
Mindsets for Green Innovation

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Abstract: Managers' mindset about the sustainability construct and its triggers is the topic dealt with in the paper. The interviewed managers are all working in companies expressing a commitment on sustainability in their external communication. However, our findings reveal that their commitment is pursued from different business models, visions and ideas about the sustainability construct. We found that sustainability is not triggered, approached and practiced in accordance with one overall mindset. Four interrelated mindsets emerged - due to that sustainability is a learning process and thus formed and developed over time.

Keywords: sustainability; mindsets, learning and innovation

1. Introduction

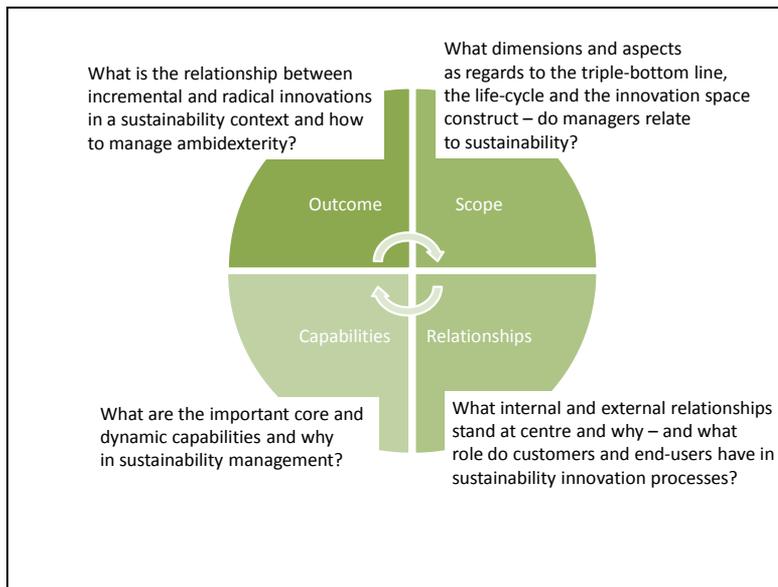
It has been proposed for some time, that sustainability is an emerging megatrend that will have the same impact on how companies compete and create value as other previous megatrends – e.g. TQM, lean and IT. In light of this apparently shared presumption among scholars and business managers (Connelly et. al., 2010; Lubin and Esty, 2010) - the following questions appear important: What are the triggers behind firm's adoption of the sustainability construct and what innovations does the construct give rise to? What characterizes firms' way to manage sustainability and what (if any) differences are there - between 'sustainability' compared with 'conventional' new product development? One motive to pose these questions relates to a lack of clarification in the literature about the impact of the sustainability trend on the practice of innovation management (Been and Baker, 2009; Cronin et al., 2010; Huang and Wu, 2010). A second motive to address the two questions relates to the fact that the literature about what makes some companies 'embrace' the sustainability construct and others not - is lacking behind (Crittenden et. al. 2010). With the aim to contribute to this literature, we have conducted an explorative study of how top managers perceive the sustainability construct; its triggers and

management. As expressed above and in our paper's title, we use the term 'green' interchangeably with 'sustainability'. The reason is to highlight the impact that our understanding (as decision makers and researchers) of the current and future state of the world's 'green' capital, has had on the emergence of the sustainability megatrend.

2. Mindsets and Sustainability

If the vision is to embrace the sustainability construct, then it is evident that some changes and organizational learning processes have to be initiated (Haugh and Talkwar, 2010). Accordingly, our study is inspired by the literature that deals with organizational change and development, and from the presumption that top managers' mindsets are vital in understanding the pattern of a firm's behavior and the inherent drivers and barriers to innovation and business development. The mindset construct is here understood as a frame of reference upon which managers: shape and formulate arguments and interpretations, select issues, decisions, knowledge areas and processes to be involved with, and carry out decisions and other management processes (Johnson-Laird, 1983; Prahalad and Bettis, 2004, Tollin and Jones, 2009).

Figure 1 Mindset about Sustainability



From having the view that sustainability is closely related to organizational change and development follows that organizational learning (OL) appears relevant to incorporate. In our approach to determine managers' mindsets about sustainability, we have been inspired by Bell, Whitwell and Lukas's (2002) framework - containing four OL schools (i.e. the managerial, process, developmental and economic school). With inspiration from this framework we have developed a conceptual model for analysing managers' mindset,

see Figure 1. The central idea in the ‘managerial school’ (upper right part) is that the members of a firm’s top management team play a key role for a firm’s ability to address environmental issues and to drive innovation. In Figure 1, ‘scope’ expresses a significant consequence of the above mentioned leadership initiatives, namely a definition of the organizations frame of inquiry, conduct and learning within the sustainability field.

With inspiration from the generic sustainability innovation (SIC) model by Hansen, Grosse-Dunker and Reichwald (2009), scope addresses the three dimensions in the triple bottom line concept. However, unlike the SIC model, we also incorporate the economic dimension and from the perception that measuring and reporting overall financial and sustainability results are two out of several economic aspects (Kleine and Hauff, 2009). The ecological dimension incorporates all the potential impacts of businesses activities on the quality and quantity of natural resources. Thus, scope relates to the spectra of aspects considered, as reductions in energy, alternative energy production and natural resources used, waste management, improved pollution and emissions management etc. Finally, the social dimension, expresses the spectra of stakeholder’s needs emphasized as being important.

The second dimension of ‘scope’ concerns a product’s physical life-cycle and then what phase or phases from ‘cradle to cradle’ that stand in focus, e.g. primary production, processing, packaging, distribution, use (consumption and maintenance), and recycling (Hansen, Grosse-Dunker and Reichwald, 2009). Finally, the third dimension of ‘scope’ addresses innovation types in a sustainability context. The ‘innovation space’ framework by Tidd and Bessant (2009) has inspired and supported us to include the following innovation areas: product, process, position and paradigm. As expressed by the first area, it is about changes in the market offerings (a firm’s products/services). Process innovation refers to changes in the ways products/services are created and delivered (product development inclusive). Position innovation refers to repositioning of an established brand (a product or a company brand). Finally, innovation of paradigm refers to changes in the underlying and governing mindsets (dominant logic) framing the issues and tasks the organization shall be committed to. Thus, the question that we address is: What innovation area (-s) and life-cycle phase (-s) do managers relate to the sustainability construct?

What are the triggers behind firms’ propensity to innovate products, brands, processes and/or business models in a sustainability context? When dealing with this question in the strategy and innovation management literature, a central idea is that organizational learning (OL), together with knowledge about market and technology are three interrelated key triggers (Tidd and Bessant, 2009). The link between OL and market knowledge comes from that the former is critical in order to attain a balance between incremental and radical innovations. Furthermore, the link derives from the idea that knowledge about customers’ behaviours and values is imperative in innovation and business development processes (Teece, 2007). From adopting a process school on innovation follows that relationships are important. Accordingly, and due to the importance given in the contemporary innovation literature to market knowledge and end-user driven innovation, the following question is addressed: Within the context of sustainability, what internal and external relationships stand at centre and why, and what role do customers and end-users have?

According to the development school, capabilities are understood as an accumulation of learning that have been recognized and appreciated in various processes and projects at different organizational levels (Birchall and Tovstiga, 1999; Helfat and Peteraf, 2003). In our attempt to analyze what types or categories of capabilities that managers' relate to sustainability - we have been inspired by the dynamic capability framework by Teece (2007). The central issue dealt with by Teece is the following: What are the critical capabilities to be developed within a firm in order for it to continuously: "renew and recreate its resources and capabilities and, most importantly, upgrade and reconstruct its core capabilities ..." (Wang and Ahmed, 2007:36). - The last dimension, outcome, deals with learning from an economic perspective. This implies that expected efficiencies gained by exploitative innovation (incremental changes of a well established process, product technology, concept or brand) appears more favourable, as compared with questioning and perhaps replacing a path that hitherto has shown to be successful (Bell, Whitwell and Lukas, 2002). However, as discussed in the literature dealing with the ambidexterity concept (Raisch and Birkinshaw, 2008), there is a need to assess not only the performance implication and tradeoffs of being committed on exploitation and exploration, but also to assess if a tension, or paradox, exists between the two learning orientations and if so - how to manage it.

3. Methodology

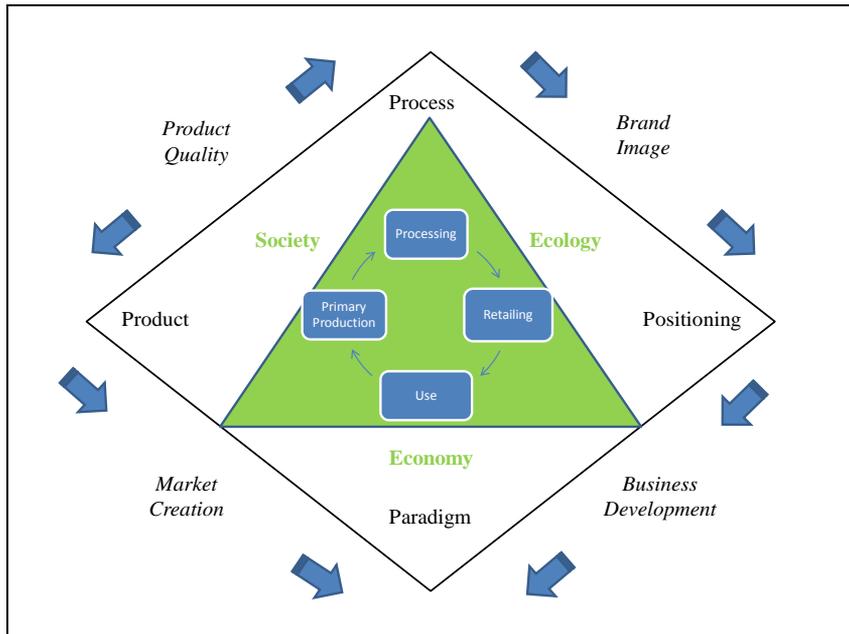
Semi structured in-depth interviews with chief executives responsible for sustainability, innovation, and/or corporate communication at a corporate level in six Danish companies represent the main empirical base. The companies do all have on a national basis a dominant market position within their product/market segment (four on an international level as well). However, their business models differ considerably. The following product/market segments are represented: chocolate and sweet, grocery retailing, ingredients to the FMCG industry, energy, shipping and bio industrial products. At the time for the interviews - all companies had a corporate function with a strategic responsibility for sustainability. All interviews (ten in total) followed the same guide, prolonged for about one and a half hour to two hours and were recorded. Each interview was initiated by questions aimed to reveal the sustainability context, as perceived by the interviewed manager. That is, the meaning of and commitment on the sustainability construct within the company, at various levels and within different functions. During this talk, some of the issues addressed in our conceptual model (Figure 1) were dealt with. However, during the second part of the interview, specific questions relating to the four dimensions in Figure 1 were posed. A three-stage process was followed when analysing the data, as suggested in the literature on conducting qualitative research and on analysing sense making processes (Strauss and Corbin, 1990).

4. Findings

Our three stage process of analyzing the interviews as regards to 'scope' resulted in four categories. Figure 2 below gives an overview of defining features of the four categories with respect to the three aspects. The naming of the categories (product quality, brand image etc.) has a reason in 'scope' but also in the core trigger behind the companies' adoption of the sustainability construct. The arrows in the figure aim to signify

that managers' and companies' mindsets about sustainability may evolve and change over time.

Figure 2 Scope



Product Quality

This mindset was expressed by one of the interviewed managers. The orientation on ‘corporate citizenship’ was initiated during a time period when the following issue was at the top of the company agenda: How to secure a continuous supply of a crude material with high quality? Coincidentally, during the period to innovation activities in the supply chain – the aspect of children-labour among suppliers of the particular crude - was brought into light by NGOs in the media. The education of farmers became central, though the handling of the crude material at this level in the value chain has a major impact on the quality of the processed end-product. Other aspects at this level concern the impact of the technology used by farmers on the natural environment and on farmers’ wealth. In order to implement this and the above mentioned projects, the company came to work closely with local representatives of global NGOs and with private governmental research organizations. Accordingly, capabilities to establish relationships and knowledge sharing networks within these contexts are considered essential.

In order to create an understanding and commitment internally to implement the social sustainability strategy - the ten principles of the United Nations Global Compact Platform stand at centre in corporate communications. However, sustainability reporting has not yet become a prioritized field. The interviewed manger explained this as follows: “We definitely get a positive response on the things we do, but our customers (the big retailing organizations) are not the driving force. Sustainability is not a ‘must have’ for them.” In the marketing to end-users, the company’s commitment on social responsibility is not emphasised, with the exception of the FAIRTRADE mark on one of the key brands

and on its homepage. Although 'corporate citizenship' has been central for almost ten years, the engagement is still constrained to one crude material and to one source of supply. The same relates to the health aspect of food, drinks and confectionaries. So far, this engagement has resulted in one successful radical new product and a new experience, or challenge, namely: "to achieve the same taste and consistency as of sugar based products" (a statement by the interviewed manager). In order to solve this problem, a partnership with a company from a close related product market segment was established. As compared with 'conventional' NPD, 'green' NPD: "is not that ambiguous it is very simple - eliminate sugar" (the manager of innovation and sustainability).

Brand Image

Managers from two companies within the service sector (grocery retailing and transportation) were found to be oriented towards creating an image of their companies as being at the forefront as regards ecology. With the vision to become perceived 'the most responsible place to shop and to work' by consumers and influential stakeholders (the media, opinion leaders, and governmental institutions) one are in the retailing company engaged with extending the number of products and brands that qualifies for ecology marking. Furthermore, investments have been made in broadening the sustainability scope. The CSR manager told the following: "We are very much involved with the health aspect of food – and then in terms of: eat more vegetables and fruit. That's a thing - in store communication about health issues - that we have put an emphasis on during the last couple of years. Our stores can see that this is a way to differentiate us from competitors". The core trigger behind 'ecology' and recently 'health' was described as follows: "when you are able to measure that the things you do have an impact – businesswise and financially – then you get a commitment at the top" (Director of corporate communication).

Due to the fact that the retailing company do not have any own manufacturing units, the buying functions at various levels and within different units (branded stores) has an important role in implementing the sustainability vision. This implies, not only to acquire a reassurance from suppliers that quality standards according to the adopted marking systems are being followed, but also to push and support suppliers (of the retailer's own brands in particular) to pursue the company's sustainability strategy. In conducting this work, the buying function of food report to the CSR manager. A critical issue and capability in realizing this process as well as in realizing the health campaign mentioned above, has been to make the sustainability strategy operational. The CSR manager told the following: "In the beginning it was really hard for many of our employees to understand what corporate social responsibility is. Therefore, we had to make it very concrete by translating the strategy into forty activities". The activities cover ecology, climate, health and fair trade and are formulated as follows: We will establish at least two ecology marked stores during 2011; We will increase the information about ecology and environment to consumers and about which ecology and environment marked products, that are offered in our stores; We will market and make the keyhole marking system more known in Denmark (source: the sustainability report of the retailing organization).

In the shipping company, sustainability covers a number of aspects related to ecology (emissions into air and water; use of renewable resources and energy etc. and environmental aspects of shipping over the entire value chain). Also, internal social aspects (e.g. health and safety of employees) and external social aspects (e.g. ethical

behaviour and corporate citizenship) have recently become key issues. One core trigger behind the adoption of the sustainability construct and the change process it has implied, was by the sustainability manager described as a need to create a more customer focused approach to business. Thus, the sustainability trend has acted both as drive and as a means to design and execute a comprehensive transformation process aimed at turning the company's mindset from an inside-out to an outside-in focus. As in the retailing company, the sustainability strategy and function is governed by a business perspective on sustainability. The guiding star and central theme in internal corporate communication is: "How can we turn sustainability into business" (one of the sustainability managers' statement). And as in the retailing company, the perception is that the challenge lies not in technology. The conception, or more correctly conviction, is: "It is quite simple to reduce pollution and make money at the same time, due to the fact that costly fuel can be saved" (one of the sustainability managers' statement).

Sustainability is perceived as a central and distinguishing feature of the corporate brand. However in contrast to the retailing company, the perception is that once this value orientation has been implanted – it will become a central dimension of the business model and in its operation. Thus, the idea and goal is to close down the sustainability function when this assignment is perceived to be finished; within a couple of years. From this follows that a central field of capability relates to design and implementation of organizational change processes. In managing these change processes and thus designing an external sustainability oriented organization, a governing attitude is that the company shall not be a reactor, but stay ahead of developments and trends within the sustainability field.

Business Development

One distinguishing feature of this category relates to the impact that the ecological dimension has had – within a short period of time – on several economic aspects. A number of factors stand behind, or has supported, this process. One factor relates to a perceived need to establish a unifying strategic dimension within a global company that during many years has incorporated, through buy-ups, a number of capabilities, products and markets. A second and related trigger concerns the way sustainability issues are addressed. The following statement was made by one of the interviewed VPs of corporate sustainability: "How can the business benefit from our sustainability strategy?" Finally, a third and important trigger has been and still is the expected future orientation of one's key and large customers. The sustainability trend within some of the company's customer segments has made innovation of positioning and of business model become imperative. Within one of the companies in this category, a selection of challenges aims - not only to function as guiding stars in the strategy process - but also direct and inspire decisions and processes at other levels. One 'guiding star' is that the world's food chain at present produces about 30 percent more in order to cover 'the demand for waste'. In order to understand and act upon this challenge, life-cycle assessment (LCA) analysis is regarded as a central process and field of capability in all decisions and management processes. The perception is that LCA is a prerequisite in order to systemize innovation work and to detect arguments and opportunities for: increasing or decreasing the product portfolio; initialize sustainability process innovations in the value chain and within the ones of key account customers; suggesting incremental customized sustainability product innovations and for making customers aware of whatever possibilities there are to decrease costs, avoid future potential taxation, and increase margins.

Although the above referred company is preoccupied with a number of ecological aspects that relates to 'use' and the future well-being and prosperity of end-

users – this stakeholder is not yet a target in communication processes dealing with sustainability. The customer group is perceived as being considerably heterogeneous (residing with primary production and processing in the food industry, above all) with respect to both insight about and commitment on sustainability. Within marketing and sales, this phenomenon has resulted in a different approach in customer interactions. The difference is perceived as follows: “Sustainability has made us become proactive. So instead of responding to customers’ request about an alternative to (a replacement of) X – we look into and suggest how we can change and make improvements within the whole chain” (one of the interviewed managers’ statement).

The second company in this category has for many years operated with a business model that in light of the trend ‘renewable energy resource’, or more correctly claim among the company’s stakeholders – appear as more or less obsolete. Thus, the sustainability trend has triggered, or more correctly forced, the company’s top managers to become engaged with a number of sustainability innovation projects. Additionally, the trend has forced the company’s managers to rethink their mindsets about innovation, management and energy business. Some of the initiated innovation projects are closely related to the company’s core business model and will not become profitable within the nearest future (e.g. wind-power). However, these projects have within a short period of time resulted in a considerable recognition, favourable image, among various stakeholder groups on a national as well as international level. In the process of rethinking the business model, the overall mindset of the company has changed. This change was by the interviewed innovation manager described as a shift: “from being a commodity-pusher to a business selling a broad array of energy-saving solutions”. In the wakes of this change process, a new business area and unit has been developed (ESCO). Although the company always has operated in both business and consumer markets, the new business area (ESCO) and the challenges that the company’s present and core business model is confronted with - it has become imperative to extend the external orientation further. The primary reason is, told the interviewed innovation manager - the many opportunities for product innovation that become apparent when taking on a customer perspective (e.g. ‘smart grids’ a software solution that aim to storage energy).

Market Creation

The holders of this mindset are sustainability and innovation managers in a company that is operating in a rapidly developing market segment and where value-creation is about sustainability. As in the previous category, the central task of the function is to identify trends and to support the company’s business functions in converting sustainability related knowledge into concepts, systems and/or processes that can be developed. In order to successfully carry out this task, the department has to identify upcoming new trends, build up new knowledge and eventually create decision-support for management. Two examples of areas of capabilities with current focus are: developing LCA tools and, making sustainability assessment analysis. Another task is implanting a sustainability mentality throughout the organization. Innovation is in the company driven by a number of managers and teams from the top as well as bottom. However, the most important actor is the ‘Sustainability Development Board’, which is composed by VP’s from all departments. The setting up of innovation sustainability goals is made by this group. In addition to this, the board is responsible for securing that the goals are reached by the decided innovation strategies. Thus, all decisions relating to sustainability issues and projects are taken by this board. The reason for this is that sustainability is the core essence of the company’s business model. The products and services developed and

offered aims to solve sustainability issues and challenges for manufacturing companies in different industries. Accordingly, the trigger behind the company's commitment with sustainability innovation lies in an early recognition of the sustainability trend and that this trend could give rise to market creation. - Like in the previous category, LCA analysis is an important process and field of capability in the pipeline phase but also during the next following phases. Thus, LCA is conceived as an integrated and central process alongside with processes aimed to assess financial and market considerations. The essential task of the sustainability function is not to promote LCA, but to assist and support project leaders in making LCA act as a tool to direct and support decisions in a process that often appears as a black box, as one of the managers described it.

5. Innovation Management in a Sustainability Context

From acknowledging that sustainability is an emerging megatrend that has to be acted upon, follows - as revealed in our interviews - that innovation becomes an imperative. However, as shown in the previous section, the mindset for innovation may differ considerably. The central field of consideration and action (i.e. 'scope') may be on the downside part (supply and product quality) or the upside part of the value chain (market position and brand image). Alternatively, the focus may be on the present value chain (business development) or on evolving new value chains (market creation). Two explanations to the chosen path appeared: 1) The triggers behind companies' adoption of the sustainability trend or construct and, 2) The present positions and path available (Teece and Pisano, 1994), like the company's current technology, assets and the strategic attractiveness and availability of alternative paths: (e.g. product quality, brand image, business development or market creation).

As regards the other dimensions in our conceptual model (capabilities, relationships and outcome), the interviews did disclose differences. LCA appeared as a central field of capability for business development and market creation but not for innovation of positioning (brand image). Additionally, communication with NGOs was put forward as representing a central and particular area of capability when engaged with product quality or with brand image. However, it is evident that our explorative approach and small sample has restricted our ability to determine a relationship between the four dimensions in our conceptual model. Despite this limitation we have been encouraged by the insight about important capability areas that our interviews have provided us - to propose that there exist a difference between 'green' and 'conventional' innovation. Based on our interviews and the sustainability literature, we propose that some new capabilities need to be added to a highly recognized framework of dynamic capabilities (Teece, 2007) - in order to make the framework address innovation in a sustainability context. In Figure 3 are listed a number of issues, knowledge and processes that relates to the categories of dynamic capabilities in Teece's framework. The lower part contains capabilities that managers' in our study described as being important in a sustainability context. However, considering our methodology (limited sample, semi-structured interview), Figure 3 is only to regard as a tentative framework to be further developed and evaluated in future studies.

Figure 3 Dynamic Capabilities

Source: Tollin and Schmidt, Marketing Logics, Influence and Ambidexterity, paper in review.

SENSING	SEIZING DESIGN	SEIZING FINANCE	TRANSFORMING
Collect and analyze quantitative data about customers'.	Convert product ideas into operational entities as value chains or business models.	Document investment requirements for launching new products successfully.	Lead projects that deals with radical product innovation
Collect and analyse qualitative data about customers.	Assess the result of NPD ideas on brand equity and/or corporate reputation	Estimate the result of NPD ideas on cash flow and/or on share holder value.	Integrate strategic partners to the company's innovation networks.
Monitor cultural changes and trends in the society.	Assess the match between new product ideas and company values and ideals.	Use advanced research techniques like conjoint analysis, perceptual mapping etc.	Manage knowledge creating networks of different partners.
Monitor developments and trends in product, packaging and process technology.	Create consensus across the organisation around values and innovation expectations.	Assess the processes that shall be kept in-house and what to out-source.	Coordinate and integrate knowledge across the firm or relevance for innovation.
Monitor the strategic landscape in the search for new business opportunities	Work with clients/end-users in the development of new concepts.	Protect strategic knowledge in marketing and innovation	Manage innovation projects that involve several functions and/or organisations.
Continuous interactions with NGO's and governmental institutions on at national and international level. LCA Analysis	LCA analysis, Work with external partners in order to meet official requirements	Convert sustainability investments into economic measures.	Create a commitment in the organization for sustainability and a broader mindset . Create an awareness and an interest for sustainability construct among customers

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