

**Business Strategy and the Environment Conference, Devonshire Hall, University of Leeds, UK
13th & 14th September 2004**

**MANAGING ENVIRONMENTAL RISKS IN TURKISH AUTOMOBILE
SUPPLYING INDUSTRY FOR SUSTAINABLE DEVELOPMENT AND
COMPETITIVE ADVANTAGE**

I. Hakki ERASLAN

Department of Management

Bogazici University

34342 Bebek/Istanbul/Turkey

E-mail: hakkie@urak.org or eraslan44@hotmail.com

Dr. Melih BULU

National Competitiveness Research Institution (URAK)

Unalan Mh. Ayazma Cd. Camlica Is Merkezi A/3

Uskudar/Istanbul/Turkey

E-mail: melihb@urak.org

ABSTRACT

Corporate social responsibility (CSR) was often seen as an elaborate form of philanthropy in the past, but now it is much more than this concept. CSR is responsible behavior in the impact of business on society, is a term describing a company's obligation to be accountable to all of its stakeholders, and broadly refers to operating a business in a manner that meets or exceeds the ethical, legal, commercial and public expectations that the society has of business, whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis (Daft, 2000: 143; EC, 2002: 6).

CSR is the commitment of business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to enhance their quality and welfare of life (Tinto and Watts, 2000).

Although, there has been some theoretical and empirical debate regarding the positive and negative relationship between corporate social performances and firm financial performance. CSR has become a crucial element of firms' efforts to foster sustainable and equitable development within countryside and worldwide since last two decades. Because, in today's business environment sustainable business success and shareholder value cannot be achieved solely through maximizing short-term profits, but instead through market-oriented yet responsible behavior. Thus, companies, as well as automobile supply manufacturers, should be aware that they could contribute to sustainable development by managing the operations in such a way as to enhance economic growth and increase competitiveness whilst ensuring environmental protection and promoting social responsibility, including consumer interests (COM, 2001, 2002).

A recent survey by PricewaterhouseCoopers of 140 chief executives of U.S.-based multinational companies found that 85 per cent of them believe that sustainable development will be even more important to their business model in five years than it is today. As many more organizations decide that they must address the principles of CSR; there is a growing need for tools to help them to define and address what CSR means and how to implement it throughout their organizations. At its General Assembly in Stockholm, Sweden, in September 2002, the International Organization for Standardization (ISO) decided that the time had come to consider the value of developing management standards on CSR. This resolution recognized the value of the ISO 14001 environmental management system (EMS) standard in improving the efficiency of corporate environmental management, and built on a report prepared by the ISO Consumer Policy Committee (COPOLCO) on the value of CSR standards (IISD, 2004).

Accordingly, CSR has emerged an important issue, and protecting the environment is one aspect for organizations to address if they are to behave in a socially responsible manner. Environmental management is a continuous process but those businesses that develop and implement an Environmental Management System (EMS) reap long-term sustainable competitive advantage (Rajendran and Barrett, 2003: 2).

In this research ISO 14001, which specifies the requirements for a firm's EMS, is examined, and in particular the research on the costs and benefits of this standard for Turkish automobile supplying firms is addressed by regarding sustainable competitive advantage. To obtain the objective of the research, site visiting and in-depth-interviews were conducted in different Turkish automobile supplying firms. Thus, a major impacts, costs and benefits are determined, and a number of environmental strategies are suggested for sustainable competitive development and advantage.

According to research result, the Turkish automobile supply firms should promote sustainable development as part of its mandate to create the foundation for a more productive, competitive, knowledge-based economy. The promotion of EMS is an important component of this overarching objective and can help to support other policy priorities including improving Turkish automobile firm's innovation performance, employment growth, and income growth.

INTRODUCTION

To achieve and maintain competitive advantage firms need to be appropriately positioned within their industry (Porter, 1980) and focus on the development and use of firm specific core competencies (Barney, 1991). 'Going green' or the adoption and use of an environmental management system can be a source of competitive advantage (Aboulnaga, 1998; Boiral and Sala, 1998), while environmental initiatives can be used to leverage a firm's innovative capability (Roy and Vezina, 2001). Porter and Linde (1995) states that environmental regulations push firms to innovate in their products and process which is very important for being competitive. Because of domestic environment regulations, firms develop new products and efficient processes. Therefore, these firms have an advantage in international markets.

An environmental management system (EMS) is based on the concept of continuous improvement in all aspects of the firm's environmental performance. ISO 14001, introduced in September 1996, specifies the requirements for an EMS, and applies to those environmental aspects over which the firm either has control or could be expected to have an influence. ISO 14001 follows the Plan-Do-Check-Act model and shares a number of features in common with ISO 9000, hence firms already certified to ISO 9000 can find synergies between the standards, and can act as a framework for significantly improving organizational performance (Stapleton, Glover and Davis, 2001), but although the number of certified firms has grown these firms are more likely to be larger than small (Bansal, 2002).

ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) AND ISO 14001 FOR SUSTAINABLE COMPETITIVE STRATEGIES

Environmentalism first occurred during 1960s when social activism pushed government and regulators into legislating command and control regulations (Harding et al, 2003). The environmentally sensitive issues reflected to societies, thus people have become more responsible at the end of 20th century. Boiral and Sala (1998) indicates that many businesses strategically concern environmental issues and want to become a social player and this derived from increasing concern for the natural environment by consumers. World demand is rapidly moving in the direction of valuing low-pollution and energy/resource-efficient products with higher resale and scrap value (Porter and Linde, 1995) Likewise concern for environmental issues, interest in sustainable development is growing year by year. According to IISD sustainable development means that adopting business strategies and activities that meet the needs of enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future for the business and enterprise (IISD, 2004).

Societies' sustainable development and environmental protection concerns push business to approach systematically to the environmental activities. Tien, Chung and Tsai (2004) point out that traditional *end-of-pipe pollution control* method to solve environmental problems at every stage causes duplication of personnel and equipment, which may lead company to lose its competitive position due to associated costs of duplicated usage of resources. To stay competitive enterprises should have lower costs than rivals have or they should offer a different product with premium value (Porter, 1980). Enterprises can be more competitive by controlling ecological variables (Shrivastava, 1995). As a result of these advancements Environmental Management System (EMS) has been evolved. EMS is a system, which approaches systematically to the environmental problems, and eliminates the duplicated costs incur in *end-of-pipe control* method, because it offers macro perspective about environmental problems and it directs company produce *green* products. Today, people become willing to pay more money for green products that mean companies can differentiate their products by making it more environmental friendly. Within the perspective of EMS, environmental design is an important strategic issue in the 21st century, and has become an integral part of perpetual growth (Tien, Chung and Tsai, 2004). EMS is defined as the part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy (ISO 14001: 1996), which simply provides a firm with a highly structured framework for developing an environmental policy (Boiral and Sala, 1998).

The EMS models are built on the *plan, do, check, act* model to ensure that environmental issues are identified, controlled and monitored such as ISO 14001. The ISO 14001 standard meets the needs of company to establish or improve an EMS (Babakri, Bennett and Franchetti, 2003). ISO 14001 standard does not define the specific environmental performance goals that an organization should attain (IISD, 1996). Instead, it provides a framework that helps a company to achieve its own objective and reach its own targets over time (Kwon, Seo and Seo, 2002). ISO 14001 standard has five fundamental steps; (1) development of environmental policy, (2) planning, (3) implementation and operation, (4) checking and corrective action, and (5) management review.

Moreover, the major steps can be explained as for the following (Boiral and Sala, 1998; Aboulnaga, 1998; Rondinelli and Vastag, 2000; Schaarsmith, 2000):

- *Development of environmental policy*: In this step top management develops an environmental policy that should be related with the current and potential environmental impacts of the company's products and services, consumed material, pollution prevention, and waste reduction. Policy should also include commitments regarding compliance with relevant law and regulations.
- *Planning*: Planning process covers identification of controllable environmental aspects, legal and regulatory requirements, a set of clearly defined applicable targets and objectives, based on its environmental situation that will lead company improve its environmental performance and a set of environmental management program by which company will be able to achieve its objectives and reach its targets.
- *Implementation and operation*: Roles, responsibilities, and authorities of all employees should be assigned. Employees, may have significant impact on environment, must get the required training and information that will increase their environmental awareness. In addition, appropriate documentation of core elements and individual environmental responsibilities must be provided. Emergency preparedness in order to handle accidents is another important issue that must be taken into account in this step.
- *Checking and corrective action*: Systematic monitoring and measurements of discharges to the environment in order to track the environmental performance with the objectives and targets should be implemented in this step. Calibration and maintenance of measurement and monitoring equipments are necessary actions for this step. At the end of this step company should adjust system by corrective and preventive actions in order to prevent future occurrence, and keep records regarding environmental management and EMS audits.
- *Management review*: Management checks EMS regarding suitability, effectiveness and adequacy of the EMS at convenient periods, which will assure sustainable environmental performance.

ISO 14001 Certification Motivators

ISO 14001 let also companies improve their environmental performance and long-term profitability by developing systematic measurement, monitoring, and reporting of environmental impacts of company that will enhance customer and stakeholders' satisfaction. There may be several motivations for ISO 14001 certification. One of them is to pass barriers of markets that require environmental management system (Boiral and Sala, 1998). Adopting an EMS by ISO 14001 may be also derived from national regulations, customer pressures from domestic and international markets. There are also internal motivators such as integrating pollution prevention programs, improving environmental capability, and enhancing employee involvement in environmental activities (Morrow and Rondinelli, 2002). However, these motivators for ISO 14001 certification may vary from company to company.

Potential Costs and Benefits of ISO 14001 Certification

ISO 14001 certification may allow firms reach global markets without limitations originated from environmental issues (Miles and Russell, 1997). Green differentiation may produce economic value, because it enables enlargement of market access globally for eco-friendly products (Roy and Vezina, 2001).

Many authors mention the potential advantages of ISO 14001 in creating competitive advantage and sustainable development (Aboulnaga, 1998; Boiral and Sala, 1998; Kwon, Seo and Seo, 2002; Miles and Russel 1997; Morrow and Rondinelli, 2002; Schaarsmith, 2000) as:

- ✓ *Environmental performance*: Systematic approach of EMS to the environmental problems provides company chance of air and water emissions reduction, prevention of environmental risks and accidents, and regulation violations. Positive achievements in environmental performance also improve reputation of the company in public image.
- ✓ *Efficiency*: Focusing on the energy conservation and waste reduction help company reduce their energy inputs, waste, and scraps. Combined with recycling efforts, company can increase its process efficiencies and reduce input costs that would be a source of competitive advantage.
- ✓ *Entrance to market*: Customers especially in USA and Europe stipulates ISO 14001 certification to their suppliers that would ensure competitive advantage to ISO 14001 certified suppliers among non-certified suppliers. In addition, ISO 14001 can be seen as an indicator of environmental responsibility; hence, ISO 14001 certified company can market its products international area with less effort due to global environmental concerns.
- ✓ *Corporate Culture*: Clearly documented goals, responsibilities and authorities may contribute awareness of environmental issues among employees, communication between managers and employees, job training and employee motivation that would reinforce corporate culture.
- ✓ *Productivity and Innovation*: Efforts spend on making products and processes environmental friendly and of high quality can be regarded as a source of productivity and innovation. Innovation capacity also depends on communication with environment-related interest groups that would increase environmental know-how of the company.

According to Boiral and Sala (1998), ISO 14001 is an extensively documented management system. A questionnaire that has been conducted to 584 firms in United States, and has been responded by 177 firms including 69 automotive firms, indicates that the greatest obstacle for ISO 14001 implementation is high cost of certification (Babakri, Bennett, and Franchetti, 2003). However, companies should bear in mind that benefits from cost cutting activities, increase in sales may exceed costs in long run, and company can achieve sustainable competitive advantage.

METHODOLOGY OF RESEARCH

The Turkish automotive supply industry emerged in the 1960s along with industrialization progress of Turkey. There are now more than 1,300 companies in the sector, including 150 large-scale manufacturers, and compete in the international market and exporting their products. Thus, Turkish automobile components are increasingly popular among original equipment manufacturers (OEMs) in Germany, the United Kingdom and elsewhere. Automobile supply companies continue to make investments in facilities, equipment and processes to enhance their international competitiveness. Apart from direct trading with OEM's and supplying the aftermarket many foreign component manufacturers have licensing arrangements and joint ventures with Turkish partners (DEIK, 2002). Turkish automobile firms are mainly located on Istanbul-Sakarya-Bursa triangle (Marmara Region), called as the Detroit of Turkey. Majority automobile firms are also situated in this area including Renault, Toyota, and Ford.

The exports of Turkish automobile supply industry are increasing steadily from 353 million USD in 1993 to 2.4bn in 2003. The high level of technology achieved by the industry is evidenced by the fact that 70% of its exports are to EU members. Thus, a majority of the firms operating in the industry obtained internationally-acknowledged quality certificates (ISO 9000, QS 9000, ISO 14000, ISO TS 16949, etc.). The industry produces a number of automobile parts including engine and engine parts, power train parts and components, brake and clutch parts and components, hydraulic and pneumatic systems, suspension systems, security systems, rubber and plastic parts, chassis frame and parts, castings and forgings, electrical equipment and parts, transmissions, lighting systems, filters, batteries, ferrous and non ferrous castings/forging, auto glass and seats for local use and exporting purposes (TAYSAD, 2004).

The research was conducted to six ISO 14001 certified major Turkish automobile supply firms in which visiting each automobile supply plant has affected research, and semi-structured in-depth interviewing, environment managers, quality managers, logistics managers, production/operations engineers, and other technical personnel whenever they were available. Further data on the background information of firms was obtained from company records, annual and internal reports. Interviews and plant tours lasted between two and four hours in duration.

ENVIRONMENTAL STRATEGIES IN TURKISH AUTOMOBILE SUPPLYING FIRMS: EMS AND ISO 14001

The Turkish automobile supplying industry consists of almost 1.300 firms. Most of these firms are small-scale and produce component replacement items of different quality for the after-sales market. Over 100 of these firms have export capability in the international market; therefore, these firms meet the quality standards of the Turkish automobile producers and the international market. They use new technologies and have quality standards such as ISO 9000, QS 9000, TS 16949, and ISO 14001. The rapid increase in export rate can be attributed to quality satisfaction. Transformation from domestic to global market in the sector urges automotive suppliers to improve their existing structures in line with the demands of global auto manufacturers. These improvements relate to a need to build advanced technological skills, infrastructure, research and development means; capable of effective and successful technical cooperation; skilled in unique product development; equipped with the ability to obtain shares in global projects as well as to have high brand competitiveness. In order to stay competitive in international area, Turkish automobile supplying firms should continuously improve their process efficiency and innovation capacity.

SITE VISITING AND INTERVIEW RESULTS

ISO 14001 Certification Motivators for Turkish Supplying Firms

According to Thornton (2000), automakers can have significant impacts on their suppliers' environmental, safety and quality behaviors. The research showed also that major Turkish automakers such as Ford-Otosan, Toyota, and Oyak-Renault have strong effects on Turkish automobile supplying firms. Thus, the most common motivators of ISO 14001 certification can be described as responsiveness to customer pressures, demand conditions, stakeholder audit, and international market requirements.

Moreover, regulatory compliances, corporate social responsibility, and getting competitive advantage are the main inducements for implementing ISO 14001 standard. Some supplying firms have had strong environmental sensitivity for a long time as corporate culture like Brisa, a joint-venture company between Bridgestone and Sabanci Holding.

ISO 14001 Certification's Costs and Benefits

The research result indicates that the major contributions of EMS can be seen amongst employee such as enhancing environmental conscious and awareness, increasing performance, and motivations regarding environmental issues in both small and big suppliers, for instance the factory workers bring their used batteries from their house to collection box because of various environmental trainings and seminars.

Thanks to EMS, most of the firms have achieved control of environmental impacts and important environmental improvements leading long term sustainable development such as degradation of waste materials is experienced considerably including hazardous oils, contaminated water, and gas emission.

Especially, as a part of EMS, environmental performance of Turkish automobile supplying firms increases. For instance, firms have established sand re-generation plants, biological and chemical refineries and acid neutralization facilities to reduce environmental impact.

Moreover, Turkish automobile supplying firms train second tier suppliers by giving various seminars, training programmes to make them more aware of environmental impacts of their operation, and push them to ISO 14001 certification.

Research indicates that along with other quality standards, process efficiencies have increased by efficient usage of energy and water inputs, and lowering scrap values by adopting ISO 14001.

Most Turkish automobile suppliers, firstly, decompose waste as much as possible, then, send disposal materials including hazardous substance to IZAYDAS (Kocaeli municipality central waste destroying plant). Additionally, decomposition makes recycling and revaluation possible. Cost savings coming from these processes compensate the costs of ISO 14001 certification. Turkish automobile supplying firms have become also more sensitive about environment by purchasing new machinery to minimize environmental impacts their production process. Adoption of EMS has also contributed to firm's reputation, corporate culture and image on stakeholders. For instance, some firms organize open door day activities and events for stakeholders including national and local press about environmental progress of company.

According to interview results highly documentation of ISO 14001 loads an extra work to the employees, but it is seen as a self-control mechanism by employees. Moreover, transportation and disposal costs are high, but it should be keep in mind that decomposition of waste materials gives them chance to sell their wastes that compensates the costs of disposal materials.

CONCLUSION and RECOMMENDATIONS

Interview results show that ISO 14001 certification and volunteer proactive environmental strategies do not give strong competitive advantages to the firms in short term for domestic market, because customers focus on price of goods instead of degree of *greenness* of the products. However, in long term it seems that environmental strategies would have significant effect on competitive advantage of firms when customers willing to pay more money to "green" products. Turkish regulations consistency with EU may also affect competitiveness of firms regarding environmental performances. Accordingly, Turkish automobile supplying firms may have ISO 14001 certificate and establish an EMS as a way to differentiate themselves from potential suppliers. However, according to research results, ISO 14001 has not contributed to innovation capacity of the Turkish supplying firms yet.

It should be mentioned that a major automaker in Turkey is still working with automobile supplying firms without ISO 14001 certification, although that firm stipulated ISO 14001 certification before. Automakers' behavior on the suppliers affects the competitiveness between supplying firms; thus automakers should be consistent with their policies announced to the customers. Major automakers should not work with non-certified suppliers firms as a way to minimize the environmental impacts of suppliers' activities.

Research indicates that IZAYDAS, unique disposal plant in Turkey, disposes hazardous materials with very high prices. High costs of disposal of hazardous materials may lead firms self-dispose their wastes secretly instead of sending to IZAYDAS. IZAYDAS should reduce prices for disposal of hazardous materials, which would encourage other small firms certificate ISO 14001 or/and become more environmental friendly, and also contribute to capacity usage of IZAYDAS, which is 35% now.

Government and municipalities should award environmental performance of firms to ensure sustainable development. For instance, governments may provide tax reduction to environmental investments such as establishment of refineries, recycling plants, and may promote usage of natural gas. Municipalities may provide transportation of hazardous materials, and build required infrastructure such as natural gas network and drainage system.

Turkish automobile supplying firms should communicate with environment related non-governmental organizations, local, national, and international press in order to inform stakeholders about their environmental progress. Thus other firms should follow the same path with the pressure coming from the public.

REFERENCES

- Aboulmaga, I. A. (1998), Integrating Quality and Environmental Management as Competitive Business Strategy for 21st Century, *Environmental Management and Health*, vol.9, iss. 2, pp. 65-71.
- Association of Automotive Parts and Component Manufacturers (TAYSAD), 2004. May, Bulletin.
- Babakri, K. A., Bennet, R.A., and Franchetti, M. (2003), Critical Factors for Implementing ISO 14001 Standard In United States Industrial Companies, *Journal of Cleaner Production*, vol. 11, pp. 749-752.
- Bansal, P. (2002), The Corporate Challenges of Sustainable Development, *Academy of Management Executive*, vol.16, no. 2, pp. 122-131.
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage, *Journal of Management*, 17:99-120.
- Boiral, O., Sala, J-M. (1998), Environmental Management: Should Industry Adopt ISO 14001?, *Business Horizons*, Jan-Feb, pp. 57-64.
- Commission of the European Communities (COM), 2001. Promoting a European Framework for Corporate Social Responsibility, COM (2001), 366 final, Green Paper, Brussels.
- Commission of the European Communities (COM), 2002. Corporate Social Responsibility: A business contribution to Sustainable Development, COM (2002), 347 final, Brussels.
- Daft, R.L., 2000. *Management*, Fifth Edition, the Dryden Press.
- European Commission (EC), Directorate-General for Employment and Social Affairs, 2002. Corporate Social Responsibility: A Business Contribution to Sustainable Development, Unit D.1, July.
- Foreign Economic Relations Board (DEIK). (2002), Turkish Automotive and Components Sector, October.
- Harding, R. A. et al (2003), The Role of ISO 14001 in Environmental Management at U.S. Manufacturing Facilities, Retrieved from: http://www.bren.ucsb.edu/research/2003Group_Projects/iso/Final/iso_final.pdf
- International Institute for Sustainable Development (IISD), Global Green Standards: ISO 14000 and Sustainable Development, June 2004. Retrieved from: <http://www.iisd.org/pdf/globlgrn.pdf>
- International Institute for Sustainable Development (IISD), ISO Social Responsibility Standardization: An Outline of the Issues May 2004. Retrieved from: <http://www.iisd.org/standards/csr.asp>
- Kwon D-M., Seo, M-S., and Seo, Y.C. (2002), A Study of Compliance with Environmental Regulations of ISO 14001 Certified Companies in Korea, *Journal of Environmental Management*, vol. 65, pp. 347-353.
- Miles, M. P., and Russell, G.R. (1997), ISO 14000 Total Environmental Management: The Integration of Environmental Marketing, Total Quality Management, and Corporate Environmental Policy, *Journal Of Quality Management*, vol. 2, no. 1, pp. 151-168.
- Morrow, D., Rondinelli, D. (2002), Adopting Corporate Environmental Management Systems: Motivations and Results of ISO 14001 and EMAS Certification, *European Management Journal*, vol. 20, no. 2, pp. 159-171.
- Porter, M. E., van der Linde, C. (1995), Toward a New Conception of the Environment-Competitiveness Relationship, *The Journal of Economic Perspective*, vol.9, no.4, pp. 97-118.
- Porter, M. (1980). *Competitive Strategy*, Free Press, New York.
- Rajendran, D., and Barrett, R., (2003), Managing Environmental Risk in Small Business: An Agenda for Research, the 16th Annual Small Enterprise Association of Australia and New Zealand (SEAANZ) conference, 28 September- 2 October.
- Rondinelli, D., Vastag, G. (2000), Panacea, Common Sense, or Just a Label? The Value of ISO 14001 Environmental Management Systems, *European Management Journal*, vol. 18, no. 5, pp. 449-510.
- Roy, M-J., Vezina, R. (2001), Environmental Performance as a Basis for Competitive Strategy: Opportunities and Threats, *Corporate Environmental Strategy*, vol. 8, no. 4, pp. 339-347.
- Schaarsmith, J. H., (2000), ISO 14001 Lowers Environmental Risks, *Business Insurance*, vol. 34, iss. 28, pp. 12.
- Shrivastava, P. (1995), Environmental Technologies and Competitive Advantage, *Strategic Management Journal*, vol. 16(summer special issue), pp.183-200.

- Stapleton, P., Glover, M., and Davis, S. (2001). *Environmental Management Systems: An Implementation Guide for Small and Medium Sized Organizations*, Second Edition, US: NSF International.
- Thornton, R.V. (2000), ISO 14001 Certification Mandate Reaches the Automobile Industry, *Environmental Quality Management*, vol. 10, no. 1, pp. 89-93.
- Tien, S-W., Chung, Y-C., and Tsai, C-H. (2004), An Empirical Study on the Correlation between Environmental Design Implementation and Business Competitive Advantages in Taiwan's Industries, *Technovation*, {Article in Press}.
- Tinto, R.H.R., and Watts, P., (2000), Corporate Social Responsibility: Making Good Business Sense, World Business Council for Sustainable Development (WBCSD), January.