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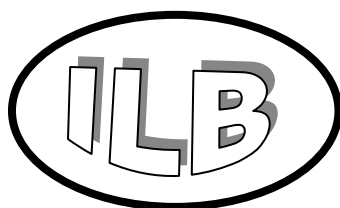
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Corporate Responsibility in the Food Chain: The Criteria and Indicators

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Abstract

Corporate responsibility (CR) is becoming a key issue in the food chain. In order to make sense of this phenomenon, a seminal paper by Maloni and Brown (2006) called for further empirical investigation on the criteria of responsibility in the food supply chain. The purpose of this paper is to answer the call by identifying the criteria for defining CR and develop indicators for measuring the responsibility performance of the food chain.

The study was based on interactive and participatory stakeholder dialogues with diverse experts, corporate representatives and other stakeholders, including non-governmental organizations (NGOs) and governmental bodies. Through an iterative research process we identified the criteria and developed the indicators. Our findings enable business leaders to evaluate and manage their operations towards more responsible business praxis.

Keywords: *Corporate responsibility, food chain, social, environmental, economic, criteria, indicators, measuring, definition*

1 Introduction

The world is facing a challenge of sustainability that affects the whole agrifood industry. For example, critical natural resources such as phosphate fertilizer that has been essential in food production are being depleted due to increased consumption rates. There is increasing evidence that the sustainability challenge threatens the delicate balance of our ecosystem and hence human well-being (MA 2005). This socioeconomically driven environmental challenge has been predicted to have severe repercussions on the sociocultural and economic conditions of developing and industrial economies, thus leading to a necessity of sustainable development and sustainable agrifood systems. At best, corporate responsibility (henceforth CR) is a micro level contribution to the macro level challenge of sustainability.

A multitude of stakeholders in the food sector are increasingly interested in CR and business impacts on society and natural environment (Maloni and Brown 2006, Deblonde et al. 2007, Lamberti and Lettieri 2009). Issues of food safety, the origin of raw materials, animal welfare, as well as environmental impacts of products and processes, are gaining interest especially among consumers (Forsman-Hugg et al. 2008). This means that responsibility is becoming a key issue, and even a source of competitive advantage, for some food companies (Heikkurinen and Forsman-Hugg 2011).

CR can be considered to be an umbrella term to conceptualize responsible behaviour in business (cf. Goodpaster 1983). It consists of corporate environmental responsibility,

corporate economic responsibility and corporate social responsibility (Van Marrewijk 2003) or corporate sociocultural responsibility (Ketola 2008). Derived from the Triple Bottom Line (Elkington 1997), CR sets the scene for businesses to consider the needs of planet, profit and other people beyond their direct and short-term fiscal interests. Oftentimes, these considerations are only referred responsible as they exceed the level of legal compliance. In other words, obligatory actions de jure, such as paying taxes, are excluded.

A more specific definition of responsibility has been challenging to pinpoint (Kilpatrick 1985; Cramer et al. 2004; Dahlsrud 2008), partly due to the complexity (Goodpaster 1983) and contextual nature of the concept (Dahlsrud 2006, Halme et al. 2009). Existing generic and universal models fail to consider industry specificity (Maloni and Brown 2006, Fritz and Matopolous 2008), as well as country specific issues, leaving the definitions on abstract levels that can be badly misleading and provide a smokescreen behind which firms can hide and avoid truly effective social and environmental performance (Norman and MacDonald 2004).

Therefore, defining CR on its contextual groundings has relevance for both the firm and its stakeholders, including the customers and other groups that are affected by and can affect the achievement of corporate goal (cf. Freeman 1984). A definition that consists of valid criteria and indicators for measuring, enable improvement of responsibility performance (cf. Hutchins and Suterland 2008) and increased transparency. The purpose of this paper hence is to identify the criteria for defining CR and develop indicators for measuring the responsibility performance. As a missing empirical investigation on the content of responsibility in food industry context, the study contributes to the research gap pointed out in a seminal article by Maloni and Brown (2006).

The empirical part of the study is based on interactive and participatory stakeholder dialogues with experts, corporate representatives and other stakeholders, such as non-governmental organizations (NGOs) and governmental bodies in the Finnish context. Through an iterative research process we constructed the criteria and indicators for responsibility in the food chain. We conclude that the findings enable leaders to evaluate and manage the direction of a food company holistically towards more responsible business praxis. Before presenting the findings and further conclusions, we review the literature on responsibility in food business.

2 Theoretical framework

2.1 Seven dimensions of corporate responsibility

The discussion on the relationship between business, society and the natural environment is nothing new. Already in the 1950s, the social responsibilities of the businessmen were in the heart of the discussion (Bowen 1953) followed by questions of environmental harm (Carson 1962) entering the field. Research has been conducted in several disciplines, dispersed in a number of journals and a generally accepted doctrine has not developed (Kettunen 1983). Thus, theorizing is filled with different perspectives and the main concepts have mutated over the time and place (for theoretical syntheses and different classifications on the thematic arena see Garriga and Melé 2004, Windsor 2006, Secchi 2007, Ketola 2008, Heikkurinen 2011).

In the late 1990s, John Elkington (1997) coined the Triple Bottom Line (TBL) framework that emerged to a commonly accepted basis for combining economic, environmental and societal issues in the business life. TBL offers a steady starting point for further, more contextual studies to arise. To cover the contextual characteristics of the (Finnish) food industry, Forsman-Hugg et al. (2009, 2012) expanded the TBL-framework to seven dimensions of responsibility. These dimensions of environment, product safety, nutrition, occupational welfare, animal welfare, economic responsibility and local market presence (Forsman-Hugg et al. 2009, 2012), were detected through an iterative stakeholder engagement process. This seven-dimensional model has been adopted by several Finnish food companies in their responsibility management, and it is also adopted for this study.

2.2 *Food chain as the context*

Food companies operate in complex and multinational context (Fritz and Schiefer 2009), which can lead to long and uncontrollable supply chains. It is claimed that food system is undergoing a revolution, transforming how food is produced, who produces it, and where it is processed and distributed, how it is cooked, and where it is eaten (Food Ethics Council 2005). Many of the above mentioned issues also relate to CR.

Through customers, on the one hand, many food companies have identified the relevance of being responsible (Heikkurinen and Forsman-Hugg 2011). Traditionally, CR is expected on company level, however the pressures are increasingly pushing firms to extent their responsibility up and down the supply chain (Hutchins and Sutherland 2008, Forsman-Hugg et al. 2009, Heikkurinen and Forsman-Hugg 2011) and networks (Fritz and Schiefer 2009). In the upstream part of the food chain, primary producers face different challenges than do manufacturers and retailers positioned further down the chain. In previous studies, these chain member specific characteristics have not been fully taken into account. On the other hand, responsible behaviour has high relevance for food companies through the food sector's high dependency on the environment, society and economy (Hartmann 2011). The ecosystem, which the agrifood system is a subsystem of, has boundaries. Natural resource scarcity, e.g., creates new challenges for the food companies as the prices of scarce resources, such as oil and phosphate, are likely to skyrocket. Eventually, many critical resource inputs, e.g. fossil fuels, will be depleted. This means that all food companies, chains and networks will have to change towards more responsible business praxis that contributes to sustainable development.

The quest for defining CR in the food chain is founded on an attempt to measure CR performance. Measuring can give an idea of what kind of resource inputs (natural, human, environmental capital) are used, what kind of progress has been made (e.g. efficiency), what are the outputs of the process, and what have been the outcomes or effects of firm action on the environment, society, and profitability (cf. Wood 1991, Wood 2010, Katajajuuri and Forsman-Hugg 2008). In addition, performance measures can be used as the basis for communicating issues related to responsibility. For these reasons, work on measuring and defining responsibility has great relevance for business leaders and managers but also for other stakeholders, such as state representatives and non-governmental organizations (NGOs).

2.3 Conceptual frame of the study

The conceptual frame for our study is depicted in Figure 1. On the top of the figure, a simplification of the food supply chain is presented, consisting of primary producers, manufacturers, retailers and consumers. At the bottom of the figure are other relevant stakeholders of the food chain, including governmental actors such as consumer agency, as well as non-governmental actors such as activist groups. The seven dimensions of CR can be found from the two columns on the very left. The four principles of measuring, namely inputs, process, outputs and outcomes (in the middle of the figure) are all important in defining and measuring CR. Within this conceptual frame, we proceed with the research purpose to empirical investigation.

		Supply chain			
		Primary production	Manufacturing	Retail	Consumer
Corporate responsibility (CR)	Environment	Measuring responsibility in terms of inputs, process, outputs and impacts			Demand for responsibility information
	Product safety				
	Nutrition				
	Occupational welfare				
	Animal welfare				
	Local well-being				
	Economy				
		Other stakeholders			

Figure 1. Conceptual frame for corporate responsibility in the food chain

3 Methodology

The study is based on a qualitative and an iterative research process between researchers and experts and company representatives that were engaged through participatory workshops. The methodology and research process is described in detail below.

3.1 Data collection and preliminary analysis

In the *participatory research* method (Cornwall and Jewkes 1995), participants have an active role as research participants. Participatory research approach regards people as agents rather than objects by affirming participants' own knowledge as valuable. Participatory methodologies are often characterized as reflexive, flexible and iterative compared to linear characteristics of most conventional methods. Participatory research includes a multiplicity of approaches and applications. A typical characteristic is also to adapt methods of conventional research and use them innovatively in new contexts and in new ways. Participatory research approach was chosen because of its ability to allow an active stakeholder dialogue, which has a central role in building widely accepted content for responsibility (Forsman-Hugg et al. 2008).

The primary research data were collected in terms of altogether eleven workshops during 2009-2011. The participants in the first seven workshops consisted of external researchers (not the authors) and public administration representatives (hereinafter expert workshops), whereas the latter two workshops were compounded of corporate representatives (hereinafter corporate workshops). The tenth workshop was built of the members of the research project and the authors of this article (hereinafter researcher workshop). The final workshop consisted of representatives of different stakeholder groups, including also some

experts, researchers and corporation representatives (hereinafter grand stakeholder workshop). The objectives of the workshops 1-9 were to explore (a) what do the participants consider as the elements CR in the food chain consists of, (b) what are the criteria within the elements. As a third objective, the question (c) how those criteria can be measured, was at the centre of the focus.

Workshops 1-7: Expert workshops. In the first seven participatory workshops, experts from academia and public administration representatives were invited to assess the content of CR, so that each dimension (environmental, economy, nutritional responsibility, food safety, occupational welfare, animal welfare and local wellbeing) had its own workshop and experts. The workshops realised between April and October 2010, involving altogether 30 experts (2-9 experts in every workshop).

The structure of the workshops was the following. Each workshop started with an overview of the research project and objectives of the workshop session. Then the participants worked individually for 10-15 minutes, writing their ideas (on the question what does the dimension consist of), thoughts and key words on post-it notes. The notes were gathered and arranged on a blackboard according to their affinity by two moderators (members of the project and authors of this article). This was followed by a phase where participants worked together as a group, discussing and evaluating the grouped notes on the blackboard and their detailed contents. The role of the moderators was to lead the discussion, yet not to purposefully influence the content or the direction of the discussion. Each session lasted for about three hours.

Workshops 8-9: Corporate workshops. In the beginning of these sessions, the moderator (a researcher in the project and an author of this article) presented the results of the expert workshops. After this, corporate representatives discussed the content produced by the experts. The moderator inquired the same research objectives as in the previous workshop. In addition, the participants debated the measurement of the responsibility dimensions.

The workshops 8 and 9 were held in June and October 2010 with altogether 33 corporate representatives. As mentioned, the data gathered in the previous expert workshops were used as a point of departure in these corporate workshops. In the 8th workshop, the discussed CR dimensions were nutrition, food safety, environment and local well-being whereas the 9th workshop covered economy, occupational welfare and animal welfare. Participants of the workshops were grouped into these dimensions specific groups so that their job descriptions matched with the responsibility dimension in a best possible way. For example, a product safety expert from a firm was placed in the food safety group. The participants were managers and directors from four case firms involved in the research project: a cooperative retailer and three manufacturers from which one produces meat, one vegetal and third bakery products.

Workshop 10: Researcher workshop. In this workshop, the researchers (authors of this article) gathered together to construct indicators that describe the criteria developed in the earlier workshops. The experts produced altogether 389 ideas that were further developed by the company representatives. Both workshop sessions' data were documented on post-it cards and photographed from a black board. The data content analyses were based on detailed notes that were taken in the workshops. As the outputs of expert workshops differed from the corporate workshops, a detailed analysis of the reasons and rationales was

conducted in the research workshop. The analyses were based on five guidelines and aims to:

- merge the criteria that are equal or similar;
- remove the criteria already found in legislation or national requirements (in this study corporate responsibility implies a wider perspective than the view that companies act in compliance with the legal norms);
- relocate the criteria that are more suitable under other responsibility dimension;
- discuss the criteria that corporate representatives and researchers and governmental representatives disagree upon; and
- discuss whether the issues belong to criteria or indicator level

The suggested indicators were reduced to 70 so that each CR dimension had about 10 criteria. This set of indicators was presented in the next workshop for a broad group of stakeholders.

Workshop 11: Grand workshop. The final stakeholder workshop consisted of 54 stakeholders from whom 16 were corporate representatives, 13 NGO representatives, 12 academic researchers and experts, 9 primary producers, and 4 governmental and state representatives. This workshop was held in June 2011, and it took five and a half hours. In the beginning, the moderators (two researchers in the project and authors of this article) presented the project and aims of the workshop. Participants were divided into seven groups which were each working with one dimension of responsibility. The analyzed criteria were introduced at the workshop and the group of stakeholders worked with draft versions of indicators and developed them further through group conversation as well as created new instruments for measuring responsibility in the food chain. The participants were divided into groups based on their own interests and groups were formed to include representatives from different stakeholder groups. Each group had one moderator from the research group whose main tasks were discussion facilitation, time management and documentation of the discussion.

In these dimension specific discussions, the indicators developed in the preceding workshop were analysed and modified towards a group consensus. As an outcome the groups constructed a common view of what are the most relevant criteria and indicators (max. 10) for CR. In the last session of the workshop the groups presented their work to all participants who voted for the three most important indicators of each dimension. The stress was on finding criteria that are measurable.

Additional fact finding. Additional information was needed for analyzing the data (inter alia mapping the legal requirements in some dimensions). Therefore, workshop data were complemented with additional interviews with dimension specific experts (outside the research team) and literature searches concerning legislation. The interview durations varied from an hour to an hour and a half, and they were mainly conducted on face-to-face basis and in some cases by phone.

3.2 Final analysis

The process of the methodological approach describe above can be labelled as “participatory stakeholder workshops”. In this method, data analysis cannot be detached from the data collection process but collection and analysis are perceived as iterative and rather parallel than consecutive. Both researchers and participants have a key role producing, collecting, classifying and analysing data. However, in the last part of the research process, a final analysis of the data was conducted by the multidisciplinary research team (also the authors of this paper). The aim of analysis was to:

- identify the relating or overlapping criteria and indicators;
- remove the criteria and indicators that are still based on legislation or national requirements;
- assess the significance and measurability of the selected criteria and indicators; and
- form groups of the relating, significant and measurable indicators.

With these aims as guiding principles, the research team finalized the data analysis that can be presented as the findings of the study.

Findings

The findings of the study are in Tables 1-7 below in the following order: environment, product safety, nutrition, occupational welfare, animal welfare, local well-being, and economy. The criteria for environmental responsibility are energy use; water use; climate change; eutrophication; and environmentally labelled products. The indicators for these criteria are depicted in Table 1.

Table 1.
CR and environment: criteria and indicators

Criteria	Indicators		
	Primary production	Manufacturing	Retail
Energy use	Share of renewable energy used (incl. electricity and heat) [%]		
	Amount of annual improvement of energy efficiency (kWh/kg) [%]		
Water use	Share of products sourced from water scarce areas [%]		
Climate change	Amount of decreased organizational carbon footprint (CO ₂ -ekv/kg) [%]		
	Share of products with carbon foot prints assessed (CO ₂ -ekv/kg) [%]		
	Amount of decreased product footprints (CO ₂ -ekv/kg) [%]		
Eutrophication	Amount of annual decrease in eutrophication emissions (PO ₄ -ekv/kg) [%]	Share of products which eutrophication emissions are assessed (PO ₄ -ekv/kg) [%]	
Environmentally labelled products	N/A	Share of products and purchases with Nordic Ecolabel or carbon foot print [%]	

The criteria for product safety are risk evaluation of raw materials, products and processes; industry guidelines for good practices; knowledge and know-how applications; research and development; management; and availability of information and traceability. The indicators for these criteria are depicted in Table 2.

Table 2.
CR and product safety: criteria and indicators

Criteria	Indicators		
	Primary production	Manufacturing	Retail
Risk evaluation of raw materials, products and processes	Share of audited/certified purchases [%]		
	Amount of product withdrawals to protect consumer health and safety [X]		
Industry guidelines for good practices	The industry guideline (by Finnish Food Safety Authority) for best practices is in use [Y/N]		
Knowledge and know-how applications	Amount of product safety training (X)		
	Share of product safety experts in the organization [%]		
Research and development	Ratio of research and development spending to annual revenue [%]		
	Ratio of research and development investments to annual revenue [%]		
Management	Organization has a product safety team consisting of experts from different fields [Y/N]		
Availability of information and traceability	Organization uses an effective channel to communicate with stakeholders [Y/N]		
	Organization gives out more information concerning product safety issues that is required (e.g. origin of products) [Y/N]		

The criteria for nutrition are nutrient content; product portfolio and development; nutrient information and labels; advertisement; and education and information. The indicators for these criteria are depicted in Table 3.

Table 3.
CR and nutrition: criteria and indicators

Criteria	Indicators		
	Primary production	Manufacturing	Retail
Nutrient content	N/A	Share of products fulfilling the nutrient profiles criteria (by European Union) [%]	
Product portfolio and development	N/A	Share of products suitable for special diets and allergies (e.g. low-lactose and gluten-free) [%]	
	Organization participates in research and development projects [Y/N]	Ratio of research and development projects spending to annual revenue [%]	
Nutrient information and labels	N/A	Share of products with extended nutritional value label (by Finnish Food Safety Authority) [%]	
	N/A	Share of packaged products with GDA (Guideline Daily Amount) label [%]	
Advertisement	N/A	Organization's advertisements targeted to children follow authorities' recommendations [Y/N]	
Education and information	N/A	Additional nutrient information of products is available on organization's website [Y/N]	

The criteria for nutrition are leadership; know-how, flexibility and possibility to influence the content of work; interaction in work community; workload in relation to employee capabilities and capacities; and sustenance of ability to work. The indicators for these criteria are presented in Table 4.

Table 4.
CR and occupational welfare: criteria and indicators

Criteria	Indicators		
	Primary production	Manufacturing	Retail
Leadership	Amount of annual leadership training [X]		
	Amount of (annual) orientation for new personnel [X]		
	Ratio of systematic manager-employee development dialogue to personnel [%]		
Know-how	Amount of work safety and machinery training [person-year]		
	N/A	Amount of training offered to primary producers [person-year]	
	Share of personnel in job rotation [%]		
Flexibility and possibility to influence content of work	Entrepreneur has holiday possibility outside the farm [Y/N]	Share of employees that are of opinion that they can influence the content of work and time of working [Y/N]	
	Organization uses feedback and suggestion schemes [Y/N]		
	Amount of annual employee initiatives [X]		
	Share of action followed by employee initiatives [%]		
Work community interaction	Organization conducts questionnaires related to occupational welfare [Y/N]		
	Organization takes action based on questionnaire results [Y/N]		
	Employees are of opinion that they receive needed information for their work [%]		
Workload in relation to employee capabilities and capacities	Employees are of opinion that physical and psychological requirements are in balance with employee capabilities and capacities [1-5]		
Sustenance of ability to work	Ratio of days of illness to industry average [%] and annual change [%]		
	Ratio of workplace accident frequency to industry average [%] and annual change [%]		
	Entrepreneur and employees are members of occupational health care [Y/N]	Ratio of occupational health spending to annual revenue [%]	
		Ratio of economic support for primary producers' occupational health care to annual revenue [%]	

The criteria for animal welfare are housing and transport; feeding; health; behaviour; communication and marketing; and procurement. The indicators for these criteria are depicted in Table 5, and largely based on the Welfare Quality® (WQ) framework: Science and society improving animal welfare in the food quality chain (e.g. Blokhuis et al. 2008, Keeling 2009).

Table 5.
CR and animal welfare: criteria and indicators

Criteria	Indicators		
	Primary production	Manufacturing	Retail
Housing and transport	Organization follows and keeps record of animal housing and transport conditions (WQ) [Y/N]	Organization follows and keeps record of animal housing and transport conditions (WQ) (e.g. slaughter-houses) [Y/N]	
	Organization requires that suppliers follow animal transport temperature and animal friendly driving with tachographs [Y/N]		
Feeding	Organization follows and keeps a record of the feeding of the animals (WQ) [Y/N]	Organization follows and keeps record of animal feeding (WQ) [Y/N]	
Health	Organization follows and keeps record of animal health (WQ) [Y/N]	Organization follows and keeps record of animal health (WQ) [Y/N]	
	Organization has animal health care plans [Y/N]	Organization requires that suppliers have animal health care plans [Y/N]	
Behaviour	Organization follows and keeps record of animal behaviour (WQ) [Y/N]	Organization follows and keeps record of animal behaviour (WQ) [Y/N]	
Communication and marketing	Information on animal welfare is available to suppliers and buyers [Y/N] and to public [Y/N]		
	N/A	Share of products sales with excellent welfare quality (WQ) [%/€]	
	N/A	Share of product campaigns with excellent welfare quality (WQ) [%/€]	
Procurement	N/A	Share of ingredient and product procurement with excellent welfare quality (WQ) [%/€]	

The criteria for local well-being are variety/diversity of the local production and selection; local socioeconomic impacts; seasonal raw materials and products; interaction; and food/culinary culture. The indicators are depicted in the Table 6.

Table 6.
CR and local well-being: criteria and indicators

Criteria	Indicators		
	Primary production	Manufacturing	Retail
Variety/diversity of the local production and selection	Share of raw materials produced in the province [%]		
	Share of products produced in the province [%]		
	Share of raw materials produced in Finland of all raw materials [%]		
	Share of products produced in Finland [%]		
Local socioeconomic impacts	Organization's share of outsourcing services acquired/purchased from the municipality [%]		
	Organization's share of jobs in the municipality [%]		
	Organization's share of corporation tax in the municipality [%]		
Seasonal raw materials and products	Yearly share of seasonal raw materials [%]		
	Yearly share of seasonal products [%]		
Interaction	Organization highlights/brings to the fore the producers of raw materials and the makers of products [Y/N]		
	Organization arranges open days [Y/N]		
	Organization has an interactive feedback system [Y/N]		
	Organization co-operates with local schools/learning institutions and supports employment of young people [Y/N]		
Food/culinary culture	Share of geographical indications (GI) of selection/production [%]		
	Share of native breeds and heirloom plants used company's products [%]		
	Organization's recipes utilize local food culture/tradition [Y/N]		

The criteria for economy are employee salaries and wages; financial support; profitability and continuity; and hedging against market and price risks. The indicators for these criteria are depicted in Table 7.

Table 7.
CR and economy: criteria and indicators

<i>Criteria</i>	<i>Indicators</i>		
	Primary production	Manufacturing	Retail
Employee salaries and wages	Ratio of salary development to industry average [%]		
	Share of person-months that are outsourced and temporary (rented) staffing [%]		
Financial support	Ratio of philanthropy for public good to annual revenue [%]		
Profitability and continuity	N/A	Organization has transparent pricing structure [Y/N]	
	Five year average ratio of net income to mode of total assets (return of assets) [%]		
	Ratio of shareholders equity to total assets (equity ratio) [%]		
	Ratio of after-tax operating income to book value of invested capital (quick ratio) [%]		
Hedging against market and price risks	Average duration of procurement contracts [X]		

4 Discussion and conclusion

The purpose of this paper was to identify the criteria for defining CR and develop indicators for measuring the responsibility performance of organizations in the food chain. The findings presented in Tables 1-7.

The inherent nature of the CR dimensions is very diverse, and hence also the presented criteria and indicators vary in shape and measurability. Some of the indicators measure the inputs, whereas others address progress, outputs or impacts of CR. Some of the criteria emphasise the role of the manufacturing and retailing firms, whereas other the primary producers. It is also evident that different types of supply chains, e.g. vegetal chains in comparison to poultry chains, have dissimilar challenges related to responsibility. In addition, some of the indicators might be more suitable for larger companies, whereas others for small and medium sized ones. Therefore, as limitations of the framework, the indicators may not reach to offering comparability between firms. Or, in other words to the ability to say which firm is more responsible than the other?

Nevertheless, as the seminal article by Maloni and Brown (2006) encouraged for empirical investigation in the food chain, this study provided important synthesis on what is CR in the food chain and how it can be measured. In order to further understand the responsibility phenomenon and applicability of the framework, academic scholars and business organizations could test the framework in their practices and several contexts. This could also provide interesting data for one important question: the weighting of the dimensions, criteria and indicators. Scholarly interest could be e.g. which dimensions, criteria and indicators are weighted in which contexts, whereas business pundits might wonder the question how many points can their firm get from each indicator and dimension? Other questions can also be raised on the grounds of the framework. For example, is it so that if all the dimensions are weighted equally, the framework is rather anthropogenic? Four of the seven dimensions concern the human system and well-being, namely product safety, occupational welfare, nutrition, and local well-being. Economy is again an instrument for human well-being, and hence also serves the needs of humans. The natural environment, again, is a suprasystem of the human and economic systems. Therefore, giving equal footing for the seven dimensions, and indicators within, may not be logical.

A scientific consensus is emerging to address that the world is facing a challenge of sustainability that affects the whole agrifood industry. Whether the framework provided in

this article is able to become part of the solution depends largely on how the criteria and indicators are adopted and weighted by the industry and academia. It is evident that some of the measures offered are very advanced and even futuristic in comparison to others. In any case, the framework can be considered as a suggestion forward. However, whether this way forward really contributes to sustainable development, still remains unaddressed. As further studies, the linkage between the indicators and sustainability are ought to be assessed.

The deployed participatory method enabled an important dialogue between the actors of the food industry. The participants found the gatherings fertile in developing responsible business practice and a precious channel for communication and knowledge sharing. “A common platform, where food chain companies can regularly meet the other actors concerned – an empowered citizenry, NGOs, public authorities – and where all actors can mutually and on an equal footing challenge choices and responsibilities (Deblonde et al. 2007)” is also considered important based on the findings of this study. Being so, participatory stakeholder workshops are likely to have potential as the methodological basis for further research.

References

- Bowen, H. R. (1953). *Social Responsibilities of the Businessman*. New York: Harper & Row.
- Blokhuis, H. J., Keeling, L. J., Gavinelli, A., and Serratosa, J. (2008). Animal welfare's impact on the food chain. *Trends in Food Science & Technology*, **19**(1): S79-S87.
- Carson, C. (1962). *Silent Spring*. Boston: Houghton Mifflin.
- Cornwall, A., Jewkes, R. (1995). What is participatory research? *Social Science and Medicine*, **41**:12 , 1667-1676.
- Cramer, J., Jonker, J, and van der Heijden, A. (2004). Making sense of Corporate Social Responsibility. *Journal of Business Ethics*, **55**:2, 215-222.
- Dahlsrud, A. (2008). How Corporate Social Responsibility is Define: an Anlysis of 37 Definitions **15**:1-13.
- Deblonde, M., De Graaf, R., and Brom, F. (2007). An Ethical Toolkit for Food Companies: Reflections on Its Use. *Journal of Agricultural and Environmental Ethics*, **20**: 99-118.
- Elkington.J. (1997). *Cannabils with Forks. The Triple bootom Line of 21st Centry Business*. Oxford: Capstone Publishing Ltd.
- Food ethics council (2005). *Power in the food system. Understanding trends and improving accountability. Workshop series report. Available on the internet: <http://www.foodethicscouncil.org/system/files/foodgovreport.pdf>*
- Forsman-Hugg, S., Katajajuuri, J-M., Riipi, I, Mäkelä, J., Järvelä, K., and Timonen, P. (2012). Key CSR dimensions for the food chain. *British Food Journal*. Submitted manuscript.
- Forsman-Hugg, S., Katajajuuri, J-M., Mäkelä, J., Paananen, J., Pesonen, I., and Timonen, P. (2008). Stakeholder-driven CSR dimensions and criteria for food chains. In: Csutora, M. & Szerényi, Z. (eds.). EMAN-EU 2008 Conference, Sustainability and Corporate Responsibility Accounting measuring and managing business benefits, October 6-7, 2008, Budapest, Hungary: 27-32.
- Forsman-Hugg, S., Katajajuuri, J-M., Paananen, J. Pesonen, I., Järvelä, K., and Mäkelä, J. (2009). Elintarvikeketjun vastuullisuus. Kuvauus vuorovaikutteisesta sisällön rakentamisen prosessista. *Maa- ja elintarviketalous* 140: 74

- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Boston: Pitman.
- Fritz, M., Matopolous, A. (2008). Sustainability in the agri-food industry: a literature review and overview of current trends. Proceedings of the 8th International Conference on Management in Agri-Food Chains and Networks, 29-30 May.
- Fritz, M., Schiefer, G. (2009). Tracking, tracing, and business process interests in food commodities: A multi-level decision complexity. *International Journal of Production Economics*, **117**(2): 317-329.
- Garriga, E., Melé, D. (2004). Corporate Social Responsibility Theories: Mapping the Territory. **53**: 1-2, 51-71.
- Goodpaster, K.E. (1983). The Concept of Corporate Responsibility. *Journal of Business Ethics*, **2**:1, 1-22.
- Halme, M.; N. Roome; and P. Dobers (2009). Corporate responsibility: Reflections on context and consequences. *Scandinavian Journal of Management*, **25**:1, 1-9.
- Hartmann, M. (2011). Corporate social responsibility in the food sector, *European Review of Agricultural Economics*, **38**:3, 297-324.
- Heikkurinen, P., Forsman-Hugg, S. (2011). Strategic corporate responsibility in the food chain. *Corporate Social Responsibility and Environmental Management*, **18**: 5, 306–316.
- Heikkurinen, P., Ketola, T. (2012). Corporate Responsibility and Identity: from a Stakeholder to an Awareness Approach. *Business Strategy and the Environment*, Early view. Doi: 10.1002/bse.744.
- Heikkurinen, Pasi (2011). Environmental strategy and sustainability, in Idowu, Samuel O.; Louche, Celine (Eds.), *Theory and Practice of Corporate Social Responsibility*. Springer.
- Hutchins, M. & Sutherland, J. (2008). An exploration of measures of social sustainability and their application to supply chain decisions. *Journal of Cleaner Production*, **16**: 1688-1698.
- Katajajuuri, J-M., Forsman-Hugg, S. (2008). Importance and challenges of measuring supply chain CSR. In *Sustainability and Corporate Responsibility Accounting – measuring and managing business benefits*, EMAN-EU 2008 Conference Proceedings, 27-32.
- Keeling, L. (2009). How did we design the welfare measures? In *Delivering Animal Welfare and Quality: Transparency in the Food Production Chain*, 8–9 October 2009, Ultuna, Uppsala, Sweden.
- Ketola T. (2008). A Holistic Corporate Responsibility Model: integrating values, discourses and actions. *Journal of Business Ethics*, **80**(3): 419–435. DOI: 10.1007/s10551-007-9428-y.
- Kettunen, P. (1983). The stages of moral responsibility of the firm. *Scandinavian Journal of Management Studies*, **1**: 2, 137–151.
- Kilpatrick, J. A. (1985). Corporate Response to Social Pressures: A Typology. *Journal of Business Ethics*, **4**: 6, 493-501.
- Lamberti, L., Lettieri, Em. (2009). CSR Practices and Corporate Strategy: Evidence from a Longitudinal Case Study. *Journal of Business Ethics*, **87**: 153-168.
- MA (Millennium Ecosystem Assessment). (2005). *Ecosystems and human well-being: Synthesis*. Island Press: Washington.
- Maloni, J.M, Brown, M.E. (2006) Corporate Social Responsibility in the Supply Chain: An Application in the Food Industry. *Journal of Business Ethics*, **68**: 35-52.
- Norman, W., MacDonald, C. (2004). Getting to the Bottom of `Triple Bottom Line`, *Business Ethics Quarterly*, **14**:2, 243-262.
- Secchi, D. (2007). Utilitarian, managerial and relational theories of corporate social responsibility. *International Journal of Management Reviews*, **9**(4): 347–373. DOI: 10.1111/j.1468-2370.2007.00215.x.

- Van Marrewijk, M. (2003). Concepts and definitions of CSR and corporate sustainability: Between agency and communion. *Journal of Business Ethics*, **44**: 95–105.
- Windsor, D. (2006). Corporate Social Responsibility: Three Key Approaches. *Journal of Management Studies*, **43**(1): 93–114. DOI: 10.1111/j.1467-6486.2006.00584.xdsor.
- Wood, D. J. (1991). Corporate social performance revised. *Academy of Management Review*, **16**:4, 691-718.
- Wood, D. J. (2010). Measuring Corporate Social Performance: A Review. *International Journal of Management Reviews*, **12**: 1, 50–84.