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Explaining Environmental Management System Development: A Stakeholder Approach

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Abstract

Managerial changes are necessary for companies in the Dutch food industry and agribusiness to lessen the environmental impact of their activities. To identify the opportunities or limits of environmental management systems (EMSs), it is important to first understand what influence stakeholders have on EMS development. In an empirical research we found that developmental levels of internally oriented EMSs, which primarily aim at internal administrative procedures, are explained mainly by the frequency of contacts with governmental authorities. For this kind of EMSs, non-commercial stakeholder groups have a major influence on the corporate environmental policy. Externally oriented EMSs, which focus on joint efforts in supply chains, are influenced by commercial groups in the business network (like suppliers, clients and competitors). The development of externally oriented EMSs requires adjustments in the composition of and interaction with the stakeholder environment by governmental agencies as well as managers in the agri-food sector. Opening up towards the stakeholder environment, by (among others) an adjustment of the information system, integrated (supply-chain wide) auditing and licensing, can enhance cost-efficiency, transparency and sustainability.

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Introduction

The stakeholder environment of agri-food companies contains important stimuli for EMS improvement. A better image, accountability and possibly higher turnover and lower costs are positive incentives to implement an EMS. Managerial efforts in this direction could be ranked on a continuum: on the low end would be implementation as a single business unit of administrative structures to act, monitor and control, and on the higher end would be joint efforts and co-operation with the supply chain partners and other stakeholder groups.

In this paper we investigate the influence of different stakeholder groups on the managerial efforts with respect to environmental management system implementation. Important questions to be answered are: What is the influence of stakeholder pressures on the development of EMSs? Which stakeholders are of decisive importance for developing EMSs? What are these stakeholders' characteristics?

The answers to these questions are extremely important. With respect to business management, they tell us how to behave to improve sustainable business development, and thus how to achieve long-term continuity (see the Global reporting Initiative; www.globalreporting.org). From an ethical viewpoint, stakeholders have a 'right to know' what managerial action is taken and what the consequences are (see, for example, principle no. 10 of the Declaration of Rio de Janeiro). Last but not least, sound and transparent information exchange with stakeholders reduces the transaction costs of monitoring and of 'perks' to direct the managerial efforts towards sustainable business development.

Stakeholder groups are defined as groups in the environment of the organisation that either influence the company's goal-setting and/or operations or are influenced by the company in these respects (e.g., Carroll, 1979). This paper aims to understand the role (or roles) stakeholders play in EMS development. Governmental agencies, clients and suppliers are considered primary stakeholders, since the firm's continuity depends on their continuous willingness to participate. The role of governmental agencies is studied in detail in this paper, as it is considered to be the main influential group with respect to environmental efforts. If we understand their significance, two related benefits could be achieved. Managers could shift their focus to the concerns and contributions of stakeholder groups that really matter for EMS development. And stakeholder groups for their part, especially governmental agencies, could adjust their behaviour to be more effective in influencing the companies in the direction of sustainable business management.

The paper consists of five sections. First, the theoretical framework and hypotheses are given. Next, the research design, the measures of constructs and data analysis are described. We then make our research design more specific, focusing on the role

(or roles) of the governmental agencies. A factor analysis and linear regression analysis are carried out to explore the relevant variables for explaining the variance in 'internal' and 'external' EMS development. Finally, the conclusions and recommendations are stated.

Theoretical Framework and Hypotheses

Stakeholder Concerns

Stakeholder concerns (regarding profitability and market share, employment, continuity, social circumstances, etc.) have received increasing attention in recent years, in scientific literature as well as in business practice (Madsen and Ulhøi, 2001; Clarkson, 1995; Freeman, 1984; Rowley, 1997; Carroll, 1992 and others). It has been recognised in scientific research that companies do not operate in a vacuum, but are influenced by external parties. Stakeholder relationships have been investigated with respect to goal-setting and strategic management (Johnson and Scholes, 1999), governance issues, goal conflicts and asset management, as well as with respect to social issues and environmental responsibility. Stakeholders need information to make sound decisions, just as managers within companies need information on stakeholder wishes to be able to adjust their policies accordingly. Especially since the scandals involving World Com, Enron, Parmalat and others, the 'scope of corporate accountability' (Gladwin and Walter, 1976; Gray et al., 1995a, Gray et al., 1995b; Dobers and Wolff, 2000) has been expanding rapidly, and companies will continue to increase their efforts to keep their 'license to produce'.

Stakeholder influences vary with different organisations and institutional settings. Size is a major determinant in this respect. Small and medium-sized companies (SMEs) regard the government as the major stakeholder in environmental matters (see, for example, Bowman, 1980; Bettis, 1981; Fiegenbaum et al., 1996; Solomon and Lewis, 2002; Fiegenbaum and Thomas, 1988; Madsen and Ulhøi, 2001). Big food companies, like Unilever or Nestlé, are more likely to adopt a more externally directed scope. Several external forces determine their behaviour, like the demands of suppliers, customers and competitors, as well as governmental policy .

Sustainability

Little is still known about the impacts that stakeholders have on sustainable business development, for which EMSs are designed. Sustainability means that the business enterprise not only satisfies the needs of the present stakeholder groups, but does so without limiting the life-space of future generations. Stakeholder pressures could enhance sustainable business management. They could promote transparency, openness and co-operation. Transparency (information processing) can be seen as a major issue in an EMS, while co-operation could produce economic as well as environmental benefits.

Development of an environmental management system (EMS)

An EMS is a device to achieve environmental goals. Its implementation brings about organisational change and possibly a different relationship with key stakeholder groups. We make a distinction between internally oriented and externally oriented EMSs. A complete internally oriented EMS includes all of the elements of Deming's plan-do-check-act cycle: commitment (statement of goals by the management as well as the assessment of a programme of activities), compliance (setting standards in accordance with external norms), control (regular measurements of output, registration and auditing) and communication (feedback of results, both internally and externally). The internally oriented EMS focuses on process control, the reduction of environmental impacts and organisational redesign. From a certain point in the organisational development process, however, improving a firm's environmental performance requires co-ordinated effort between exchange partners in a supply chain (Shrivastava, 1995). A supply chain is a network of organisations that are involved through upstream and downstream linkages in different processes and activities that produce value in the form of products and services in the hands of the ultimate consumer (Christopher, 1992). An externally oriented EMS would therefore require, among other things, an information system that reaches beyond the boundaries of the individual organisation. This external orientation brings extra benefits in the long run, financially as well as for the natural environment, because of shared competencies and expertise, economies of scale, co-ordination of efforts, etc.

Theoretical framework

The theoretical framework of this research is illustrated in figure 1. We propose that a stakeholder network differs in composition and influence on external compared to internal EMS development. As figure 1 shows, we will investigate the importance for EMS development of stakeholder groups with 'commercial' stakes (like clients, suppliers and competitors) and of stakeholder groups that have other 'non-commercial' interests (like intermediary and environmental organisations, inhabitants of houses in the neighbourhood of production facilities and governmental bodies).

Figure 1 shows that the role of intermediaries in EMS development is of special interest. They help companies meet the stakeholder requirements (especially of the government and of environmental organisations). They improve the social capabilities of companies: their ability to adapt and their ability to co-operate. An example of an intermediary is the public-private agreement (covenant) signed by the Dutch slaughterhouses and meat processing sub-sector (PVE, 2001). With the help of the supporting semi-public organisation FO-Industry (The Hague, Netherlands), the covenant translates national-policy issues into business devices

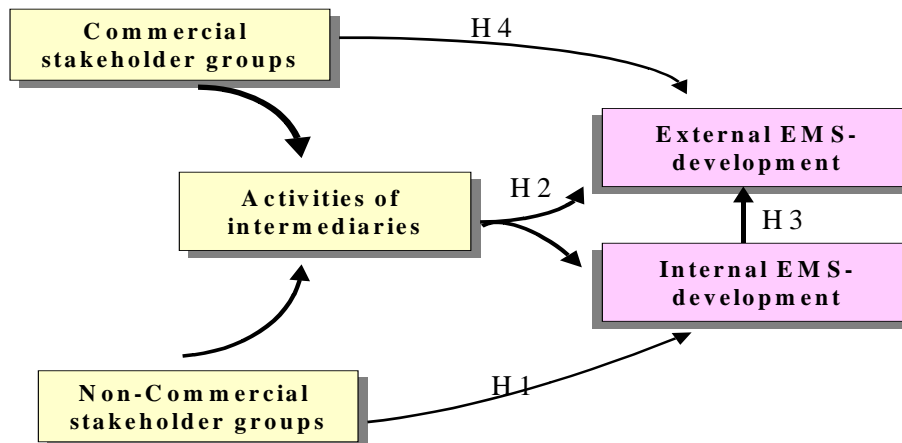


Figure 1: Theoretical Framework

that are feasible and that fit into existing management schemes (like HACCP, TQM, T&T-systems).

However, there is a danger in merely adjusting traditional management schemata. The use of existing structures and administrative devices could hinder learning and growth towards higher performance levels. Focusing on business procedures and process control could lead to path-dependent solutions for environmental problems. Necessary adjustments are made, but significant efforts to re-order the external organisation are obstructed. Sanitation, for example, is a dominant concern in food chains. Extensive measures are taken to avoid hygiene risks and improve quality management, but these make it nearly impossible for all but a minority of companies to achieve environmental goals that reach, 'beyond sanitation' (Kolk and Mauser, 2002). The solutions the manager thinks of first are evidently directly related to sanitation and process control. Management should be aware, however, that a fundamental change in environmental strategy requires a 'proactive' rather than an 'accomodative' attitude (Clarkson, 1991; Johnson and Scholes, 1999). So, how does a company create such a 'mover' attitude? The discussion part of this paper will provide clues to help answer this question.

Hypotheses

Non-commercial stakeholders, like environmental organisations, clients and governmental agencies, can influence EMS development directly (H1) and indirectly (H2). Direct influence occurs for instance through the setting of goals, monitoring of past performance and direct control. Indirect influence by non-commercial stakeholders is exercised via the activities of intermediaries (H2). Intermediaries exist at a process level, contract level and organisational level. An example of an

intermediary at a process level is the existence of a chain-wide tracking and tracing (T&T) system for raw material quality. The availability of this device could stimulate the development of a T&T-system for detecting environmental impacts. At an organisational level, branch organisations and/or leading companies in the supply chain could mediate between the legitimate demands of stakeholder groups (for instance: prescriptions in permits) and the business reality (with respect to habits, procedures, practical constraints, etc.). At the contract level, agreements (like covenants) between stakeholders and companies on long-term goals stimulate the creation of social capital.

Figure 1 illustrates our proposition that the existence of an internally oriented EMS will have a positive impact on the implementation of an externally oriented EMS (H3). We believe this to be the case because many elements of an internally oriented system (like an information structure, environmental strategy, education of personnel, etc.) are mandatory for the expansion of the EMS towards the supply chain.

Finally, we propose that commercial stakeholders (clients, suppliers) have a primary interest in the enhancement of an externally oriented EMS system. Such a system could improve the overall performance (in a broad sense) of the supply chain, of which they are a part and from which they will benefit in the end (H4).

Research Design and Results

Population and Sample

This study focuses on 2620 companies with five or more employees in the Dutch agri-food sector. After performing a literature search we carried out two surveys: one in 2002 among the 2620 selected companies in the food industry and agribusiness (I), which served as the main source for this article, and another in 2003 among the 419 companies involved in electronic environmental reporting (II). The first questionnaire (I) was used for the empirical part of this paper (response 492 companies, almost 20%). The second questionnaire was used to help structure our discussion and formulate recommendations (response 180 companies, 43%). To ensure a uniform interpretation of the questions we asked, and to improve the content validity, business and scientific experts pre-tested the questionnaires. Also, questions were included from a previous research project in 1995 on the same subject (Bremmers et al., 1996; Bremmers et al., 2003). We checked the validity and, if necessary, the internal consistency of the scales used. We also checked the results of parametric analyses by using equivalent non-parametric techniques.

Operationalisation

The dependent variable ‘internal EMS development’ was measured by adding up (and re-ordering on a 5-point scale) the number of elements of an EMS that were implemented within the organisation. The elements we looked for were: an environmental strategy, auditing, an environmental action programme, education of personnel, a database, measurements on a regular basis and internal information processing.

External EMS development was measured by assessing the levels of co-operation and of information exchange with stakeholder groups. With respect to information exchange, questions were asked on the traceability of environmental influences through the supply chain, information exchange with suppliers and buyers, and the presence of a chain-wide information system.

The independent variables were considered to be the influences of stakeholders on the corporate environmental policy. We asked the respondents to indicate the perceived influence of each stakeholder group on the corporate environmental policy.

It proved to be impossible to measure the influence of a diversity of intermediaries in one single survey question. We therefore measured the influence of intermediaries by summing up the answers on a combination of questions referring to co-operation and information exchange.

Baseline Results

In the sample group that completed questionnaire I, small companies are slightly over-represented compared with the whole population. The average size is 54.15 employees (N = 480, 12 missing cases). The standard deviation is high (110.788) and the distribution is heavily skewed. It was found that size is indeed a variable that significantly influences internally oriented as well as externally oriented EMS development (Bremmers et al., 2003).

Table 1: Elements Included in the Internal EMS

Elements of the internally oriented environmental management system	Included (%)	Included (number of cases)
Environmental strategy	25.9	119
Auditing	21.3	98
Environmental action programme	18.0	83
Education of personnel	20.2	93
Information system/database	14.8	63
Measurements on a regular basis	25.4	117
Internal information processing	21.0	97

Table 1 shows the scores on the included elements of internal EMS development. It appears that an environmental database, which is an absolute prerequisite for environmental planning and control, is implemented in only about 15% of the cases. The average score (measured on a 5-point scale) on the composite dependent variable is 1.05 ($\sigma = 1.37$). This shows that the level of EMS development within the Dutch food industry and agribusiness is still low.

Table 2 contains the scores on the variables that were used as indicators for externally oriented EMS development.

Table 2: Elements included in the externally oriented EMS

Elements of the external environmental management system	Included (%)	Included (number of cases)
Co-operation with suppliers	32.13	151
Co-operation with buyers	29.25	136
Traceability of environmental influences through the chain	2.27	11
Information system for exchange with buyers/suppliers	14.65	69
Information system for chain-oriented environmental management system	9.96	47

Table 2 suggests that co-operation between stakeholders and companies is better developed than information exchange. The traceability of environmental effects outside the single business unit appears to be low. This contrasts with the efforts of the agri-food sector to improve the traceability for food safety purposes.

Spearman Rank Correlations

For internal EMS development, the influence of intermediaries and competitors is the highest (Spearman $r = .3$, $p < 0.01$ two-tailed). Neighbours also have a moderate influence ($r = .27$, $p < 0.01$ two-tailed). The influence of the government is moderate but significant ($r = .22$, $p < 0.01$ two-tailed). Clients and suppliers have only a minor influence on internal EMS development.

It seems that a (public and/or private) policy that aims at internal measures does not necessarily bring about an externally-oriented EMS. The correlation of internal and external EMS development is no more than .256 ($p < 0.01$, two-tailed). This is probably because competences that are necessary for successful co-operation are quite different from the requirements for 'working in isolation'. Internal organisational adaptations are necessary but not sufficient to promote external co-operation for EMS development.

A major shift in stakeholder influences occurs if the company moves from an internal to an external focus. Non-commercial stakeholders, like neighbours and environmental organisations, then lose explanatory value for EMS development. The government and intermediaries also lose much of their influence. Commercial stakeholder groups, like competitors ($r = .311$, $p < 0.01$), clients ($r = .318$, $p < 0.01$) and suppliers ($r = .305$, $p < 0.01$), take a more prominent position. Governmental influences do not significantly promote externally oriented EMSs ($r = 0.08$, $p > 0.05$).

A More Specific Research Model: Design and Results

Reorientation

In this section, we will formulate a more specific research model by looking more closely at the governmental role. The public-private interaction contains a range of composite factors: strategic fit, relational quality, information quality, and monitoring and control. With strategic fit we mean the correspondence of public and private goals. Strategic fit is absent if public policy conflicts with private goals. A condition for strategic change towards sustainability is the completeness, clearness and consistency of public information. If private firms are not able to understand the essence of a public policy, no behavioural change can be expected. Relational factors like trust, perceived equality, mutual dependence and informality in contacts could determine the willingness to listen and to adopt changes. Finally, monitoring and control (as well as negative reinforcements) could force companies in the officially desired direction. We included operationalisations for the different aspects of the interaction with the government in the model, as well as size and 'pressure on profit margins' as control variables.

Baseline Results

Our analysis shows that the level of public-private correspondence is relatively low. For instance, the perception that public rules contribute to the company's own goals is only 2.65 on a 5-point scale ($\sigma = .913$). Also, the relational quality that we measured was low. Reciprocity in the relationship with governmental bodies seems to be especially lacking. Company representatives feel they do not have enough say in public environmental policies (average 2.21, $\sigma = .986$). In general, bigger companies appear to have a higher relational quality in their interactions with governmental agencies than smaller ones. It appears that the companies' awareness of the possible penalties for not following rules is relatively high, and that this has a positive influence on EMS development.

Correlations

The Spearman rank correlations show again that the frequency of contacts with governmental agencies is the main explanatory variable for the level of internal EMS development ($r = .57$, $p < 0.01$ two-tailed). Next in importance are the relational quality ($r = .36$, $p < 0.01$ two-tailed) and the perceived effectiveness of governmental policy ($r = .22$, $p < 0.01$, two-tailed). The correlations of the variables with external EMS development are low ($< .2$), so governmental behaviour does not explain the companies' efforts in this respect.

Factor Analysis and Multiple Regression

This sub-section contains the results of a single and a multiple regression analysis conducted to explain the variance in the internally and externally oriented EMS development, respectively. First, however, a factor analysis was performed to reduce the number of variables that were used as inputs. We used oblique as a factor rotation procedure, since it allows for correlations between variables. We used communalities (0.3) and factor eigen-values (1) as lower boundaries in the data reduction procedure.

The frequency of contacts and the companies' relationships with neighbours and intermediaries appear to be the main explanatory variables for internally oriented EMS development (R^2 of the model is .46). The perceived 'pressure on profit margins' showed a significant negative relationship with internal EMS development. In general, the empirical evidence shows that interactions with non-commercial stakeholder groups explain to a large extent the variance in internally oriented EMS development.

The externally oriented EMS is mainly influenced by suppliers, buyers and competitors (R^2 of the regression model being .184). Frequency of contacts with governmental agencies does not score significantly in this regression model. Its role is taken by the perceived 'clearness of governmental rules'. Perceived clearness is strongly correlated with perceived effectiveness, relational quality and consistency. ($r = .50$, $.58$ and $.48$ respectively, $p < .01$ two-tailed). Commercial stakeholder groups have a more prominent position in explaining the variance in externally oriented EMSs. In general, variables that refer to qualitative aspects of public-private interaction are more important than variables that give an indication of the quantitative aspects of interactions.

Summary, Managerial Implications and Discussion

Summary

Non-commercial stakeholders have indeed a positive impact on internal EMS development (H1). The associations are stronger than the equivalent ones for commercial stakeholder groups. Intermediaries influence EMS development (H2), but their impact lies more in bringing about internal adjustments than in external co-operation. The level of internally oriented EMS development is positively associated with the state of external EMS development (H3). The association is moderate but significant. Since we used the influence of suppliers and buyers (among other factors) to explain the co-operation with suppliers and buyers, the discerned relationship is not surprising. More striking is the fact that competitors also appear to be influential stakeholders (beta standardised is .179, highest of all relevant variables). This could be because companies use their competitors as a benchmark for business behaviour and performance. Commercial stakeholder groups are of primary significance for explaining the variance in externally oriented EMS development (H4 is supported).

Managerial Implications

Our analysis has implications for public management as well as for corporate management. Public policy makers should consider that companies can escape from the limitations of internal EMS development only if they develop a fundamentally different relationship with the government. Frequent visits by governmental agencies to monitor performance and communicate public messages should be supplemented with dialogue and co-operation. Intermediaries (like branch organisations and covenants) mainly promote the development of internally oriented EMSs. They translate the public policy into feasible and understandable business practices. So a change of public policy will have consequences for these institutions also. They will have to focus on the development of social capital, rather than on physical and human capital. So a major change of focus and intent is needed, with respect to the governmental policy, the institutions involved, but also with respect to the environmental management at the business level. Private companies should realise that a major shift in attitude towards stakeholder groups is inevitable in the course of business development, to benefit from externally oriented EMSs.

Discussion

How could a shift in public and private policy be brought about?

First of all, EMS development begins with the construction of an efficient and effective chain-oriented information system. Just imposing a reporting structure by

means of regulation could have an adverse effect because the administrative burden of companies will increase. Managers complain about the ever-increasing administrative load. The costs of information gathering and compliance are high because information is dispersed and much of the information that is provided is not useful for the individual company. Changes in regulations in the Netherlands, for example, increased the administrative costs of Dutch companies to € 12.5 billion in 2002 (EIM, 2003). A high administrative load, a lack of clearness of messages and lack of correspondence between public demands and private goals may lead to 'regulatory stress': irritation about and disinterest in regulations, and a reluctance or even inability to meet the demands. This makes companies 'reactive' (Carroll, 1979) to new policy. Implementation of an externally oriented information system (that covers the supply chain) should therefore be combined with an effort to reduce the information costs. Electronic reporting can improve the transparency, speediness and integration of information, and at the same time reduce the costs that are connected with information processing. Transparency is necessary so that consumers can include environmental matters in their preference schemes, and will be more willing to pay a premium for environmentally sound production. A synergy with information systems on ethical issues like animal-friendliness or genetically modified organisms could enhance clarity and at the same time bring about cost-reductions.

Secondly, even if the public demands are recognised and interpreted, and even if they are considered relevant, often no follow-up is made (for instance because the message is not congruent with the company's goals and strategies). Clarkson (1991) categorised companies' behaviour in his RDAP-scale as reactive, defensive, accommodative and proactive. There is reason to believe that the smaller companies will try to comply to governmental rules (they will act accommodatively), while the bigger ones will be inclined to act in a more proactive way, to make 'pollution prevention pay'. So, public policies should take into account the existing business structures and strategies and be aware of isomorphic and path-dependent behaviour. Companies do not develop gradually, neither in an organisational sense nor with respect to their EMS (Kolk and Mauser, 2002). Habits and established procedures can hinder environmental management system improvement.

We believe that the internal focus of governmental policies should be abandoned for the bigger companies. Permits for production could be granted to the companies involved in the procurement of a product, rather than to the single company (business unit). This would correspond with environmental product labelling, which also addresses the whole supply chain. Moreover, environmental reports should focus on the joint environmental performance of the companies that participate in the production of a (labelled) product. Auditing should focus on the efforts in the supply chain as a whole, since environmental solutions in one stage could cause problems in another one. So, reducing (administrative) costs, creating transparency and integration of auditing and environmental permits can go hand in hand.

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