

GREEN INNOVATION — REFLEXIVITY OR STANDARD OPERATING PROCEDURE?

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ABSTRACT

Green issues present a challenge for organizations. This paper is about how green issues are influencing two large Swedish firms, one in a traditional mechanical products industry and the other in the paper and pulp industry. We are particularly interested in how green issues affect R&D and product development work. Through their experiences, it is concluded that although green issues are perceived as strategic and that the firms in their industries are at the “top of their class” regarding green work, green issues are treated as just another issue. They are perceived within an established techno-economic framework and to some extent considered as taken care of. The firms have in some areas, however, made extensive improvements within the green field. It seems, though, as if green issues have not led to any major change in the behavioral patterns at especially the R&D departments. There have been some changes in the firms’ descriptive routines, such as project management models, which strengthen the perception that the issues are dealt with through established standard operating procedures.

1. THE NATURAL ENVIRONMENT – A STRATEGIC ISSUE

Organizations and the natural environment are a topic which has been firmly placed on the boardroom agenda and the news bills during the last decades. It might be fair to argue that organizations need to acknowledge this area in some way in order to be perceived as a credible actor on the market. This acknowledgment has also been manifested in environmental management systems, eco-labels, environmental reports, environmental audits, and so on. These tools are diffusing throughout the contemporary business community and signals a trend where green issues are being treated as strategic issues in organizations. This alongside issues such as globalization and information technology.

Treating green issues as strategic issues might be explained by the impact they have had, and probably might have in the future, on business activity. It is by many argued that these issues provide a driving force behind a new and more sustainable way of running a business (Welford, 1995; Hart, 1997). New structures and standard operating procedures (Cyert & March, 1963) are needed as the present way of doing business is perceived as unsustainable. It might also be argued that green issues appeal to organizations’ competence for renewal. As a factor singled out as important for firm survival, the firms’

innovative capability is challenged by a demand for greener products, policies, knowledge, and so on.

In large organizations, renewal is often located to the R&D department. It has been emphasized that green issues will specifically change the work of this department and that this “green” pressure will increase over time (Roome, 1994). Firms could here be seen as going through a set of steps in a greening process. For instance, from pollution prevention to product stewardship (Hart, 1997), or from compliance to compliance plus (Winn & Roome, 1993). Even if we do not choose a “step-perspective” (see Schaefer & Harvey, 1998), it seems evident that firms are dealing with green issues in a greater extent today compared to earlier. However, our interest in this process has more to do with the question of what it is that has changed within organizations. It might be suggested that the changes in organizations have not been as encompassing as one might believe from following the development in the greening of the industry process. Tentatively, it might be concluded that there has not been a change in the basic assumptions or routines on which business, and R&D, is conducted. Present routines and procedures might have been challenged, but they do not seem to have been altered or changed.

This article focuses on two large Swedish firms and their efforts to incorporate green issues in their organizations and specifically in their R&D department. The firms have emphasized that green issues are very important to the organizations and that they are considered as strategic issues. Our main question is therefore: Where green issues are considered as strategic issues, how do they influence routines for renewal and product development?

2 STRATEGIC ISSUES AND ROUTINES IN ORGANIZATIONS

Firms are influenced by both their environment and their internal processes. In order to handle changes and thereby stand a better chance of surviving, they have to manage a number of issues. Dutton and Jackson (1987, p 76) argue that firms “are bombarded by a continuous stream of ill-defined events and trends.” In the process of “bombardment” a small number of these are interpreted as more important than others in deciding the organization’s outcome. As firms interpret and single out issues they are also faced with a challenge of transforming them into strategies. Such issues might be labeled strategic issues, which may be defined as events, developments or trends that by management are perceived as having a significant influence on the firm’s performance and strategy (Ansoff, 1980).

As firms to some extent have to change they also need a capacity to innovative (Schumpeter 1971/1914). Otherwise, they will be passed by competitors and find themselves in a situation where profit margins and market shares are reduced. With Schumpeter’s view in mind, an organization needs some entrepreneur/s that create or develop new ideas, products or services. R&D departments might be considered a department for innovation and new product development. Among the issues singled out as strategic, and as tasks for the R&D staff to solve, are issues of environmental care, waste, pollution, recycling, or simply put, green issues.

Welford (1995) states that environmental concerns more and more are perceived as a factor for strategic change. This paper deals with two Swedish firms and in Sweden there is an evident growth in the amount of environmental management system (EMS) certificates/registrations, published environmental reports, eco-labels, and so on. Sweden is actually on the third place on a global comparison regarding the amount of ISO 14001 certificates and EMAS registrations (ISO World, 2000). Firms also acknowledge green issues in their organizational structures when creating a department for environmental issues and when they appoint an environmental manager. Environmental legislation is also a factor in this process. Tougher and more extensive legislation constitutes a restraint, and creates new opportunities, for firms wanting to stay competitive. In Sweden we had a new collection of environmental laws, "Miljobalken", in 1998. All of this signal that green issues are important to the competitive firm.

As the issues are diffusing into the business community, and society as such too, they will to some extent affect and challenge the work of firm management and R&D departments. Their organizational structure, management, routines, beliefs, values, and so on will be influenced (Roome, 1994). In the process of perceiving green issues as strategic they ought to have an impact on not only strategy, but also on structures (Mintzberg, 1983) and routines, or on the well-learned responses to actions and situations (Starbuck, 1983). This means changing actions and behavior which have become patterns or recipes of routines in the firm (Weick, 1979). Naturally, habits, traditions and routines created between individuals in the firm will be rule-like and hard to change (Berger & Luckmann, 1967; Hinings & Greenwood, 1988). The ability to change routines will therefore be vital to the impact of a certain strategic issue. Routines and the change of routines can also be viewed as the basis for organizational learning (Levitt & March, 1988).

So, for change to take place within an organization, its collective patterns must be changed. Habits, routines, standardized or institutionalized behavior, and so on are concepts aiming at the "cosmos" side of the working organization. Cosmos here being the opposite to chaos. On an organizational level, Cyert & March (1963, p 122ff) write about standard operating procedures (SOPs) as providing needed stability and also as a dictator of decisions made within organizations. They divide SOPs into four categories. We are here specifically interested in two of those.

Task performance rules. Rules control the behavior in an organization and what Cyert & March (1963) emphasized here was that even though what was supposed to be complex decisions were as routinized as a production line decision. There also seem to be general strives within organizations to simplify and reduce uncertainty inherent in decision-making (Burns & Stalker, 1961). Rules also pass on knowledge, often tacit knowledge, which guide and to some extent predict, for instance, product development (Lundin & Sandstrom, 2000). Within this category we also find what Cyert & March (1963, p 124) labels "standard industry practice". Such routinization forces are evident in the business community, for instance, as in the diffusion of project management models guiding project work. Interestingly, the authors also refer to rules, or standards, as providers of defense for the decision-maker. In layman's terms, s/he has something to hide behind if something should go wrong. "I followed well-established practice".

Information-handling rules. Cyert & March (1963, p 128) divide information-handling rules in two parts: routing rules and filtering rules. The power aspect inherent in them is

obvious as the persons who receive and eventually re-sends the information also filter it and decides when and how it will be sent on. Routing rules regards who will communicate to whom and about what and filtering rules are those molding and transforming the information passed on.

Procedures, as exemplified by Cyert & March (1963), influence what, when and how individuals in organizations perceives their environment. They affect which goals are set, how the contingencies are interpreted, which alternatives to consider, which rules to use in decision-making, and so on (Cyert & March, 1963, p 133). Overarching, however, SOPs seem to serve to avoid the uncertainty presented by the organization's environment. Green issues are new issues for a lot of organizations. Dealing with them might provide for some uncertainty as knowledge about them may be scarce. The organizations we have studied perceive green issues as strategic. This also means that they ought to have some effect on the routines in the organization. Let us dive into the empirical part.

2.1 A note on method

In our case studies we have made in-depth interviews with those individuals working explicitly with green issues, such as environmental managers, and with those working with product development projects at the R&D department. Focusing on R&D departments we believe is a fruitful way of studying green issues impact on firms as R&D is an important base for firm renewal. Green challenge renewal capabilities and R&D houses the organization's innovative core.

3 HUSQVARNA

Husqvarna was founded in 1689 and has, over time, developed a wide variety of products, such as weapons, cast iron stoves, meat grinders, sewing machines, bicycles, cooking utensils, chainsaws and motorcycles. Since 1978 the company has constituted an essential part of the Electrolux Group's segment for outdoor products and has in recent years concentrated its range of products on the area of forest and garden work. The Husqvarna organization has its headquarters and largest factory in Huskvarna, Sweden, and employs around 1900 people. The product categories are divided into five main segments and this description focuses on perhaps the most famous, chainsaws. The market for chainsaws consists of professional and private users and there is only one major competitor to Husqvarna (the German company Stihl), which has resulted in an oligopoly situation. They each have approximately 35-40% of the global market for professional chainsaws.

Product development is one of the company's main processes. When looking retrospectively at product development the vice president of R&D argued that the R&D focus had developed from a matter of simply producing the chainsaw to a question of performance, cutting costs and product safety, both regarding the working and the natural environment. Today these factors are integrated into Husqvarna's development processes, and partly due to this and partly due to a growing product program, the work organization has recently been restructured in order to make the organization more process oriented. In this process Husqvarna has been following a product development model, "Integrated Product Development" (IPD). In theory, this means that a new product idea travels through a set of sequential processes and checkpoints (CPs).

The IPD processes are guided by checklists and the lists also include green issues. The company stresses the importance of working with the natural environment: *“As a company working with products intended for outdoor use, it has always been natural for us to take a great interest in environmental issues. Long-term it is not enough to have the best products to maintain our position as a market leader, we must also be the best regarding environmental issues.”* (Husqvarna homepage, 1999). Husqvarna also operates under the Electrolux Group’s Vision of the Environment, which touches upon subjects such as long-term survival, satisfying customers needs, harmonious relationships between society and nature, and active distribution of information. However, in the interviews and the environmental reports, the main focus seems to be on protecting the environment, high efficiency, recycling, good profitability, development of technology and competitive position.

The company’s green view is translated onto the checklists and into the committees in the R&D process primarily by a network of environmental coordinators. However, *“what we’re fighting with today in R&D is not environmental issues, because Stihl will solve that too.”* The market also takes for granted that the products purchased conform with emission restrictions and therefore consider other qualities (weight, power, etc.) of the products. *“The market is not ready to pay one extra crown for environmental improvements”*. With a fairly non-sensitive market regarding green issues, attention is focused on monitoring and staying ahead of environmental legislation, especially legislation being developed in the US state of California regarding emissions.

As modern chainsaws are based upon a mature technology and to an untrained eye look identical to these from the mid-1970s, external actors, such as legislators and Non-Governmental Organizations, often want firms to improve faster than they actually do. Husqvarna argues that it is a slow process to make new ground when the products are highly complex and changes in, for instance, emissions, automatically have consequences on vibration, weight and performance. It also takes about ten years to retool the manufacturing process and four to five years to develop a new chainsaw. In some cases Husqvarna is far ahead of legislation. For instance, in the case of the Solar Mover (solar energy), the Auto Mover (batteries), the catalytic converters in lawn movers, riders and professional cutters, and the E-tech solution, which *“combines high performance with lower exhaust emissions, low weight and lower fuel consumption.”* (Husqvarna product catalogue, 2000). The E-tech project even received the group’s environmental award in 1997.

In the greening of Husqvarna’s IPD process, the company has developed a green index in order to measure the environmental load of new and existing products. The index includes four categories: noise, exhaust emission control, energy consumption and material, which are weighed differently with a higher weight on emissions and noise. The index is simultaneously used in the ISO 14001-framework to measure continuous improvements (a certificate is expected to be received before the end of 2000). The best products from an environmental perspective are then selected into the “Green Range” and are monitored separately. In the development process environmental data is also continuously gathered and entered into a database from which environmental product declarations are developed. These declare the product’s content, performance, packaging and distribution, recycling

and disposal, and if the product is eco-labeled. In the chainsaw families alone, there are about 450 different product declarations.

Looking ahead, the R&D staff argues that incremental product development is efficient from both an environmental and a company perspective. There are presently no signs of new techniques and batteries being alternatives, although fuel cells are interesting and there was no anxiety about being caught by surprise, because *“if trees are felled in a different way, we’ll be there”*.

4 DUNI

Duni has its origins in three industrial communities in the Swedish county of Dalsland, where it started its production of napkins and paper drinking-cups in 1949. Partly due to acquisitions the company grew and in the late 80s focused on “Meal service - products for the laid table”. Today the Duni Group consists of four result-oriented units which serve four different market segments: paper mills and product supply, away-from-home, at-home, and De Ster (a newly acquired company from Belgium focusing on catering). The group has continued to grow during the last decade under the management of a unique partnership between two powerful Swedish families, Bonnier and Wallenberg. Duni’s turnover has grown from 1.9 billion SEK in 1988 to 5.45 billion SEK in 1998. The company’s products are based upon paper and/or plastic, such as cups, plates, candles, knives, forks, table-cloths and napkins. As the products are intended for short-term usage, they are an easy target in the environmental debate and are frequently compared with non-disposable articles.

At Duni, the corporate R&D department also houses Environmental Affairs. According to the vice president of RD&E, Duni has led the development of paper and plastic used in its products for at least three decades now and green issues have been a part of the R&D process since the 1970’s.

The different market segments are characterized by different product development strategies, where the at-home segment has a continuous change-over and the away-from-home segment has a less frequent interval between product or process innovations. In the latter segment it is often a case of changing the paper process, which is an extensive task. In both segments the development processes were guided by a project manual, but in practice, the R&D workers picked the best parts and reduced the manual to a number of checklists. Today this manual is under reconstruction, but checklists still exist and green issues are present. Together with other issues they are reviewed at every “tollgate” (compared to Husqvarna’s checkpoints) in the development process.

The people in charge of keeping green issues alive in the product development process are the Environmental Advisory Board (business unit managers and the vice president of RD&E) and Environmental Affairs. Duni hired an environmental manager in 1992 and today there is a group of people working on green issues who function as an internal lobbying group. However, many of the engineers (the majority are engineers) working with product development feel that they possess sufficient knowledge about materials and their influence on the environment.

The product development processes at Duni have a focus on resource efficiency and Duni has reduced the use of plastic by 20% over 10 years, while keeping the same level of quality. The firm has developed Key Performance Indices (compared to Husqvarna's green index) in order to measure the improvement in its environmental work, which are also supposed to be used in the continuous improvement target in the ISO 14001 work. The indices include raw material consumption, production, energy, emissions, water and water effluents, waste, and transports. Specifications of environmental and product safety are also being developed as a part of the development process. Certain products are also being eco-labeled in accordance to a Nordic eco-label.

Because Duni manufactures and develops products for short time use, the products are related to a "consumer mentality" which put them in the spotlight concerning green issues already in the 1970s. Consumers have often contacted the company directly in order to ask about the influence of products on the environment. This led to early investigations on what kind of environmental load Duni's products had and those studies were often related to similar products intended for long time use. Duni here used a consultant who through life cycle inventories of a group of products showed that Duni's products were as good as any alternative. The comparison, illustrated through the metaphor of an "environmental scale", showed that under certain circumstances the two types of products were similar in environmental impact, but only when the most modern dishwasher was used and filled up. This has been presented to, among others, the Department of Agriculture and the Swedish Society for Nature Conservation (SSNC), and so far no one has disputed the results. However, SSNC and others want something, which people in general can relate to and through sorting and recycling Duni's products, this might lead to other changes being accepted.

5 DISCUSSION

In both Husqvarna and Duni green issues have been on the agenda for some years now. A lot of hard work has been done in order to handle issues related to our natural environment. We believe both firms could be considered as "top of their class" in handling green issues in their respective industry. They have implemented quality systems, environmental management systems, green indices, environmental staffs, environmental training programs, and so on. They communicate with their stakeholders regarding the issues and they use it in their promotion of their products.

The driving forces behind dealing with the issues seem to originate mainly from customers, competitors and legislators. Perhaps the strongest actor is the legislative bodies as they continuously increase the level of environmental consideration. Both firms seem to have developed a strategy to stay ahead of legislation, which might be in line with a "compliance plus" approach (Winn & Roome, 1993).

Our question at the outset aimed at how green issues, as strategic issues, influence the routines of the organization, especially the product development project work. A basic conclusion from our studies is that green issues have had a low impact on the behavioral patterns. There have been some minor changes, but in these instances it has more been a matter of transforming green issues to fit existing routines and not the other way around. However, routines, or SOPs, come in different shapes as indicated in the theoretical

discussion. Following Cyert & March (1963) the case studies present some interesting parallels.

Focusing on R&D work there are routines made explicit in, for instance, the firms project management models. They are both based on a set of checkpoints or tollgates and the process are at those intersections controlled by a steering committee. These models are also the target for an encompassing benchmarking throughout the business community. It might be suggested that both firms are part of this trend. However, this entails that there are routines which are more characterized by descriptions than behavior. Project management models are, depending on where you put your foot down, a mix of both although with a lean towards being descriptive. In both Duni and Husqvarna there has been a reaction to an old model, which did not represent the working organizations too well. Thereafter a new model was developed, which better suited the existing routines. The project management models seem to structure, coordinate and control project work. In other words, they serve to simplify the world.

Green issues have been incorporated in the models as yet another issue to monitor. The models lists what the firms need to consider when developing a new product and following the guidelines keeps the decision-makers within the boundaries. These task performance rules also provide a way of transmitting knowledge to newcomers, saying that this is a part of how things are done here. Green issues might have affected the firms' descriptive routines, such as the project management models, although we choose to see it the other way around. The descriptive routines have consumed green issues. This might also be confirmed by both firms' implementation of green issues own parallel to project management models, that is environmental management systems. In both organizations there was criticism towards the bureaucratization of environmental work. Yet another system to administer and to file reports according to. Its advantages were argued from management level.

However, this is not the influence on routines we are most interested in. Changes in descriptive routines are often just that, that is descriptive, and not changes in behavior. Environmental management systems are, though, administrative systems and do not in themselves present any content to the green work in an organization. It might be argued that they to some extent aim to change behavior, but it is not a guarantee for it. In our cases they more or less confirm and strengthen an existing behavioral pattern.

Dealing with information regarding nature and the organization and R&D are two different cases at Duni and Husqvarna. At Duni there is a separate environmental affairs department which is responsible for monitoring, translating and interpreting environmental information. They are thereby both routers and filters in the organization. The routines for the R&D staff have not changed. It might be argued that it has not been any change for environmental affairs either when the department did not exist before it became environmental affairs. This might be explained why the group is perceived as an internal lobbying group. At Husqvarna the key environmental individuals are in the middle of R&D work. There is a good chance to influence behavioral routines here, but it seems instead as if green issues have been interpreted in the same fashion as just another issues. In Husqvarna's case it has been incorporated without changing behavioral patterns.

So, in search for changes in behavioral patterns the cases do not provide any specific support for such a thesis. The established routines in R&D take over when things are moving. Green issues are handled within those. This might to some extent be explained by the contemporary market's high pressure on time. Green issues need to be handled in a credible and legitimate way, but it has to be taken care of fast so that we can go on with our core activities, that is producing and selling products. As argued by Dutton & Ashford (1993), time and attention are limited resources for managers and especially top-managers.

We therefore conclude that the reflexivity which green issues encourage to is not evident in our two cases. Evident in the meaning of an active questioning of the business mission, the firm and its relation to society, and way the firm is run. Green issues are taken seriously and our cases have thorough signs of an encompassing green work, but there is still a behavioral pattern rooted in other assumptions than those inherent in some of the green movement.

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