

Sustainability Dilemmas and their Solution Strategies by Committed Food Businesses

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Abstract

Food businesses feel the call for sustainable development (SD). This paper about the Finnish and Swedish food system actors about their understanding of and activities towards sustainability shows that there is commitment for solving aspects of sustainability and different strategies to do this. However, the food businesses also seem to get entangled with various dilemmas regarding sustainability, and to perceive contradictions between economic, environmental and social issues; however, these situations may also turn synergistic.

The businesses studied expressed commitment to sustainable solutions interpreted by their sustainability strategies. The first identified strategy was a *'self-made'* effort, whereby businesses absorbed economically, environmentally and socially *'positive'* ideas and implemented them in their activities. The second strategy was *based on labels* and included the certification of the environmental and/or social quality management system, the use of particular labelled products and local food. The third strategy for *critical co-operation* within the chain meant learning about one's food networks in co-operation with other network actors, experts or brokers. These strategies seemed to impact differently on the sustainable development of the organizations on the one hand and the chain level on the other. Label based strategies offered more visibility than *'self-made'* strategies, which may, however, support extensive sustainability efforts or remain narrow saving strategies implying the risk to miss the opportunity for chain level development. As a rather rare approach, the critical co-operation strategy may upgrade sustainable developments both on the organizational and chain level. Participatory research supporting creative and contextual sustainability developments was suggested as a promising future option for food businesses to aim at organizational and system wide SD.

1 Introduction

Sustainable development (SD) as launched by WCED (1987) into public awareness has gained widespread acceptance by the general audience, politicians, scientists and businesses. Environmental sustainability in particular has been promoted by professionals (ADA, 2007) while sustainability approach has also been recognised as a professional interest (Morgan & Sonnino, 2008; Mikkola, 2009a). Here SD is understood as a normative rather than technical concept, aiming at better economic, environmental and social conditions (Morgan & Sonnino, 2008). Food production and consumption has been identified - not surprisingly - as one of the three major functions impacting environment in western societies (Tukker, 2006; Weidema et al., 2008). Consequently, political recommendations and regulative communication schemes for sustainable consumption and production concern food sector from agriculture to green marketing (Consleg: 1991R2092; EC, 1999, 2004, 2005; Getting more from less, 2005; Swan labelling of restaurants, 2006; SOU, 2005; Ehdotus kestävien hankintojen toimintaohjelmaksi, 2008). These texts often suggest the use of organic food and local food, or even organic local food, and imply short chains in terms of (assumed) efficient transport and/or the low number of middle men as common solutions for increasing the sustainability of food system. It seems, however, that the businesses find the concept of sustainability to some extent dilemmatic when trying to translate abstract ideas into concrete everyday

practices (Post & Mikkola, 2009). Given the generic interest into sustainability, it is crucial to understand how the businesses respond to the quest for sustainability in terms of their context and sequential position within the chain. After all, the businesses are the ones to conceptualise and implement sustainability in ways allowing them to sustain on the market. In this way, the wider food system may be approached from bottom-up in terms of SD.

This preliminary paper aims to examine the ways sustainability is implemented by various food businesses committed to SD. The paper focuses on the concept of sustainability strategy and explores different sustainability strategies and their effects on the business vis-à-vis chain level. The entry point to the analysis is the way the strategy is implemented (the 'how' question) by the businesses, which was understood to connect with background issues such as what do the businesses regard as sustainable (the 'what' question), why are they making efforts for sustainability (the 'why' question) and who do they deem relevant for this aim (the 'with whom' question)? The paper discloses a range of strategies for sustainability with their specific effects on the organizational and chain level developments. This kind of sustainability study represents bottom-up developments towards sustainability, tying together individual organizations' compatibility for sustainability from upstream to downstream the supply chain. The study is based on empirical data of a Nordic network project in 2006 whereby altogether 46 food system actors were interviewed. This preliminary paper presents the results of 19 Finnish and Swedish interviews. The study concludes with the evaluation of sustainability strategies promoting chain level sustainability by adapting Porter's (1985) notion of competitive advantage into sustainability advantage on the chain level.

2 Methodology

The study leans on the notion of competitive advantage through supply chains, implying the sustenance and profitability of the individual business through learning about and development of the chain operations with other chain actors (Porter, 1985). In this paper the co-operation for competitive advantage is translated and extended to cover the co-operation and compatibility for sustainability. Accordingly, the chain actors need to indicate compatible vertical and/or horizontal backward or forward integration, respectively to the position of the actor within the chain sequence (Porter, 1985). On the market, the competitive supply chains are pitted against each other and survive through their service and price qualifications as chosen by their customers (Porter, 1985).

The development of sustainable catering industry in the Nordic countries has been one of the strategic areas of Nordic Innovation Centre (NICe), which funded during 2005-2007 the Network for Nordic Excellence in Healthy and Sustainable Catering (HealthCat, <http://www.nordicinnovation.net/prosjekt.cfm?id=1-4415-211>). The network consisted of 46 Nordic actors across the food system; of these, seven were located in Finland and 12 in Sweden. The actors were self-selected by their expression of interest in exploring the concept of sustainability and its possibly beneficial implications for their activities. The actors found a Nordic network attractive as a forum for new insights. The businesses were considered to be more or less committed to sustainability without any evaluation of their sustainability measures or status. This is in line with the concept of SD as a normative and encouraging rather than excluding orientation towards better economy, ecology and socio-cultural features (Morgan & Sonnino, 2008).

The actors represented their Finnish and Swedish organizations, and were grouped according to their activity. The first group included information professionals such as university

researchers, teachers in applied universities and employees at certification and organic promotional bodies (Group 1). The second group consisted of catering professionals such as public and commercial caterers (Group 2) and the third group of supply professionals such as wholesalers, processors and farmers (Group 3) as presented in Table 1.

Table 1. Number of participants related to actor groups and country

<i>Country</i>	<i>Group 1</i> Information professionals	<i>Group 2</i> Catering professionals	<i>Group 3</i> Supply professionals	<i>Total</i>
Finland	2	3	2	7
Sweden	4	4	4	12
<i>Total</i>	6	7	6	19

The study aimed at identification of the strategies for sustainability and their effects on the individual organizations vis-à-vis the chain level. The actors illustrated business specific situations in very different chains across the food system rather than businesses working within the same chain. The actors participated in structured telephone interviews, which were carried out during 2006 in Finland and Sweden in native languages (Table 1). A Danish researcher designed the interview guide with five questions about constituent parts of sustainability, in which way and for what interest sustainability was realised as well as whether certification of sustainability and Healthcat network activities were to be supported. The interviews lasted between ten and twenty minutes, and the Swedish interviews were tape recorded and transcribed verbatim, whereas the Finnish interviews were recorded in shorthand and translated in English. This paper does not deal with the issue of certification for SD.

Strategy was understood here as ‘activities in response to changing environment in order to continue sustainable business’, and environmental change in this case was by definition linked with need for economic, ecological and socio-cultural improvements or reforms. The qualitative content analysis of the interview corpus aimed at categorization (Kvale, 1996) of the business strategies for sustainability. The corpus was coded for sustainability activities (the how), understanding of sustainability (the what), the reason for activities (the why) and the possible partners these developments were undertaken with (the who). The analytic reading of texts was based on interview questions which elicited often rather direct answers to the analytic questions. Sometimes the particular explanations were extended over following questions, and in these cases the pertinent text segments were collected across the transcript and read as an answer to the respective question. The resulting business strategies for sustainability are reported according to their condensed meaning (Table 2), as interpreted by the researcher (Kvale, 1996). The analytic reading also had a discursive slant whereby the answers were not digested naïvely (Potter & Wetherell, 1987; Parker, 1992); it was understood that the sustainability discourse and organic food often have rather strong normative tone calling for ‘correct’ accounts. The disregard for precision in sustainability accounts was often presented as due to an economic interest, a culturally rather accepted way to ground one’s strategic activities.

3 The sustainability strategies of committed businesses

This analysis reports the core of the accounts of interviewees as representatives of their organisations, after which the meanings of these reports are condensed in Table 2 for each professional group.

3.1 Information professionals

The 'self-made' sustainability strategy

These information professionals saw a keen contact between their activities for sustainability and their work as professionals. They were academic teachers of nutrition and generic food system, who also held critical and open views about what sustainability means in terms of various foods. They saw themselves as developers of sustainable food systems through their research, teaching and supervision of students; the students were a 'channel of change' towards more sustainable world.

They expressed an extensive and critical focus on the "whole [food] system", talking about the production of food, in the ways not "stressing the nature", the need for efficient logistics, and the importance of healthy food as well as taking various social aspects, such as occupational conditions, into account. The content of the talk varied from very concrete sustainability aspects such as unhealthy food being replaced by tasty and healthy food to the abstract ideas of rational use of natural resources aligning with carrying capacity and democratic processes. There was no advocacy for particular labelling schemes, but any products could be evaluated for specific sustainability aspects on particular grounds. Notably, they felt themselves free to construct their approach to sustainability as representatives of official educational structures, and the broad and critical sustainability concept "inbuilt" in them had no alternatives. Evidently, they were interested to understand the knowledge created on the sector and its sustainability developments in general. The Nordic frame offered an interesting field for discussions as well as learning from other researchers and experts. These professionals felt their work as very satisfactory although challenging.

The label based sustainability strategy

The professionals here worked for promoting the adoption of various labelling schemes such as organic and Swan label. They explained this as a sustainability approach for restaurants, catering organizations and individual consumers. The professionals working for organic label promoted both domestic and imported organic produce. Additional close-by-meaning products such as those labelled as 'fair' were included in the approach. The Nordic Swan labelling scheme, one of European environmental labels, was intended for restaurants with a broad approach for sustainability including not only local and organic food but also the use of energy, water and chemicals. The non-food approach was based on a life-cycle analysis. The information professionals working on label based perspective expressed similarly a broad and critical view into food system with the negative tone of hazardous chemicals and inequalities in pay for workers. They saw that administrative agencies could be more critical towards defective production methods. These professionals enjoyed their work and felt they were fulfilling the vision for "sustainable society" where next generation will inherit a "world which functions". Their 'partners' for sustainability were their customers, and particularly in the case of Nordic Swan, the researchers with the LCA knowledge.

Critical co-operation strategy for sustainability

There were also critical promoters of sustainable development without obvious commitment to particular labels or LCA information. These professionals sought to help public procurers by setting up “right criteria” for sustainable food, based on several approaches and customised for the procurer. Additionally they offered recruitment for public catering. The view for sustainability emphasised ecological food produced in ways not depleting natural resources. “Big agriculture” was criticized as source of unemployment and depletion of natural resources. The critical co-operation oriented information professionals sympathized rural areas, their livelihoods, landscapes and cultural features. The critical co-operation strategy saw additionally the public procurers and farmers as important co-operation partners.

3.2 Catering professionals

The ‘self-made’ sustainability strategy

These caterers applied their ‘self-made’ orientation for sustainability by choosing basic food of known origin, as contrasting with “weird stuff” which was marketed. They also emphasised “maintenance functions and durability of equipment”. Sophisticated solutions for saving food, water, energy, dishes and chemicals were applied by organising menus, their timing and portion sizes “according to customers’ situation”. The caterers made systemic choices about cook and chill versus other cooking methods and decreased the frequency of transport according to storage facilities. Some of them also made efforts to purchase local food rather than organic food. Their efforts for sustainability were dependent, however, on limited public budgets, customers’ tender calls and the conditions of their facilities and organizational strictures. The ‘self-made’ caterers viewed SD from very extensive to rather narrow perspectives; on the one hand, sustainability was about saving natural resources, avoiding pollution, saving energy and materials in production and looking for positive social interaction in heavy catering work. On the other hand, sustainability view could ‘shrink’ by conscious expression to multiple use of materials and good maintenance. Caterers expressing the ‘self-made’ strategy were stressing the “modest” life-style and avoidance of industrially induced unnecessary needs. They hoped to satisfy customers’ expectations for quality food, for example by developing their use of domestic vegetables. The actors clearly pointed out the urge to save money in public services, whereas the “saving of nature” was to be left on “individuals” [as private consumption]. Additionally, farmers were contacted in order to increase supply of local and domestic food. The caterers also appreciated meeting and learning from others, and they particularly sought knowledge based on sound scientific research.

The label based sustainability strategy

The implementation of the use of organic food in a school kitchen proceeded gradually, “commodity by commodity”. The organic ingredients were procured at economical prices by “pressing” producers. Because organic food was not industrially refined, the kitchen was rebuilt specifically to deal with “scrap”. The aim was to end up with a totally organic kitchen, although at the moment some conventional food and industrially prepared foodstuffs were used. Finally, this mode of operation was not more expensive than the one of conventional kitchens, although the building of facilities was supported by project funding. Caterers working in label-based operations evidently saw transports and domestic food, organic food

and short chains as part of SD. The label based strategy in public catering also met economic restrictions in terms of prices of ingredients, but was seen as “leading” in one’s country by being able to keep to the cost level of public food service, even if it was organic. Additionally, it was appealing for being awarded by a large processing company for using organic food. Finally, parents’ appreciation for the organic school food felt satisfactory. Label based strategy approach was implemented in co-operation with the producers, processors and customers as well as city and national officials for project support and funding.

Critical co-operation strategy for sustainability

Working for sustainability by considering the people eating healthy food and working for food in decent circumstances was not connected with the use of labelled products but keeping an eye on internal environmental activities and interaction with suppliers. This approach was explained as the company positioning towards sustainability, and supported by an internal sustainability report.

From the point of critical co-operation, the entity with eaters, workers and the common environment became a meaningful target for development. The caterer following critical co-operation strategy explained that customers’ views were important but that the quality approach the business had adopted worked as an orientation for SD of the business. The caterers representing the critical co-operation strategy referred to suppliers and customers as their partners.

3.3 Supply professionals

The ‘self-made’ sustainability strategy

The growers changed their style of activities years ago by switching to renewable energy and investing to new energy-efficient machinery. They developed their distribution system more efficient and gained cost savings. They also stressed the equal quality and pay of work and made efforts to share the unpleasant as well as pleasant tasks among the personnel. They felt that intertwining economic, ecological and social dimension was very rewarding. Suppliers categorized as ‘self-made’ used the ‘win-win’ and “economically and environmentally sustainable” tropes to describe their approach to the content of the concept, adding human health and decent pay across the whole chain. The ‘self-made’ strategy adopters did focus on economy, which translated to ecological benefit. Additionally the relations between management and workers were positive, which seemed to increase willingness to work for the business. They were not very clear about with whom they seek sustainability and participation in the network was rather nonexistent.

The label based sustainability strategy

Farmers and processors were committed to organic production and their products were certified; they considered organic production methods as correct but not adequate in terms of sustainability. One processor made efforts to switch over to renewable energy and considered imported food via air freight not sustainable. Additional saving of materials such as water and chemicals was realised in processing and more flexibility was looked for to get large companies to run organic product lines. Furthermore, there were processors using a selection of organic food and local food, and they had b-to-b trade with certified businesses. A wholesaler focused on products labelled as fairly traded, and preferred environmental label type I. The company also had constructed an internal strategy for sustainability. Finally, a

wholesaler specified on various labels such as organic, integrated production, and the one for domestic origin. Those committed to label based approach emphasised EU directives, controlled production and saw sustainability to mean tropes such as “future generations” and “farm to fork”. Some actors confessed that for them, the economic aspect was decisive in organic farming and wholesaling. In the countryside, the producer’s want for the business to pass on “from father to son” was also a remarkable feature in the explanation of label based approach. The labelling advocates saw the consumer interest as essential and assumed, that organic, environmental and fairly traded labels had become “fashionable”. Some actors also continued the business style of their predecessor which ‘kept them going’ in the upmarket position. These actors had hardly resources to participate in network activities.

Critical co-operation strategy

In the Finnish and Swedish data there were no actors within this category.

Table 2. The categories of strategic solutions for sustainability by Finnish and Swedish information, catering and supply professionals

Strategies	Information professionals	Catering professionals	Supply professionals
'Self-made'	Open and critical evaluation of sustainable solutions in terms of product and production quality from health, environmental and social perspectives	Critical choice of basic (domestic/local) food with saving energy, water and chemicals as well as decreasing the consumption of materials, good maintenance, social 'baseline' for workers	Investment to energy-efficient machinery, re-planning of logistics, switch to renewable energy and securing equal pay and shared stress in work within the business
Label based	Appreciation of 'worked-out' solutions for sustainability as labels such as organic production, LCA-based categorization of products, domesticity and/or fairly traded products conveying to improvements for social and health aspects	Organising the catering facilities for organic ingredients, gradually increasing their share, with keeping the organic price level 'down' and connecting with suppliers, funding bodies and customers	Organising the business to produce or trade with labelled products and possibly exceeding the label requirements by own additional improvements
Critical co-operation	Focus on contextual needs of procurers and co-operation with them to develop procurement criteria for sustainability using any information and knowledge of suppliers available	Catering of healthy, economic food to customers by developing one's facilities and supplier co-operation environmentally and with an eye on social aspects	No data in Finnish and Swedish interviews (data found in literature of Finnish supply chains)

4 Discussion

Combining the analytical features of sustainability strategies (the how, what, why and with whom) of different actor groups makes visible the dynamics of the different strategies: what is done for sustainability, what kind of understanding pertaining to sustainability lies behind the activities, why these activities were applied and with what kind of 'partners' they were implemented. This 'systematics' of sustainability strategies suggests the effects of upgrading sustainability within the respective organizations as well as their 'pull-and-push' (Jongen & Meulenberg, 1998) impact within the chain environment.

4.1 *The information professionals*

The 'self made' information professionals exercised critical and open study of the food system, however, sometimes from a particular disciplinary point of view. The disciplinary limitations can hardly be overcome without new scientific contributions such as the rising sustainability science. The constructive sustainability strategy of these information professionals was consistent with their 'noble aims' as independent representatives of the educational system. Their 'partners' in this strategy were rather self-evidently the students, who would have possibilities for managing change in their future positions within the industry, if not risking the everyday grind without inspiring connections. Apart from the rather 'strong and hands-on' approach of participatory research (Bruges & Smith, 2008; Mikkola, 2009b), exemplifying probably a less common research style, the overall sustainability upgrading effect of these information professionals on the food system took place indirectly and in diffuse manner through education and dissemination of research results.

The information professionals committed to label based approach more or less agreed about the broad view about sustainability. However, the label based approaches varied by their foci; organic label only indicated particular production method, which was seen to address sustainability in spite of exclusion of other sustainability aspects such as energy consumption, transport or use of low-pay foreign labour. The Nordic Swan label addressed the meal preparation and service process as a whole, with emphasis on the use of organic food - as a mutual interest with organic labelling scheme - and local products as well as the consumption of energy, water, chemicals and transports at the restaurant. Furthermore, the Swan label may be seen as a politically accepted, exemplary process of ecological modernization (Spaargaren, 1997, 2000). The organic information and the LCA based Swan scheme business were partly dependent on public funding while making efforts to cover the costs of information production of the criteria and certification from customers. The effect on the supply chains was partly similar, albeit the organic label scheme called for decreasing the use of synthetic fertilizers and pesticides whereas the Swan label scheme upgraded the out-of-home eating more thoroughly, extending to society wide utility systems. Their impacts on the food system as sustainability pull may not yet be very extensive as the so far rather low acreage of land in organic production and the number of labelled restaurants shows.

The critical co-operation approach of an independent consultant working for sustainability was closely connected with customers' interests to sustainable procurement. The work aimed to support Nordic food culture, rural livelihoods and landscape protection in addition to wider ecological food system concerns. The obvious 'partners' were customers and farmers, but researchers seemed to lack from this co-operation. The effect on the catering organizations, supply chains and wider food system probably upgrades sustainability

interests for local and domestic food, but possibly with no regard to more particular LCA type of knowledge. However, this kind of work with customized approach connected with LCA type information may convey remarkable sustainability potential as a sustainability pull for supply chain specific solutions (Mikkola, 2009a,b; Kovács, 2008).

4.2 The catering professionals

The 'self-made' sustainability approach focused on cost savings in terms of energy, water and chemicals' consumption and avoidance of waste creation. Albeit the views about sustainability were mostly broad, they could also narrow to efficiency of operations and good maintenance. Here, the effects of cost-saving in one's operations did bring environmental benefits, while the social aspects were secured by a minimum standard of occupational regulations. This mode of operating does generally not become visible for public appreciation as 'environmental virtue of modesty and saving'. However, the approach pays little regard to external environmental (Bergström et al., 2005) and social sustainability and therefore, risks neglecting these aspects. The result may resemble 'Wal-Mart' style of business (Fishman, 2007), which is corroborated in another study pertaining to professional identity for sustainability (Mikkola, 2009a). The chain level effects seem to be limited in terms of sustainability upgrading and as pull exercised upstream the chain. Possibly even Wal-Mart type downgrading may develop in upstream businesses.

The label based catering moved gradually towards organic kitchen, which was interpreted as valid strategy for the broad aims of orientating towards sustainable food system. This approach seemed to pay little attention to use of utility services and consumption of chemicals, but focused to comply with organic regulations without adjusting to organic price level. The approach also served to distinguish professional impact on sustainability upgrading within the organization and upstream the supply chain (Mikkola, 2009). The political promotion was visible through project funding and confirmed by customer appreciation. The organic kitchen clearly exercised pull on organic supply chains and in this particular way upgraded the food system, although the socio-economic and for instance energy aspects within the kitchen operations and supply chain remained inexplicit.

The critical co-operation of a catering organization was based on regard of the eaters and the workers as well as environment, both within the organization and beyond it upstream the supply chain. The work was progressed in co-operation with the respective employees and businesses, as motivated by generic company sustainability policy. In principle, this kind of developing approach would be able to upgrade both the business itself as well as the businesses upstream, by developing compatible pull-and-push. The approach seemed to have limited visibility within the food system. However, without explicitly informed benefits the approach seems to some extent vague, which does not mean, that the approach would be without considerable potentials. Furthermore, without expert support and research input as to the LCA status of operations and chain level phenomena the approach may seem deficient to some extent. However, this particular strategy category may be identified in co-operation of Finnish caterers with farmers and processors to decrease the costs and environmental impacts of their activities. The co-operation is strengthened by the information that the saved costs are shared between the partners in the long-term supply contract (Mikkola, 2009a).

4.3 Supply professionals

Suppliers with 'self-made' sustainability strategy experienced a 'win-win' situation when they developed the sustainability orientation of their business by switching to renewable energy sources, increasing logistic efficiency and looking after more equal pay and stress of the employees. This corresponded their broad sustainability view of the food system "from farm to fork" with the exception that the vegetable farming was not mentioned as in need of any upgrading. Basically, this approach was economically beneficial and socially satisfactory; however, it hardly had any visibility within the chain. In itself, it upgraded company's sustainability activities and exerted a push towards sustainability within the supply chain.

The label based approach was total as a core orientation for farmers and processors, whereas wholesalers dealt with a mixture of food from conventional and integrated production as well as labelled food indicating domesticity, fair trade and organic production. The label based approach was interpreted as a sustainability policy, which was, however, perceived as insufficient by some processors. They understood that energy, chemicals and logistics as well are necessary sustainability aspects, which were not addressed by organic regulations. Their co-operation partners for sustainability were the customers, who enabled their activities on this upmarket segment. In addition to environmental aspects they felt the economy was better than within conventional agriculture. They were able to upgrade their businesses and exert push towards consumers. Eventually, due to the rather limited market share of organic food this push was not as strong as they would like it to be. The domesticity label probably supported nationally localised agriculture, which was probably conventional but included regulative base-level for social conditions and options to 'self-made' upgrading. Additionally, fairly traded products suggested concern for global sustainability interests.

Critical co-operation as a sustainability strategy of supply professionals was not present in this Finnish and Swedish data. Eventually, a rather similar economically organised supply chain pattern has been found among primary producers, processors and brokers (Mikkola, 2008) whereby the chain level management principle was coined as socially overlaid coordination. In this case, economic, social and possibly environmental aspects were balanced and able to secure the continuity of the supply chain.

5 Conclusions

The categorizations of sustainability strategies in this paper are to some extent abstractions and do not faithfully follow the social reality of the actors for several reasons. First, the discursive reality dictates what is socially acceptable to say and in which kind of situations (Potter & Wetherell, 1987). It cannot be assumed that 'everything' is disclosed by the interviewees. Second, the interviewees did represent their businesses but they hardly know 'everything' taking place (Kvale, 1996) within their organizations or beyond. Thirdly, they may not be able to express their knowledge in consistent and accurate wordings (Kvale, 1996). Within these limitations, it can be claimed that activities towards sustainability were exhibited by the businesses in this study. The dilemmatic translation of sustainability goals by businesses to every-day practices (Post & Mikkola, 2009) seemed to take place in multiple ways, in terms of particular sustainability aspects, which were interpreted as sustainability strategies in this study. These sustainability strategies exerted differing upgrading and visibility effects for the businesses themselves as well as varying 'push-and-pull' effects within the supply chains within which they operated.

The self-made sustainability strategy was indeed able to save costs, energy and materials, which obviously is environmentally positive. The win-win double helix with economy and environment did not necessarily include social aspects, which may meet their regulative bottom line but could also imply to very satisfactory conditions. However, the self-made strategy towards sustainability hardly exerted any pull when implemented at the downstream end of the chain, whereas it did imply a push when realised in the upstream part of the chain. Probably the approach did not gain respective acknowledgement. *This sustainability strategy therefore seems to qualify as both arbitrary and random for the chain environment, and would lever sustainability on the chain level more effectively in the form of critical co-operation.*

The label based approach was heterogeneous in the way that organic labelling implied to organic regulations only and the Swan labelling of restaurants for the extensive sustainability complex including LCA information of processes and products. Finally, domesticity labels referred just to country specific location of the agricultural production, which could meet a business with 'self-made' sustainability approach but quite as well may not. The upgrading effects of the organic and Swan labelling schemes are evident within the respective businesses and throughout the chain, whereby the *label committed businesses exert compatible pull and push on the market.* Interestingly, there are views among organic actors towards more encompassing sustainability activities, whereby they approach the principles of the Swan scheme or some other extensive sustainability certification.

The critical co-operation strategy for sustainability was similar to the self-made one in that it carried no external 'tags' about its orientation and thereby lacked external visibility. However, the approach would have very extensive upgrading applications across the food system; it could exert internal and context adapted 'push-and-pull' approach on the supply chain level towards increased sustainability. However, additional research based understanding about environmental and social reality could support the work considerably; otherwise the approach gets close to 'self-made' approach, dependent on businesses resources but as applied on the chain level. Here large organizations may have resources for the effort, but small and medium sized businesses on catering sectors seem to have very limited contacts with research (Risku-Norja & Mikkola, 2010). One option is to resort to participatory research (Bruges & Smith, 2008; Mikkola, 2009b) or to conceptual models sharing the understanding of environmental and social reality for local application (Mikkola et al., 2010). However, short-term market and strategic business relations and lacking social connections with reflective trust seem to impede this sustainability approach (Mikkola, 2008).

One difficulty is that the developments towards sustainability within 'self-made' and critical co-operation strategies for sustainability have become visible by qualitative research and there are so far no quantifications available. The label based sustainability approaches allow some quantification to be made and they may imply more sustainability work than required by labelling criteria. Additionally the labelling approaches are heterogeneous and among them, the Swan label could indicate extensive sustainability approach. Here the participatory research approach, combining LCA, economic and social aspects would support system wide development, which must be seen as a future developmental challenge. Here the businesses applying critical co-operation strategy would offer functional networks to work with social research and LCA -based (modelling) tools when proceeding contextually towards sustainability.

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