical dictates, it is the employee's duty to take the initiative, protest against unethical activities of the firm, organize collectively and make the firm conscious of its obligation to save the environment. However, in the process of promotion of environment-friendly attitudes, the firm may lose some of its profits as environmentally safe acts can be costly and the firm may not be able to sell a product for the cheapest price. But the firm definitely gains a favourable social and business image, which might boost sales among 'environmentally conscious consumers' (Takala & Pallab, 2000).

In another literature, a study was conducted by the Monash Centre for Environmental Management (MCEM) in collaboration with the Australian Industry Group (AIG). This study involved both interviews and a questionnaire survey of Australian manufacturing organizations to determine the relationship between environmental management practices, productivity initiatives and competitive strategies. A total response rate of 16.1 per cent was obtained in this study. The results showed that in response to the demands of external stakeholders, market and internal pressures such as cost reduction and avoidance of fines, the implementation of environmental management techniques led to increased productivity, business and innovation. In nearly one-half (44 per cent) of the responding companies, employees had the responsibility for the environmental management programs. The increased contribution and involvement of the employees in environmental management programs has also resulted in the effective usage of raw materials and reduction in waste, thus leading to reuse of materials and decrease in pollutant releases.

Rewards and Recognition (RWRD)

Environmental problems, from indirect and often even from direct processes, are not easy to identify. Long term, cumulative environmental problems result in little feedback about their effects along the way. One reason for this is that environmental problems arise from processes that most organizations do not monitor. How many manufacturers try to isolate and publish the effects of avoidable air pollution or increased insurance costs? Thus, many organizations would be surprised at the costs if they tracked the environmental effects (Illinitch, Soderstrom & Thomas, 1998).

Chandrashekar et al. (1999) noted that even disposing of personal computers and coffee machines can cause environmental damage. However, unless there is an organizational culture that rewards employees who go out of their way to find environmentally friendly disposal and design approaches, employees will probably take the quickest path when confronted with such issues. The purpose of a reward and recognition system is to influence employees' performance by reinforcing desired values and behaviour (Abas, 1999). Once a worker is made aware of how his actions influence environmental performance, the worker must have an incentive to take those actions that minimize environmental harm. He must believe that his actions are being measured, and that he will be rewarded (punished) for good (poor) performance. Incentives and recognition awards for model companies have also been offered in many countries (Quazi, 2001).

Behaviour psychologists' claim that people seek rewards and recognition to satisfy psychological needs that exists in each of an individual (Abas, 1999). Although the theory of positive reinforcement is complex, generally rewards can be divided into two groups.

According to Quirke (1966), intrinsic rewards are the internal feelings that one gets that are based on satisfying individual own personal values by doing a "good job", such as the feeling of pride that accompanies a task that is performed exceptionally well, or completing a particular difficult job, learning skill, and so forth. On the other hand, extrinsic rewards are those such as pay increases, bonuses, prizes, awards, public or private recognition, and so forth, which others give when showing appreciation for the performance or accomplishment.

Environmental Quality Management Programs (QPRAC)

Crosby (1979, p. 10) broadly defines quality management as:

A systematic way of guaranteeing that organized activities happen the way they are planned. It is a management discipline concerned with preventing problems from occurring by creating the attitudes and controls that prevent defects from happening in the company's performance cycle.

According to Sohal, Ramsey, and Samson (1992), careful implementation of quality programs can lead to substantial benefits, which generally accrue in the following four areas: (a) reduce cost – possible savings of between 5-15 percent of sales turnover; (b) improved market position – competitively priced products; (c) improved productivity – reduced scrap and rework; and (d) increased capacity – elimination of scrap, re-inspection and value-adding manufacturing operations. Vansina (1990) also noted that, the success of quality management program (QPRAC) depends on unanimity of commitment among employees and the development of shared expectations between the firm and its customers.

Pollution Prevention Technologies (P2TECH)

Environmental technologies are defined as production equipment, methods, practices, product designs and delivery systems that limit or reduce negative impacts of products or services on the natural environment (Klassen & Whybark, 1999a; Shrivastava, 1995a). The development and installation of environmental technologies provide one mechanism for achieving improved environmental performance at the operations level (Klassen, 2000). Over the last decade, the concept of pollution prevention has attracted a great deal of attention, motivated by public policy (Freeman et al., 1992).

In this study, the term pollution prevention is defined as structural investments that make fundamental modifications to materials or processes. Much of the innovation literature differentiates between product and process innovation, and pollution prevention also can be implemented through adapting either the product or process. In fact, the two often are inter-related, and pollution prevention frequently requires a basic rethinking of both the product design and the process for manufacturing.

According to Oakland (1989), one of the most important rules in total quality and a characteristic of its application in the Far East is the attention paid to the detail of the process. Thus, improvement can only be achieved by involving people who have detailed knowledge of the process or in position to acquire it. For example, a detailed flowchart of anything more than the simplest process can seldom be completed without the help of others (Oakland, 1989) since boundaries of responsibility are crossed by nearly all processes in real organizations (Ishikawa, 1985).

Hence, a growing body of research is calling for a shift away from a narrow emphasis on pollution control technology to a broader view that pollution must be reduced before its initial generation, commonly referred to as pollution prevention technologies (P2TECH), source reduction or clean technologies (for example, Freeman et al., 1992).

Corporate Environmental Performance (CEP)

The adage “if you can’t measure it, you can’t manage it” applies to environmental performance (Chapman, 1995). According to the World Commission on Environment and Development (1987, p. 43), sustainable development is that which “meets the needs of the present without compromising the ability of future generations to meet their own needs”. In short, sustainability is achieved when resource extraction (for example, energy and natural resource) from the ecological system occurs within the carrying capacity of the resource base, and when waste transfer to the physical components of the ecological systems does not exceed the assimilative capacity of the particular ecosystems (Jennings & Zandbergen, 1995). From a corporate point of view, sustainability entails fitting organizational systems into broader social and ecological systems (Shrivastava, 1995b).

Although the sustainability of economic development is a shared responsibility of at least, business, governments and consumers (Klassen, 1993; Schmidheiny, 1992; Shrivastava, 1995b), the corporate role in slowing down the planet’s environmental degradation is particularly relevant (Hawken, 1993; Shrivastava, 1995b). Firms have financial resources, technological knowledge and institutional capability, as well as international and long-term vision to find ecological solutions for environmental problems (Schmidheiny, 1992). Furthermore, it is possibly in their interest to spearhead the search for environmental solutions (Coddington, 1993; Welford, 1995) since, in many cases, there is a competitive advantage to be attained from environmental questions (Elkington, 1994; Hart, 1995; Porter & van der Linde, 1995b; Schmidheiny, 1992).

A number of empirical studies performed in this area have returned differing verdicts. Several studies have shown no significant link between measures of environmental performance and profitability (Fogler & Nutt, 1975; Rockness, Schlachter, & Rockness, 1986) or between environmental performance and corporate disclosure practices (Freedman & Jaggi., 1982; Wiseman, 1982). But other studies have shown that better pollution performance improved profitability (Bragdon & Marlin, 1972; Spicer, 1978) and reduced risks (Spicer, 1978), and that federal compliance liability costs and profitability were negatively related (Holman, New, & Singer, 1985). One can challenge these prior studies on methodological grounds. All but one used small, single-industry samples. More importantly, they have frequently relied on self-reported data, failed to control for other predictors of profitability, and used questionable social responsibility measures (Wood & Jones, 1995). Thus, these methodological shortcomings may be responsible for the results to date, that is the relationship between environmental performance and economic performance is vague.

Nevertheless, Hart and Ahuja (1994) and Cohen, Penn, and Naimon (1995) also addressed the environment-performance relationship, with mixed results. The vague results in this area extend to other social issues such as corporate

philanthropy and community relations. Ullmann (1985), Aupperle, Carroll, and Hartfield (1985), and Wood and Jones (1995) have offered surveys of empirical work in this area.

Wood and Jones (1995) argued that this inconclusiveness is primarily due to a key conceptual shortcoming, failure to carefully trace how the social policies examined directly influence firms' bottom lines. The researcher agrees with Wood and Jones that there are conceptual flaws in prior research, but the researcher also suggest that the relationship is more complex than a simple calculus equating higher costs with lower profits.

After all, if the sole driving force for a corporate environmental policy is minimizing tangible pollution costs, then any firm going beyond compliance would forfeit the profits it could gain from simply (and legally) continuing to externalize those costs. The argument based on the resource-based view of the firm will highlight the role environmental policy plays in generating broader organizational advantages that allow a firm to capture premium profits. In a sense, it could be said that the same policies that internalize negative environmental spill-over can pay off by simultaneously generating greater positive organizational spill-over that accrue internally and privately to the firm.

Accordingly, Jimenez and Lorente (2001) suggested that firms can contribute individually towards sustainable development by innovating in their products and processes in order to use raw materials more efficiently, improve their corporate or product image, reduce the risks stemming from environmental responsibility or improve working conditions. These innovations may contribute towards simultaneously achieving economic, environmental and social objectives. In this way, the so-called win-win-win situation has arisen, where there is an improvement in environmental performance, customer satisfaction, and company performance (Elkington, 1994; Florida, 1996; Maslennikova & Foley, 2000). However, in order to move towards environmental sustainability, firms need to recognize that environmental matters do not merely restrict their actions, but rather form part of their own strategy (Hart, 1995; Hoffman, 2000; Shrivastava, 1995b).

The general debate over the relationship between the company and environmental sustainability has taken root in the field of operations management (Angell & Klassen, 1999; Gupta, 1995; Inman, 1999). There are at least two circumstances that relate environmental strategy with operations. First, it is generally accepted that the firm's main contributions to sustainable development arise from the integration of environmental requirements into industrial products and processes (Schmidheiny, 1992; Porter & van der Linde, 1995a). This is because the development and implementation of environmental technologies necessarily have to take the operations area into account (Azzone & Bertele, 1994; Shrivastava, 1995a). In fact, product and process technologies make up the basic cost and ecological impact parameters, since they determine the types

of raw materials used workers' health and safety, ecological risk, materials efficiency, waste generated and disposal treatment (Sarkis, 1995). Second, there are both similarities and synergies between environmental protection improvement activities and programmes and the operations methods and techniques already in place (Corbett & Van Wassenhove, 1993; Imam, 1999; Inman, 1999; Sarkis, 1995). Thus, programmes for keeping pollution under control, zero waste, or design for the environment may reinforce traditional operations management techniques and procedures such as statistical process control, total quality control, TQM, or design for manufacturability. Thus, Gupta (1995) suggested that environmental management programmes and policies should be developed taking into account and reinforcing operations strategy. This implies widening the objectives and performance evaluation of this area in order to include environmental questions (Angell, 1993), as well as orientating the main operations decisions (Angell & Klassen, 1999; Gupta & Sharma, 1996; Imam, 1999; Inman, 1999).

Consistent with Angell's (1993) proposal, the researcher suggests that including environmental performance as an operations objective could be the first step towards developing an environmentally sustainable strategy. In this way, operations management would support the organization's competitive edge improving environmental performance, as well as the traditional objectives of cost, quality, time and service. Shareholders will also benefit when the firm's environmental performance continues to improve over time because of the upgrades to its EMS (Feldman et al., 1996). Eco-strategies (1997) suggested that: (1) Company's performance may improve by incorporating EA into an existing EMS; and (2) Company's performance may improve by better management of environmental costs, thereby benefiting the natural and human environments.

Total Quality Environmental Management (TQEM)

Similar to TQM initiatives where empowerment makes everyone responsible for quality in a manufacturing setting, organizations need to mature environmental responsibilities to that similar level. The elimination of a "technical" environmental staff is one such structural issue that will be affected by integrating total quality environmental efforts. This change requires environmental operational concerns to be addressed by manufacturing employees, not just technical staff. Integrating this environmental management knowledge into everyday workforce practice will require similar efforts as diffusing quality management responsibility. This is the role of TQEM (Dambach & Allenby, 1995; Hanna, Newman, & Johnson, 2000; McGee & Bhushan, 1993; Sarkis, 1998; Weaver & Vorhauer, 1993). On categorization that organizations can effectively use and which has been recommended by the United States Environmental Protection Agency, is based on the Malcolm Baldrige criteria

(Sarkis, 1998). Sarkis (2001) noted the categorization as: (1) Environmental leadership; (2) Strategic environmental quality planning; (3) Environmental quality management systems; (4) Human resources development; (5) Stakeholder emphasis; (6) Environmental measurements; and (7) Environmental quality assurance.

Continuous environmental deterioration over the last few decades has drastically increased the consumer's awareness of environmental problems (Min & Galle, 2001). Carter and Narasimhan (2000) predicted that consumer's awareness of environmental issues would heighten rapidly in this decade. Stronger consumer's sentiment for environmental accountability coupled with tougher environmental statutes has pressured a growing number of companies to develop "proactive" environmental programs. Proactive environmental programs include making "green" (environmentally-sound) products, developing reusable packages, conserving energy, reducing waste, recycling, creating and environmentally sensitive corporate culture, and integrating TQEM into the firm's planning processes (Carter, Ellram, & Ready, 1998; Handfield, Walton, Seegers, & Melnyk, 1997).

The underlying philosophy of TQEM is that the principles of TQM apply to environmental improvement too (Angell & Klassen, 1999; Madu, 1998). TQM can be viewed as a holistic approach to quality management, including continuous improvement, proper training and empowerment of workers, appropriate incentives, and quality management systems (Corbett and Pan, 2002). TQEM carries the same philosophy into the environmental realm.

The environmental literature tends to emphasize the opportunities available to companies willing to pursue them, rather than focusing on efficiency-related issues, such as cost reduction (Ghobadian, Viney, James & Liu, 1995). In particular, the opportunity to achieve competitive advantage, through environmental excellence is stressed (Ottman, 1992).

Also, Chandrashekar et al. (1999) argued that time-proven techniques that have helped reduce quality costs and improve market share can provide similar results when applied to many environmental problems.

In the last few years, companies have been modifying their managerial practices. The process of environmental management, variously described as strategic environmental management (Barron, 1994), sustainable quality management (James, 1994, p. 68) or TQEM (Ghobadian et al., 1995), involves drawing corporate environmental objectives close to the heart of corporate business strategy. Lent and Wells (1992, p. 382), in their review of US corporate attitudes, have shown that this process is becoming increasingly common in the USA, while Polonsky, Zeffane, and Medley (1992, pp. 36-37) have indicated a similar movement towards this panacea in Australia.

In addition, Ghobadian et al. (1995) recognizes that the underlying theme of management is making the environment pay that is, the search for a bottom line repayment on investment. This concept has been strongly emphasized by

industrialists writing on the environment (Maucher, 1993, pp. 7-8; Neimeth, 1993, pp. 209, 31). McCloskey and Maddock (1994) argue that while the environment is now a competitive issue, success will be measured by the development of policies which are both sound in a commercial sense and also environmental logical.

Techniques based on the TQEM philosophy (which is based on integrating TQM methods and environmental management methods) are already being used by many organizations (Chandrashekar et al., 1999). The argument follows that many environmental policies have shared values and objectives with TQM policies (Ghobadian et al., 1995), and are therefore compatible. For instance, pollution prevention and waste reduction are identical, and both contribute to a policy of continuous improvement (James, 1994, p. 64). This too supported a change from TQM to TQEM (Corbett & Cuttler, 2000).

TQEM is becoming a popular technique used by companies to integrate environmental concerns. The literature does spend time considering the practical benefits of environmental excellence. This strand of writing associates the environment with the burgeoning total quality movement. This has also supposedly become a key change in their behaviours, for example the involvement of the whole organization in TQEM with the direct participation of senior managers (Klassen & McLaughlin, 1993). In this sense, companies have a manager, and even a department, whereby in an exclusive way devoted to environmental issues in order to gain a higher level of development in relation to environmental management (King, 1993).

Nevertheless, an environmental manager or department is insufficient in this wider perspective of environmental management. Complementarily, the environmental manager has to be closely linked with the environmental problems and practices (Brio, Fernandez, Junquera & Vazquez, 2001). Besides, he must support and reinforce continuous improvement (Kitazawa & Sarkis, 2000; Madu, Kuei, & Lin, 1995). In spite of the urgency to respond to environmental requirements, managers' attitude towards the environment is not evolving in the same way in all companies. There are several researchers who have studied the differences in relation to environmental attitudes among managers (Henriques & Sadorsky, 1999; Vastag, Kerekes, & Rondinelli, 1996).

Environmental actions must be based on prevention and best practices of the company (Brio et al., 2001). In order to enhance their effectiveness, they require exclusive control and co-ordination that allow the analysis of achievement of environmental objectives and goals. Besides, they require control of weak points of the system for fostering its continuous improvement.

TQEM has led to an enhancement of product quality and corporate performance as well (GEMI, 1992). It is assumed that, given the human propensity for consumption, environmental degradation will continue (Ahmed, Montagno, & Firenze, 1998). For example, US companies have traditionally been reactive to environmental concerns (Qassim, 1994). Recently, some big

companies (Damian, 1995) have become more proactive in their environmental concerns (Arlow & Gannon., 1982; Holmes, 1994; May & Flannery, 1995; Sarkis, 1995). Another example, Procter and Gamble enhanced its TQM (Hardin, 1986; Klassen & McLaughlin, 1993) philosophy to TQEM. Environmental issues affect different areas of a firm's operation such as manufacturing, raw material procurement, energy usage, marketing, product development, disposal and waste management. Firms often use environmental management techniques such as Life Cycle Analysis (LCA), and TQEM to improve their environmental performance (GEMI, 1992; Wolters, James, & Bouman, 1997).

The underlying philosophy of TQEM is that the principles of TQM also apply to environmental improvement (Angell & Klassen, 1999). Though the potential of applying quality control tools to environmental management has been pointed out before, besides the perception of the advantages and difficulties (Brio et al., 2001), the current study goes beyond those works by highlighting other dimensions of corporate responsiveness as a tool to improve their environmental performance. The extensive review by Angell and Klassen (1999) supports our belief that these questions have not yet been explored (with the exception of Brio et al., 2001).

However, the difference of this current study from previous studies is in the time period, culture and type of industry.

Methodology

Surveys were mailed with a cover letter and a business reply envelope to the top executive of each firm in the sample. These individuals were requested to either complete the survey themselves or refer it to the most appropriate person in the firm for completion. The cover letter explained the purpose of the study. Complete confidentiality of the respondents was guaranteed. The high response rate is attributed to the follow-up telephone calls to managers in the sample. The questionnaire was administered in English as Malaysia was a member of the British Commonwealth, English is a well-understood language, particularly in the business setting, and no translation was required. In order to test for non-response bias, the respondents were assessed with an analysis of variance between the early and late respondent groups (Armstrong and Overton, 1977).

The sample was drawn with the aid of the 2007 issue of FMM Directory. However, all other companies except private limited manufacturing companies were eliminated from further consideration. Referring to the number of sample size noted by Krejcie and Morgan (1970, p. 607), 322 companies were supposed to be selected from the population, after deducting samples for the pilot study. The researcher used random sampling. Also, the sample size obtained for the study was appropriate according to the rules of thumb proposed by Roscoe (1975, cited in Sekaran, 2000), whereby sample size larger than 30 and less than

500 are appropriate and the sample size should be several times (preferable 10 times or more) as large as the number of variables in multivariate study, including multiple regression analyses. However, the researcher selects 700 companies because one of the limitations of mail questionnaires is low response rate.

Results and Discussions

Companies in the sample were randomly chosen from FMM Directory 2007. Approximately 700 questionnaires were mailed and 210 were returned, but only 196 were usable representing a response rate of 28 percent. They are all private limited companies. The responding companies were located in five regions. 49 percent of them are from the Central Peninsula (Perak, Selangor, Federal Territory and Negeri Sembilan). It is assumed that the distribution of industries observed is reasonably representative of the distribution of industries in Malaysia. The annual company sales growth ranged from less than 0 percent to over 20 percent, the median being 10 percent. Eighty-three percent of the firms employed 300 or less people, and seventy percent had total assets of 100 million dollars or less.

The companies included in the study came from a wide range of businesses including food processing, fabrication, paper manufacturing, automotive, assembly and chemical manufacturing. Other manufacturing activities include manufacturing of jewellery, musical instruments, sports goods, and games and toys, and in this study, it comprises 13 percent of the total 196 respondents. 59 percent of the companies were locally owned, 30 percent were owned by foreigners, and 11 percent were joint venture.

The adjusted coefficient of determination (R^2) indicates that 56.2 percent of the variation in the dependent variable is explained by variations in the independent variables. This signifies that 56.2 percent of the variation in CEP was statistically explained or accounted for by the regression equation. This R^2 was statistically highly significant, with $F = 18.904$ and $p < 0.0001$.

Thus, the general expression in the form of regression equation can be stated as follows:

$$\text{CEP} = 42.239 + 0.550 \text{ ENVLDR} + 0.645 \text{ PMGT} - 0.889 \text{ TPMGT} - 0.463 \text{ EI} + 1.674 \text{ RWRD} + 0.777 \text{ QPRAC} + 0.612 \text{ P2TECH}$$

The 7 predictor variables were observed to positively correlate to CEP (the dependent variable) as indicated by the positive R-value of .771 in table below. A computed R-square value of .594 suggests that the corporate social responsiveness related variables are responsible for more than 59 per cent of the variance in CEP with a standard error of estimate of 15.42.

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
Model				R Square Change	F Change	df1	df2	Sig. F Change	
1	.771	.594	.562	15.4181	.594	18.904	14	181	.000

a. Predictors: (Constant), ENVLDR, PMGT, TPMGT, EI, RWRD, QPRAC, P2TECH. b Dependent Variable: CEP

Summary of Regression Analysis (n = 196)

Independent variables	Expected sign	Actual sign	Coefficient	Standard error	t-test level	Significance
Environmental leadership	+	+	0.550	0.269	2.045	0.042
Environmental process management	+	+	0.645	0.323	1.994	0.048
Top management commitment	+	-	-0.889	0.363	-2.448	0.015
Reward and recognition	+	+	1.674	0.545	3.072	0.002
Environmental quality management program	+	+	0.777	0.299	2.599	0.010
Pollution prevention technologies	+	+	0.612	0.212	2.892	0.004

Adjusted R² = 0.562 F Ratio = 18.904 Significant = 0.0000

Environmental Leadership (H₁): The study found empirical evidence to support the hypothesis that environmental leadership is positively relate to corporate environmental performance.

Also, it was found from the multivariate analysis that environmental leadership is a predictor or a significant explanatory variable of corporate environmental performance.

These findings confirm the theory that the degree of improvement of corporate environmental performance increases if the degree of environmental leadership increases (while other factors being remained constant) and vice versa. The findings are consistent with the results of an indirectly related study by Shrivastava (1994) with regard to environmental leadership and performance.

Environmental Process Management (H₂): Environmental process management was found to be significantly and positively related to corporate environmental performance. The perceived degree, to which the environmental

process management is accepted by the employees, will be positively related to the perceived degree of corporate environmental performance. Also, it was found to be a significant explanatory factor or a predictor of corporate environmental performance. Provided that other factors remain constant, environmental process management leads to corporate environmental performance improvement. The findings are consistent with the results of an indirectly related study by Adam et al. (1997) with regard to environmental process management and financial performance. The findings also support the legitimacy theory argument, which proposed that it provide an interpretation to the companies to deal with issues concerning the environment (Nasi et al., 1997).

Top Management Commitment (H_3): A significant negative relationship was found between top management commitment and improvement of corporate environmental performance. The study of Zutshi and Sohal (2003) found that, following the implementation of the improvement programmes, the company enjoys the benefits from both its positive impact on its bottom line and from enhanced employee morale and work environment. This is due to the fact that, if the employees perceived total commitment from the top, they are more accepting and committed towards the processes and changes.

However, in this study the employees' involvement and top management commitment are highly correlated but negatively related to corporate environmental performance, and only the top management is significant to corporate environmental performance.

Surprisingly, the findings showed that when the top management commitment increases, the improvement of corporate environmental performance decreases, and this may be related to the employee involvement. Any change or alteration in the routine, daily organizational operations can result in resistance from the employees. This can be attributed to human psychology as nobody likes to change the old, set ways of completing tasks. For that reason the employees would attempt to impede the implementation of a process or system, as they are reluctant to change their old habits. Similarly, if any programme or policy were imposed on them, the response of denial would be more aggressive, leading to delays and ultimate failure of the program.

According to Dahlgaard et al. (1998), the top management should sustain their commitment to quality improvement initiatives and take an active role in all quality management activities. This statement is in contrast to the finding of this study. May be this result is a relic in which top management commitment was operationalized and thus, while this finding is provocative, further research with better measures is required. In terms of theory, the findings support the life cycle theory developed by Ackerman (1975). Based on Ackerman's (1975) first phase that is policy, the top management identifies the issue as one that deserves his or her personal attention, states the organization's concern with the issue, and formulates a general policy to deal with the issue.

Employee Involvement (H_4): An insignificant and inverse relationship is found in the relationship between employees' involvement and corporate environmental performance. This inverse relationship may be interconnected with the size of the firms. When the firms are small, the number of employees is less, and also, may be the employees are not from the managerial levels.

Thus, they are not involved in the decision making, which emphasizes on pollution prevention strategies. The employees will just follow whatever policy lay down by the top management. The staff, not just the managers, must also be aware of what is involved.

For instance, if they are in-charge of waste disposal, they should know what waste they are disposing.

Reward and Recognition (H_5): A significant positive relationship was found between reward and recognition and corporate environmental performance. Further, reward and recognition was a strong predictor of corporate environmental performance. It was hypothesized that there is a relationship between reward and corporate environmental performance. The study found empirical evidence to support the hypothesis.

The findings confirm that the more the management recognize and give rewards to the employees, the better they work for improvement of corporate environmental performance, while other factors being constant and vice versa. The findings confirm empirically the argument of Lawler (1994). Also, the findings are consistent with the explanations of Kitazawa & Sarkis (2000).

Environmental Quality Management Program (H_6): The study found empirical evidence to support the hypothesis that quality practices is positively related to corporate environmental performance. Also, it was found from the multivariate analysis that quality practices are a predictor or a significant explanatory variable of corporate environmental performance. These findings confirm the theory that the degree of improvement of corporate environmental performance increases if the degree of quality practices increases (while other factors remained constant) and vice versa. The findings are consistent with the results of a related study by Sohal et al. (1992) with regard to quality programs and elimination of scraps.

Pollution Prevention Technology (H_7): Pollution prevention technology was found to be significantly and positively related to corporate environmental performance, and also a predictor of corporate environmental performance. It was hypothesized that there is a relationship between pollution prevention technology and corporate environmental performance. These findings support the study of Dutton and Ashford (1993) whereby, technological innovation has been accepted for sustained improvements in environmental performance.

Conclusions

The management is faced with increasing pressure to address the environmental concerns and expectations of diverse stakeholder groups. In an effort to meet these challenges, organizations have shown their corporate social responsiveness by developing environmental management systems to provide a structure for protecting the environment and managing environmental issues. This research presented a description of selected characteristics of the environmental management systems of privately-held manufacturing companies to facilitate an understanding of the current state of environmental management and to provide a basis for additional research.

This study has shown that the corporate social responsiveness related variables that is, environmental leadership, environmental process management, top management commitment, rewards and recognition, environmental quality management programs, and pollution prevention technologies seem to have an association with the corporate environmental performance. The findings suggest manufacturing firms should attempt to increase the degree of environmental leadership for better corporate environmental performance. In relation to that, environmental process management, reward and recognition, environmental quality management program, and pollution prevention technologies also relates significantly to corporate environmental performance. Hence, the manufacturing firms (small, medium and large) should make a serious effort so that all these environmental management elements will improve corporate environmental performance, and implicitly will enhance the economic performance of the firms.

Hence, corporate social responsive activities may be viewed as important in sustained and improved corporate environmental performances. It is hoped that this study will help throw some light on the importance of corporate social responsive activities and how they can yield benefits to the organizations in relation to environmental agenda. To the academia, it is hoped that this maiden attempt at uncovering the 'corporate mystery' of corporate social responsiveness in respect to Malaysian manufacturing companies will serve as an important catalyst to further investigations and discussions of the subject so that ultimately the whole truth shall prevail.

In conclusion, responses to environmental issues are already beginning to mirror those in the quality movement. It would be a stretch to claim that quality and environmental issues are the same.

Nonetheless, some quality and environmental issues are similar and in a few cases, identical. Managers who ignore the environment will have to play catch up later or go out of business. Therefore, it makes sense to be proactive. Further, environmental issues are only the tip of the iceberg. The main reason for improving processes is not just economics or regulations; it is a fact that this is the right thing to do. Best of all, in the long run, it is free.

Endnote

- ¹ The words “company”, “firm”, and “organization” have been used interchangeably within this paper.

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