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Making the Number of Options Grow. Contributions to the Corporate Responsibility Research Conference 2013

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Introduction

For both, enterprises and society as a whole, strategically implemented Corporate Social Responsibility can contribute to making the number of options grow. Making the number of options grow or at least add to not decreasing them is also a core task of sustainable development – and so is creating adaptability¹. Both concepts can add to the resilience of enterprises and society at large. They can help to increase their adaptive capabilities to meet with disturbances without changing substantially. Rather, these disturbances help open up options for re-evaluating the current situation, trigger social mobilization, recombine sources of experience and knowledge for learning, and spark novelty and innovation². This in turn is, what the European Commission (2011) in its CSR strategy claims to be the benefits of CSR³ - in terms of risk management, cost savings, access to capital, customer relationships, human resource management, and innovation capacity on the enterprise level, in terms of additional shared values concerning the economic, environmental, and social prosperities on the society's level.

Due to this close relationship between CSR, sustainable development, resilience, and the creation of new options we chose “Making the number of options grow” to be the main motto of the 2013 International Corporate Responsibility Research Conference. The conference takes place at a different European university every year and addresses topics of corporate responsibility beyond enterprise borders and connecting the three fields of sustainability (environment, society and economy) to the enterprise level. In 2013 the conference was organized by ISIS and took place at the University of Graz from September 11th to 13th. About ninety researchers took part and gave some 60 presentations. They approached the motto from various points of view, but all presentations had one common focus: to add to the creation of choices. A selection of the CRR papers is now published in this volume, including the two best papers of the conference.

Graz, January 2014

Rupert J. Baumgartner, Ulrike Gelbmann, Romana Rauter

¹ Holling, C.S. (2001). Understanding the complexity of economic, ecological, and social systems. *Ecosystems* 4:390-405.

² Walker, B., et al. (2004). Resilience, adaptability and transformability in social-ecological systems. *Ecology and Society* 9 (2):5.

³ EC – European Commission (2011). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the committee of regions: A renewed strategy 2011-14 for Corporate Social Responsibility. Brussels 2011.

Einleitung

CSR (Corporate Social Responsibility) kann einen Beitrag dazu leisten, dass die Anzahl der Möglichkeiten wächst; sowohl für Unternehmen als auch für die gesamte Gesellschaft. Die Anzahl der Möglichkeiten wachsen lassen oder zumindest dazu beizutragen, dass es nicht weniger werden, ist eine der Hauptaufgaben der nachhaltigen Entwicklung – und kreiert somit auch Anpassungsfähigkeit. Beide Konzepte – nachhaltige Entwicklung wie auch „adaptability“ – können die Widerstandsfähigkeit der Unternehmen und der Gesellschaft verstärken. Weiters können sie helfen, die sog. „adaptive capabilities“ zu erhöhen, um ohne wesentliche Veränderungen mit Störungen besser umzugehen. Diese Störungen können auch hilfreich sein, um Möglichkeiten für die Neubewertung der aktuellen Situation zu finden, um soziale Mobilisierung einzuleiten, um Erfahrung und Wissen und Lernen zu fördern und um Neuerungen und Innovationen zu entfachen. Dies wiederum sind die Vorteile von CSR, wie es auch die Europäische Kommission (2011) in ihrer CSR-Strategie festhält – im Sinne von Risikomanagement, Kosteneinsparungen, Zugang zu Kapital, Kundenbeziehungen, Personalmanagement und Innovationsfähigkeit auf der Unternehmensebene. Diese Beiträge auf unternehmerischer Ebene können dann auch gemeinsame Werte und gesellschaftlichen Nutzen auf der wirtschaftlichen, sozialen und ökologischen Ebene schaffen.

Durch diese enge Beziehung zwischen CSR, nachhaltiger Entwicklung, Resilienz und die Schaffung von neuen Möglichkeiten haben wir „Making the number of options grow“ als Hauptmotto der International Corporate Responsibility Research Conference 2013 gewählt. Die Konferenz findet jedes Jahr an einer anderen europäischen Universität statt und befasst sich mit Themen der unternehmerischen Verantwortung über die Unternehmensgrenzen hinaus und verbindet die drei Bereiche der Nachhaltigkeit (Umwelt, Gesellschaft und Wirtschaft) mit der Unternehmensebene. Im Jahr 2013 wurde die Konferenz vom ISIS organisiert und fand an der Universität Graz vom 11. bis 13. September statt. Über 90 Wissenschaftler/innen nahmen teil, in Summe gab es rund 60 Präsentationen. Sie alle näherten sich dem Thema aus verschiedenen Blickwinkeln, aber alle hatten einen gemeinsamen Fokus: die Anzahl an Möglichkeiten wachsen lassen. Eine Auswahl der CRR Beiträge wird nun in diesem Band veröffentlicht, darunter auch die beiden besten Beiträge der Konferenz.

Graz, Jänner 2014

Rupert J. Baumgartner, Ulrike Gelbmann, Romana Rauter

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* Best Paper Awards CRRC 2013

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Responsibilities of the water-supply and distribution companies

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Abstract

Water-supply and distribution companies (WSC) are companies dealing with one of the most crucial resources of earth. Thus, they have a special duty to meet sustainability and CSR issues. In the sustainability context corporate governance and ethical business leadership require explicit integration of environmental and social challenges in the corporate sustainability management of water utilities. In this context, the central research question is how water companies implement sustainability and CSR requirements in their management and operating activities. In order to be able to meet the requirements of a sustainable development and look after their social responsibility WSC should develop strategic options and integrate sustainability instruments continuously. Realizing system changes sustainability-related as well as social value chain processes have to be managed in a integrative way to generate a measurable contribution to the increase of the eco- and social-efficiency in the sense of corporate social responsibility. This study investigates to what extent water supply companies implement sustainability management tools, norms and concepts (e.g. ISO 14001, ISO 9001, Balanced Scorecard etc.) as well as confirm ISO 26000. Relevant data was collected by using literature studies and web analysis. The data was prepared with the help of categories and by keywords. The corresponding management concepts and instruments as well as the CSR criteria were interpreted on the basis of qualitative and quantitative content analysis and by means of contingency analysis. By analysing 65 German WSC and their CSR aspects it could be found that the triggers for a sustainable energy use and a sustainable management were just marginally determined. Moreover, there is a lack in CSR communication and making CSR credible to public. The results make obvious that there are differences between municipal and private WSE facing sustainability requirements. In particular, climate change and sustainability are major challenges for WSC, but are still insufficiently integrated into management processes and external communications. However, a paradigm shift from cost to sustainability and cradle-to-cradle is necessary. This includes integrated and systemic strategic management approaches. These are available, although they have not been adapted yet in the WSC comprehensively.

Keywords

Water supply companies, sustainability management, ISO 26000, bivariate analysis

1 Introduction

Water-supply and distribution companies (WSC) are companies dealing with one of the most crucial resources of earth. Thus, they have a special duty to meet sustainability and CSR issues. In the sustainability context corporate governance and ethical business leadership require explicit integration of environmental and social challenges in the corporate sustainability management of water utilities. The challenges of a sustainable development and the climate change as well as the necessity to reduce climate relevant emissions and develop adaptation strategies are aimed at a drastic reduction of energy costs and the development of intelligent sustainability-oriented infrastructure and management systems (Arnell et al., 2011). The challenges of a sustainable development and CSR issues are aimed at the development and implementation of smart sustainability-oriented infrastructure, energy and management systems. In order to be able to meet the requirements of a sustainable development and look after their social responsibility WSC should develop strategic options and integrate sustainability instruments continuously. Realizing system changes sustainability-related as well as social value chain processes have to be managed in an integrative way to generate a measurable contribution to the increase of the eco- and social-efficiency in the sense of corporate social responsibility. The main focus of a sustainable change should not only be directed towards the final goods and services of a company, however, above all result in an increase in the value of companies and society (Arnold and Hockerts, 2011). In order to be able to meet the requirements of a sustainable development and look after their social responsibility WSC should develop strategic options because of the coupling from energy demand and a high quality of water treatment and wastewater disposal.

The special challenge can be seen in the high path dependency of the infrastructure of sanitary environmental engineering (Brisco, 1995; Kundzewicz et al., 2007). The system is built on mass throughput and consumption growth and is therefore only partly adaptable to changed conditions. Against this background, the ongoing changing situations and conditions cause high instability at the actors. The central task has to be seen in the necessary conformity to the changed facts, like a strategy for resource conservation and an efficient resource use (Hanjra and Qureshi, 2010). In the last two decades, considerable innovations could be developed in the fields of alternative water-supply technologies in Germany. However, they were mainly realized in some, small-scale pilot projects. To these challenges WSC often react with cost efficiency strategies (Walter et al., 2009). In this context, the central research

question is how water companies implement sustainability and CSR requirements in their management.

Looked at ISO 26000 social responsibility, however, includes much more. ISO 26000 defines corporate social responsibility (CSR) and how it can be implemented into the companies (ISO 26000, 2010). In this study 65 representative German WSC are analysed concerning their management instruments and CSR contribution as well as their representation of a visible and credible social responsibility. Criteria for the CSR sector are the seven core subjects of ISO 26000 like organizational governance, human rights, labour practice, the environment, fair operating practices, consumer issues, community involvement and development. Active integration of sustainable development requirements will be evaluated e.g. by sustainability reports, balanced scorecard, EMAS III, ISO 9001, ISO 14001. Relevant data was collected by means of literature studies and web analysis as well as a secondary data analysis. The data was interpreted on the basis of qualitative and quantitative content analysis and by means of contingency analysis as well as correlation (Bryman and Bell, 2009). The article is structured like following: in chapter 2 the characteristics of the water industry will be described, chapter 3 deals with sustainable water management. In the 4th chapter the empirical design is presented. Chapter 5 shows the results of the study followed by the discussion in chapter 6. The final conclusions are shown in chapter 7.

2 Characteristics of the WSC

Using water sustainably is a great social challenge with regard to economic and demographic changes in society. WSC show characteristics of natural monopoly (Camdessus and Winpenny, 2003). Because of economies of scale and density as well as subadditive cost functions a company can provide the market more economically than every greater number of companies (Hontolez, 2002). Technical-economic structures are subtly differentiated regarded within the liberalization and privatization of networks (Milly et al., 2005; Hontolez, 2002). Beyond that in the water industry different structures of the companies like pure WSC and multi-utility/public services or private-law or municipal companies and mixed legal forms can be found (Jenerette and Larsen, 2006). There have been private-law and municipal companies in the water industry for decades (BDEW 2011). According to BDEW (2011) there are 6.211 WSC operating in Germany. Municipal and private-law companies have different values referring to the number of companies and the volume of water. With a view to the number of companies there are 56 % municipal institutions and 44 % private-law ones. Referring to the volume of water private-law companies have 64 % interest and the municipal ones a 36 % share.

The modern municipal water supply and distribution is based on a central system which has evolved over many decades (water-supply and waste-water disposal facilities). Till now there was the rule of centrality and consistency of the systems with middle and high-density settlement having decisive technical and economic advantages over de- or semi-centralized systems (Zschille et al., 2009). Economic-technical advantages like the economies of scale, economies of scope and economies of reach could develop especially well because of the permanent extension of the networks and connecting new users. Based on this, the system has expanded over many years without realizing and valuing the economic and technical limits of use critically with regard to a sustainable development and the climate change. The guidelines within the WSC change partly dramatically and will have an influence on the future conceptions of the infrastructure more or less directly (Vörösmarty et al., 2000; OECD, 2011).

The successful infrastructure model studied of its social and distributional objectives as well as the reached environmental and hygienic standards is faced with the following central challenges:

- Decreasing population numbers and falling specific need of water of the households and businesses (Hummel, 2008; Kozial et al., 2006)
- Price margin between increasing water sewage prices and decreasing consumption (fixed costs lock-in effect, OECD, 2011)
- New requirements of resource regulation, especially matters of cost coverage and economic efficiency (EU Water Framework Directive)
- Shortage of resources and the rise of prices for energy and raw materials (Arnell et al., 2011)
- Climate change with its global and regional consequences to the water economy (Howard et al., 2010; Charlton/Arnell, 2011; Krebs et al., 2011; LUBW et al., 2010)
- Cost of adaptation to the climate change (Arnell et al., 2011)
- A changed energy policy framework because of objectives and legal developments at the European and national levels

Water, land and energy are strongly interlinked. Water governance refers to the range of political, social, economic and administrative systems that are provided to ensure the responsible usage and management of water and water-related services for all ranks (Grambow, 2013:381). It is thus clear that only functioning governance is the fundament of a successful land and water management and to be considered in all planning and management levels (Grambow, 2013:380). The network-related infrastructure and sectors of supply systems, like power, gas, oil, and water are in transition (Hanjra and Qureshi, 2010). The 1998 introduced market liberalization is

aimed at more competition in the energy sector. On the one hand, big energy companies can develop a big leverage on the diffusion of renewables like diversification of energy portfolio and expansion of renewables in the electricity mix. On the other hand municipal networks and cooperation in the energy sector (local energy supply networks) gain more and more importance in the context of a sustainable development. This is caused by the increasing significance of local value-added processes and especially the renewable energy production as hydro or water power, wind energy, photovoltaic, biomass. The political conditions and scope of action for utility companies are determined decisively by the market incentive programme and the Renewable Energy Sources Act – EEG, which are especially evident for the feed-in tariff for electricity from renewable energy.

The demands on adaptability and flexibility of technical and social-economical elements, patterns and systems are heightened by the criteria of a sustainable development and the climate change and make them urgent at the same time. Being able to react very quickly and adequately to the challenges of a sustainable development and climate change it is necessary to strengthen the flexibility and reactions of the companies as well as the implementation of appropriate instruments next to the adaptation to technical base system, material flows, regional economic systems and intelligent infrastructures (Walter et al., 2009). Most of the existing infrastructures have to be transformed into innovative ones with regard to the economic valuation of system and transformation alternatives. In this context the WSC have to have to make considerable investments regarding resource and environmental efficiency.

3 Social responsibility and sustainable water management

Sustainability, corporate social responsibility (CSR), corporate responsibility (CR) and social responsibility (SR) are connected strongly; however, there are fundamental differences as well (Arnold, 2011; Munoz-Torrez et al., 2009; Frynas, 2009; Dahlsrud, 2008). Sustainability is a principle or a way to manage economic activities by integrating social and ecological aspects in a long-term perspective. The three sustainability principles ‘precautionary, polluter pays’ and cooperation principle’ have been the longest tradition in the water section (Grambow, 2013). The precautionary principle is based on risk disclosure and enables rapid intervention and government action in order to protect the environment or water resource. With the help of the polluter pays’ principle external costs can be internalized (Tobey and Smets, 2007). The principle of cooperation enables a stakeholder involvement for setting shared levels and standards. Within the last two decades and the increasing awareness of environment protection and a sustainability development several other sustainability

principles have been crystallized (Kahlenborn and Kraemer, 1999; Grambow, 2013). Currently 12 sustainable principles are discussed and represented in table 1.

CSR can be described as a concept where companies integrate social and ecological issues as well as interactions with stakeholders in their business activities on a voluntary basis (Carroll, 2008). To act social responsibly does not only mean to fulfil the legislative expectations, but also to be active beyond compliance; CSR is the “responsibility of enterprises for their impacts on society” (EU, 2011:6). CSR activities can refer to various phenomenon, above all social-ecological problems are addressed. CR is regarded wider and integrates business aspects, business ethics or corporate governance in special (Beltratti, 2005). Using CR companies have special reasons, e.g. image, risk management or cooperation with stakeholders. CR primary points at the basic challenges of the prevalent business model when realizing sustainable and social-ecological standards in companies (Munoz-Torres et al., 2009). Social responsibility addresses not only entrepreneurial activities but also social-ecological and economical standards as well as principles, patterns and models of all different organizations (Frynas, 2009; Dahlsrud, 2008).

Therefore, the aim of ISO 26000 was for instance to consolidate existing standards and give all forms of organization recommendation with regard to the implementation and realization. ISO 26000 does not solve the fundamental question concerning the connection of responsibility and core competencies finally (Porter and Kramer, 2006), however, points out clearly socially responsible conduct in the core activity areas (ISO 26000:3.3.4). The ISO standard positions clearly CSR engagement and social behaviour in the core business cannot be replaced by philanthropic activities (as often spread in the CSR area). All in all it gives instructions for increasing the credibility of social-ecological activities. Corporate Governance, ethical management as well as the social and environmental responsibility of companies requires the integration of ecological and social challenges into corporate sustainability management. The sustainability management is challenged to identify ecological value indicators and to integrate them into strategic management. Therefore, WSC have to face several management tasks like value setting, participation, sufficiency, transparency, justice and the traditional management process as plan-do-control-act (Grambow, 2013; Hahn, 2012; Porter and Kramer, 2006).

Corporate and institutional governance are embedded in legal, social and environmental conditions that are limited in influence by a company - either public or private (Grambow, 2013:493). The qualitative difference is given by (1) internal goals defined by the company itself like business ethics, sustainability, quality, production volume, market shares, etc., and (2) practices and tools used within the company in order to achieve these goals, like resourcing, management tools including indexing and controlling as well as internal and external dialogues. The sustainability achievement of

a company decisively depends on how ecological and social challenges are met conceptually, institutionally and instrumentally. Main norms, concepts, instruments and tools in the light of sustainability management are: Benchmarking, Climate and environmental balance, Corporate Citizenship, Cradle-to-Cradle-concept, CSR, (Eco-)Design, Eco-efficiency-analysis: ISO 14045, Ecological footprint (ISO 14040/44), EFQM, EMAS (III), Environmental information system, Environmental/ sustainability statement/report, Further education/training, GRI, ILO, Incentive system, IPP, ISO 9001, ISO 14001, ISO 26000, ISO 31000, ISO 50001, Mission statement, SA 8000, SBSC, Stakeholder dialogue, Suggestion system, Sustainable Supply-Chain-Management, Sustainable Value, UN Global Compact, Working time models (Schaltegger et al., 2013; Klewitz and Hansen, 2013; Müller-Christ, 2011; Finkbeiner, 2011; Siebenhüner and Arnold, 2007).

The discussion on how sustainability can be fostered by firm internal initiatives and processes was highlighted and summarized by Arnold and Hockerts (2011). The literature suggests diverse factors of success concerning the emergence and integration of sustainability requirements (Dearing, 2000; Beard and Hartmann, 1999; Gray, 1989; Rennings, 2000; Siebenhüner and Arnold, 2007). Quite often the firm internal implementation of sustainability-related tools and strategies is dependent on a dynamic interaction of several factors. However, the concept of ecopreneurship is always highlighted in the context of sustainability (Schaltegger and Wagner, 2008; Kivimaa and Mickwitz, 2006; Schaper, 2003; Pastakia, 1998). By demonstrating the economic benefits from being greener ecopreneurs become pull factor statues for pioneer and proactive work.

Hockerts and Wüstenhagen (2010) identified ecopreneurship empirically labeled 'emerging Davids and greening Goliaths'. According to the authors emerging Davids are firms bringing their business model in line with sustainability whereas greening Goliaths represent firms striving to improve their environmental performance gradually. The empirical results are accompanied by Schaltegger and Wagner's (2008) research on corporate sustainability. They describe one type optimizing existing business models by means of sustainability management and communication systems (Burritt and Saka, 2006; Morsing and Schultz, 2006; Perrini, 2006). The introduction of sustainability management systems often increases the efficiency of existing business models and reduces the damage done to social and natural capital per unit produced at the same time. Consequently, corporate learning processes can be initiated (Siebenhüner and Arnold, 2007). The creation of new products, market opportunities and business models characterizes the second type (Schaltegger and Wagner, 2008; Cohen and Winn, 2007; Dean and McMullen, 2007). Proactive environmental initiatives (Porter and van der Linde, 1995a, 1995b) can cause cost reductions as well.

In addition, learning processes have a high impact on a successful implementation. Thus, depending on how these learning processes are initiated and integrated into management, sustainability goals can be achieved easier and earlier. From that perspective, sustainability is a special challenge for organizational learning in the respective management dimensions to facilitate the sustainability performance of a company. Grambow (2005) emphasize the evidence of environmental and social management responsibility for supporting transformation processes in the WSC. Moreover, there are concepts of organizational learning stressing the influence of corporate responsiveness towards the concerns of stakeholders for fostering sustainability (Arnold, 2011; Hopkins, 1999; Mitchell et al., 1997).

Altogether, technological development, structural and institutional considerations play an important role in moving towards more sustainability. However, firm internal factors for fostering sustainability in the light of the above discussed and special structural conditions are seldom discussed. Organizational sustainable learning processes in ecological and social topics (especially eco-efficiency and corporate social responsibility) are rather rudimentary in the water supply at present. (Tilmann, 2001; Mayer-Spohn, 2004).

There are a lot of indications of existing systems based on centralized network structures with inadequate sustainability (de Graf/van de Ven, 2005; Kärmann, 2001; Palme et al., 2005). Obviously are the energy and high resource consumption, path dependency as well as limited adaptability of the existing systems. In the last decades the WSC were deeply under economical pressure because of the structural debate with regard to their service as fundamental part of the services for the public (e.g. by deregulation, liberalization, and privatization; GWP 2004). In this connection it could be seen that not all aims of a sustainable water economy could be achieved like resource efficiency, water quality, responsibility issues, and transparent pricing policy for all customers. Especially the necessity of using innovative, system-oriented approaches of the resource economy like material flow management, eco-accounting, sustainable supply management was taken up insufficiently (Gambow, 2013). Paradigm change towards more sustainability is imperative. Here, the WSC can play an active role in structural policy and make a decisive contribution to forward-looking, sustainable industrial water ecology.

Table 1 can be understood as a sustainability management matrix highlighting 12 sustainability principles on the one hand and on the other hand stressing management tasks of WSC (in accordance to Kahlenborn and Kraemer, 1999; Grambow, 2013). Within the matrix the core sustainable concepts, instruments and tools are systemized in the sense they support the aim of the sustainability principle and fulfill respective management tasks. They are not distinguished and evaluated further in the light of management levels. The sustainability principle of iteration and of dynamics for

instance makes obvious that all decisions must be checked and monitored during the planning phase as well as continuously. In the light of ethical norms the main goal of iteration is the social-ecological balance. There is no safety, situations and results just can be more likely than others (Grambow, 2013). Thus, sustainability processes are always iterative and dynamic ones. Transparency is supporting a sustainable development by the way data, facts and planning are made public. The ISO 14001 focusses on the establishment, implementation, maintenance and improvement of an environmental management system. The norm gives information concerning pivotal environmental aspects, e.g. those ones a company can control and influence. This standard applies also for the optimization of processes in an ongoing way, thus the necessity of dynamics and iteration are taken into consideration at least partly.

Table 1: Sustainability management matrix in light of sustainability principles and management tasks (own source modified on basis of Kahlenborn and Kraemer, 199; Grambow, 2013)

Sustainability principles		Management tasks	
		Conveying values, awareness of public goods and welfare	Participation
<i>Principle</i>	<i>Explanation</i>	General environmental education, internal capacity building, awareness of importance of public goods and cultural embedding	Involving all stakeholder within project processes
Intergenerational and principle of justice	Basic ethical principle of taking care of descendants and compensation for living people	Corporate Citizenship, ILO, Mission statement, UN Global Compact, Cradle-to-Cradle-concept	ISO 26000, UN Global Compact, Corporate Citizenship, Stakeholder dialogue
Precautionary principle and principle of reversibility	According to environmental ethics anticipative risk assessment necessary. Limits and values as low as possible in order to minimise risks. Reversible measures	IPP, Eco-efficiency-analysis: ISO 14045, further education/training	Stakeholder dialogue
Polluter pays' principle	Important for internalisation of costs. economic instrument, in best case self-regulating	Climate and environmental balance, Ecological footprint	Cradle-to-Cradle-concept
Principle of integration	Integration of triadic concerns as well as sectoral, local und temporal issues	(Eco-)Design, Cradle-to-Cradle-concept	Voluntary cooperation agreements in terms of cross compl.
Regionality principle and principle of subsidiarity	Regional resource cycles are generally sustainable, particularly agro-industrial and water sector, regional solutions	(Eco-)Design, Suggestion system	Sustainable Supply-Chain-Management, Suggestion system
Principle of solidarity	Complements regionality principle, upstream-downstream relation, water compensation between the catchment areas	ISO 26000	ISO 26000, Corporate Citizenship
Principle of cooperation and participation	Fundamental approach: stakeholder participation or involvement in the sense of Good Governance	Incentive system, SA 8000, EFQM, Stakeholder dialogue	Incentive system, SA 8000, working time models, Suggestion system, Stakeholder dialogue
Principle of iteration and principle of dynamics	Sustainability-related decisions must be checked and monitored during planning and afterwards continuously	(Eco-)Design	Stakeholder dialogue
Principle of Transparency	Just transparency enables monitoring and advancement as iteration and participation as well as quality insurance	ISO 9001, UN Global Compact, SA 8000	EFQM, ISO 9001, ISO 26000, Stakeholder dialogue
Principle of efficiency and consistency	Avoid emissions right at source, no use of critical substances, efficient usage, saving water & energy, integrated cleaning, use of environmentally friendly materials	EFQM, climate and environmental balance, Ecological footprint (ISO 14040/44)	Suggestion system, Stakeholder dialogue
Principle of sufficiency and substitution	Frugality and self-restriction. Replacement by sustainable resources and materials	Carbon footprint	
Principle of resilience	Maintaining the systems stability, optimising and aimed redundancies or safety distances to critical conditions	Eco-efficiency-analysis: ISO 14045, IPP, Cradle-to-Cradle-concept	ISO 31000

Continued from Table 1

Management tasks (continued)			
Sufficiency	Transparency	Justice	Target, planning, steering, realisation, monitoring
Part of the conveying of values, message 'Doing More With Less'	Publication of data, facts and planning	Fair prices, comprehensive supply in country and town, intercontinental and international balance	Clarification of function and competency, warranty of fitness, Learning & Promotion, Monitoring of targeting, planning and steering
Mission statement, ILO, UN Global Compact, Cradle-to-Cradle-concept	UN Global Compact	Mission statement, UN Global Compact	ISO 26000, Benchmarking
	Eco-efficiency-analysis: ISO 14045, ISO 31000, IPP		Eco-efficiency-analysis: ISO 14045, ISO 31000, further education/training
Cradle-to-Cradle-concept	Climate and environmental balance, Ecological footprint	Climate and environmental balance, Ecological footprint	
			Eco-efficiency-analysis: ISO 14045, IPP, ISO 31000
(Eco-)Design		Sustainable Supply-Chain-Management	Benchmarking
	ISO 26000	ISO 26000, Corporate Citizenship	
SA 8000		Voluntary cooperation agreements in terms of cross compliance	EFQM
	ISO 14001		ISO 14001,
	Environmental information system, environmental/sustainability statement/report, EFQM, GRI	ISO 26000	EFQM, ISO 9001, ISO 26000
	EMAS (III), ISO 50001, Sustainable Value	CSR	SBSC, EMAS (III), ISO 50001, EFQM, climate and environmental balance, Ecological footprint (ISO 14040/44), Sustainable Value
(Eco-)Design, IPP	Eco-efficiency-analysis: ISO 14045, Carbon footprint	IPP	Benchmarking

4 Empirical design

From January 2011 until August 2013 selected instruments of sustainability management and the seven core themes of ISO 26000 in the CSR field have been examined in 65 representative German WSC. After analysing the current state of the art concerning sustainability management by using sustainability-related papers and books (e.g. Schaltegger et al., 2013; Klewitz and Hansen, 2013; Grambow, 2013; Müller-Christ, 2011; Finkbeiner, 2011; Siebenhüner and Arnold, 2007) the following 31 issues were included within the field of management approaches: Benchmarking, Climate and environmental balance, Corporate Citizenship, Cradle-to-Cradle-concept, CSR, (Eco-)Design, Eco-efficiency-analysis: ISO 14045, Ecological footprint (ISO 14040/44), EFQM, EMAS (III), Environmental information system, Environmental/sustainability statement/report, Further education/training, GRI, ILO, Incentive system, IPP, ISO 9001, ISO 14001, ISO 26000, ISO 31000, ISO 50001, Mission statement, SA 8000, SBSC, Stakeholder dialogue, Suggestion system, Sustainable Supply-Chain-

Management, Sustainable Value, UN Global Compact, Working time models (see also table 1). The following seven core elements of ISO 26000 and its sub-issues were part of the analysis of the CSR implementation:

- Organizational Governance
- Human rights (Due diligence, Human rights risk situations, Avoidance of complicity, Resolving grievances, Discrimination and vulnerable groups, Civil and political rights, Economic, social and cultural rights, Fundamental principles and rights at work)
- Labour practices (Employment and employment relationships, Conditions of work and social protection, Social dialogue, Health and safety at work, Human development and training in the workplace)
- The environment (Prevention of pollution, Sustainable resource use, Climate change mitigation and adaptation, Protection of the environment, biodiversity and restoration of natural habitats)
- Fair operating practices (Anti-corruption, Responsible political involvement, Fair competition, Promoting social responsibility in the value chain, Respect for property rights)
- Consumer issues (Fair marketing, factual and unbiased information and fair contractual practices, Protecting consumers' health and safety, Sustainable consumption, Consumer service, support, and complaint and dispute resolution, Consumer data protection and privacy, Access to essential services, Education and awareness)
- Community involvement and development (Community involvement, Education and culture, Employment creation and skills development, Technology development and access, Wealth and income creation, Health, Social investment)

The selection of the companies was based on a random selection. With regard to the amount of data and the organizational structure of the German WSC, an extensive general analysis cannot be presented here. Rather segmentation for region, financing form, size, and turnover resulted by chance. The WSC were segmented with regard to size (turnover, service area and population density) and region (local, national, international, municipal utilities or groups) and classified into private-law, municipal and mixed-financed organizations. As the legal form does not allow any conclusions of the financing form all shares were analysed and thus categorized respectively. In this sample WSC from all 16 federal states are represented (19 south, 21 west, 15 north, 10 east). 55 % of them are municipal companies, 34 % are private ones and 11 % are mixed financed companies. In accordance with the recommendation of the European Commission regarding the classification of the size of firms this sample shows the following distribution: With regard to the given annual income and organizational

members there are one small company, nine middle sized company and 47 firms. Eight companies cannot be classified definitely; however, they can be seen as small- and medium-sized companies in a broader sense.

With the help of literature studies and web analysis with about 263 pdf files and over 1300 webpages as well as a secondary data analysis relevant data was collected. Therefore, the companies' webpages and data coming from further searching machines or data bases, like *Deutscher Verein des Gas- und Wasserfaches: DVGW*, annual reports, sustainability reports, further webpages, pdf files, and literature studies were analysed. The data was prepared with the help of categories, e.g. given by ISO 26000 or headlines like climate, climate protection, environment, project, engagement, transparency, core business, social, etc., and by keywords (Bryman and Bell, 2009; Yin, 2009). The corresponding management concepts and instruments as well as the CSR criteria were interpreted on the basis of qualitative and quantitative content analysis and by means of contingency analysis as well as correlation (Bryman and Bell, 2009). Cross-sectional designs can be always used when it cannot be inferred that one variable causes another (Bryman, 2008). Bryman (2008:326f.) states that "contingency tables are probably the most flexible of all methods of analysing relationships in that they can be employed in relation to any pair of variables [...], are generated so that patterns of association can be searched for". In a nominal design chi-square and Cramer's V can be used as methods of bivariate analysis. By using Cramer's V the statistics only provide a positive value, showing an indication of the strength of the relationship but not of the direction between two variables. It is often presented in combination with a chi-square test showing the confidence of a relationship between two variables in a sample. Bryman (2008:334) is describing the test as following: "The test works by calculating for each cell in the table an expected frequency or value – that is, one that would occur on the basis of chance alone." The author continues explaining that the chi-square value can just be interpreted in relation to the associated level of significance. Contingency analysis was used to look for relations between the size/number of employees, finance status and region on the one hand and the management tools and the items of ISO 26000 on the other hand.

In addition, there was a bivariate analysis conducted between the management methods and the ISO 26000 items. Therefore Pearson's r was used for examining relationships between ratio variables (Bryman, 2008). In order to get more reliable data the number of analysed WSC will be increased to 100. This analysis is limited to the given or represented information at the companies' websites and in the pdf files as well as certification data basis. As there might be more management tools in use (than communicated), the study will be continued with a survey containing a standardized questionnaire.

5 Results

Within the sample of 65 WSC the Corporate Citizenship is dominant within the variety of management tools (see figure 2). In figure 2 the horizontal line shows the number of values meaning how many companies show respective management tools subdivided into the financing form. Along the vertical line the respective management tools can be seen. On the right hand side you can see the percentage of distribution per management tool with regard to all WSC. 82 % of all WSC use Corporate Citizenship; however, Corporate Citizenship only acts on low levels of sustainability management, e.g. compared to CSR or integrated systems like EMAS or IPP. At least 51 % of the investigated WSC use CSR like supporting water project within foreign partner companies or cities or highlighting the environmental and social responsibility by committing partnerships with land owners in order to save the water quality. Environmental and sustainability reports are provided publicly by 55 % of all WSC, interestingly 53 % of all municipal companies. Four main types of reports are shown in figure 2 as well (framed in grey). 18 % of the WSC integrate sustainability aspects in their annual reports and 25 % have a publicly supplied environmental statement. It is conspicuous that mixed financed companies do not provide an annual report integrating sustainability aspects. For that, these companies, seen relatively, have the highest percentage of 20/25 % in the field of environmental and sustainability reports. 75 % of the municipal WSC use an environmental statement, also meaning the same percentage of companies have been implemented EMAS (III). This is obviously accompanied by 80 % of the municipal companies using environmental information systems. Stakeholder dialogue is also used more than a half of the WSC in this sample. Almost half of the WSC use working time models to introduce flexible working hours and offer work-life-balance. There is a moderate relation between the use of working time models and the number of employees, see figure 1a.

45 % of all WSC have a mission statement; however, there is a lack in vision and mission in general. Those companies having a mission statement mainly integrate sustainability-related aspects within their statement. As general management tools benchmarking as well as further education or training can be found by 43 % of all WSC. Only a third of those companies offering trainings explicitly educate their company members with regard to sustainability.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13,054	2	,001
Likelihood Ratio	14,803	2	,001
Linear-by-Linear Association	12,211	1	,000
N of Valid Cases	65		

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,448	,001
	Cramer's V	,448	,001
	Contingency Coefficient	,409	,001
	N of Valid Cases	65	

Figure 1a: Contingency analysis for Working time models and Number of Employees, N=65

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14,138	2	,001
Likelihood Ratio	15,915	2	,000
Linear-by-Linear Association	13,201	1	,000
N of Valid Cases	65		

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,466	,001
	Cramer's V	,466	,001
	Contingency Coefficient	,423	,001
	N of Valid Cases	65	

Figure 1b: Contingency analysis for Item 2 'Human rights' and Number of Employees, N=65

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10,867	2	,004
Likelihood Ratio	11,449	2	,003
Linear-by-Linear Association	10,679	1	,001
N of Valid Cases	65		

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,409	,004
	Cramer's V	,409	,004
	Contingency Coefficient	,378	,004
	N of Valid Cases	65	

Figure 1c: Contingency analysis for Item 3 'Labour practices' and Number of Employees, N=65

Interestingly none of the WSC use or have been implemented Sustainable Supply-Chain Management, Sustainable Value, Eco-Efficiency-Analysis, Cradle-to-Cradle-Concept, EFQM, SA 8000, ISO 26000 or ISO 31000. Partly implemented or realized is the Cradle-to-Cradle-Concept within two companies, ISO 14045 within one WSC and Sustainable Supply-Chain Management within six companies. IPP is for instanced used by one WSC and partly integrated by three WSC. Two of 65 WSC (3 %) use a Sustainability Balanced Scorecard as an integrated management system; five companies use a plain BSC. Merely 34 % of the companies have the accredited environmental management system ISO 14001. 45 % of all municipal companies and of the private WSC in this sample implemented ISO 14001. Only 18 % of the SME reveals ISO 14001. EMAS III can be found in only 25 % of all examined companies; 25 % of that in the SME and 75 % in the municipal ones. Interestingly none of the eastern companies have EMAS. The more economical lined up management instruments ISO 9001 can be found in 29 % of the WSC. Here, SME have a 20 % interest and the firms have a 30 % share like BSC are used by only 5 % of the WSC; those are all groups. Large companies show a higher frequency in the use of the other management tools, like mission statement, dialogues, trainings, as well.

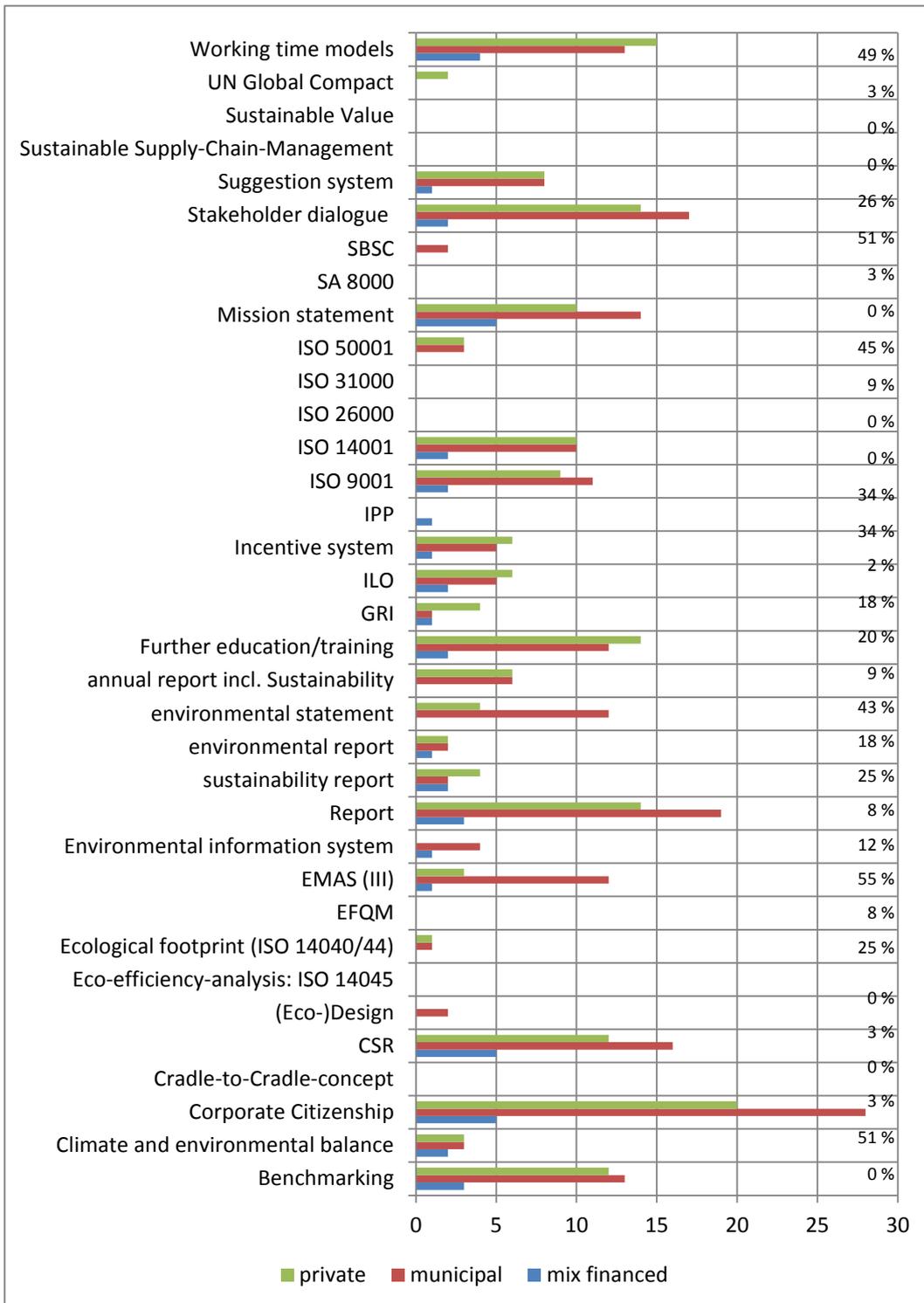


Figure 2: Level of implementation of management approaches, N=65
 (upper line = private companies, middle line = municipal companies, lower line = mixed financed companies)

A similar picture emerges from the CSR elements, see figure 3. Figure 3 shows the distribution of the main categories of CSR elements of ISO 26000. The first column of each CSR category shows the overall distribution of all water utilities, the second and third columns represent the proportionate distribution of SMEs and large companies.

The absolute numbers are also shown in figure 3. It is obvious that the category of *environment* is most strongly pronounced. Here, SME and large companies are on par. Climate protection, emission reduction and sustainable resource development take each one of great importance, while the fourth subsection biodiversity and nature protection only mentioned to 2/3. SME are the major companies in this aspect with 10% points ahead (72% vs. 62%). Regarding the three other sub-aspects the large companies have better communication skills. In accordance with the expectation the location of sustainability and environmental reports are rather equally distributed (Cramer's V .214, contingency coefficient 0.209 with an approximate significance of 0.352). The annual reports with sustainability aspects and environmental statements are comparable as well as the CSR core subjects and the respective management tools. The groups have the majority of the sustainability and annual reports containing sustainability aspects, however, contingency analysis does not show any significance. In this sample correlations between size and management tools are also unlikely.

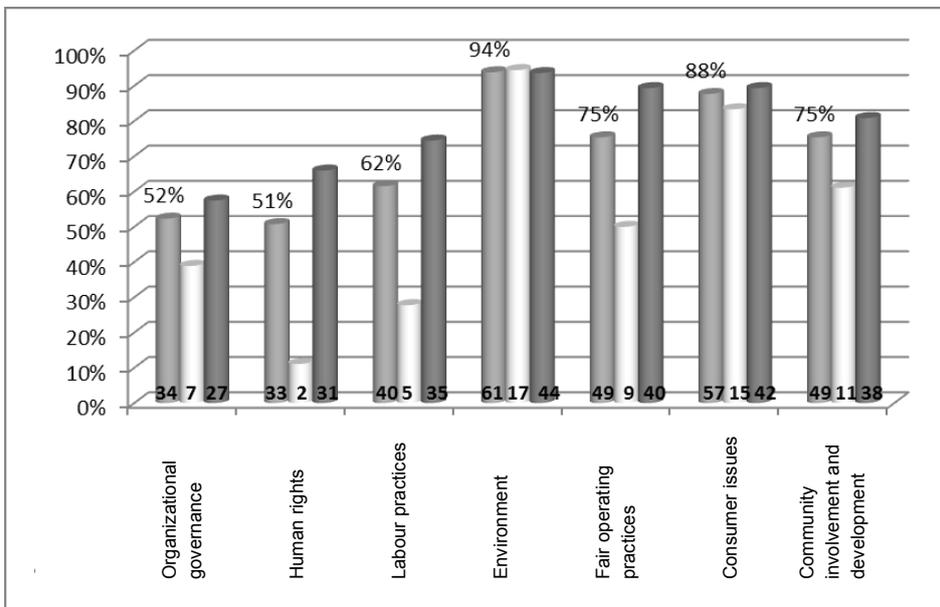


Figure 3: Identification of CSR elements, N=65 (first column = all WSC, middle column = SMEs, third column = large companies)

Furthermore, the slight reference to organizational governance and human rights is conspicuous. With regard to the *organizational governance* by far not all in ISO 26000 demanded aspects are shown by the companies. Very often the organizational structure is given, and sometimes single guidelines or responsibility areas are represented. A few companies show their formal and informal governance structure like decisional structures, values and norms very clearly. Here it seems to give a slight coherence between financial forms and information about the organizational structure. 73 % of all private WSC provide information to the first CSR issue (Cramer's V is 0.308, contingency coefficient 0.294 with an approximate significance of 0.046). The correlation between CSR issue one and the annual reports containing sustainability aspects is interesting as well (Cramer's V is 0.350, contingency coefficient 0.350 with an approximate significance of 0.005). Even those companies being ISO 14001 certified tend to provide information to governance and human rights (Cramer's V 0.330 / 351; contingency coefficient 0.314 / 351, approximate significance of 0.008 / 0.005).

Less transparency can be found at the *human rights* as well. In accordance with Winkler (2011) the content of the human rights to water and sanitation can be substantiated by the criteria of availability, quality, acceptability, accessibility and affordability. With regard to this aspect, the issue 8 'fundamental principles and rights at work' is mentioned most frequently by the WSC (49 %). Only 18 % of the WSC move into position to 'due diligence' and 'avoidance of complicity'. In large part, the description of human rights manifests itself as consideration and integration of human rights into entrepreneurial activities. How precise the human rights are applied in the WSC is very often unclear. Similar is the statement to illegal activities. The WSC say that illegal activities are punished and legal norms are kept. Information regarding the establishment, the internal processes or realization is not given at all. The second CSR core subject does not find much consideration, especially in the SMEs (Cramer's V is 0.466, contingency coefficient 0.423 with an approximate significance of 0.001, reference number of employees; sales as a reference for the size of the company, the measures of coherence are: Cramer's V .444, contingency coefficient 0.406 with an approximate significance of 0.005). A reason for this can be found that the SMEs work more regional or national whereas the groups also work international and, thus, are confronted more often with these topics and have to integrate CSR issues more often within their corporate communication. As already seen at the first CSR core subject 73 % of all private WSC give information to human rights (Cramer's V is 0.339, contingency coefficient 0.321 with an approximate significance of 0.024). Those companies providing annual reports containing sustainability aspects also give information to human rights in tendency (Cramer's V is 0.366, contingency coefficient 0.366 with an approximate significance of 0.003).

Only every fifth SME mentions *labour practices*, however 70 % of the large firms do it. Here also exists a slight correlation between the size of a company and labour practices (Cramer's V .426, contingency coefficient 0.392 with an approximate significance of 0.008, reference sales). Issue 3 'social dialogue' is mentioned by only 44 % of the large WSC. In the core subject *fair operating practices* issues 5 'respect for property rights' is for both, SME (50 %) and firms (85 %) relevant. At the SMEs the issues 2 (responsible political involvement), 3 (fair competition) and 4 (promoting social responsibility in the value chain) settle down about 25 % whereas at the large companies at about 50 %. The issue anticorruption is only mentioned by one SME and seven large companies. Only three WSC give detailed information about measures, processes and anticorruption structures in their companies.

An unequal distribution of the respective issues can be seen at the core subject *consumer issues*. They are of importance for the WSC, however, the description of the consumer service, support, and complaint and dispute resolution (issue 4), consumer data protection and privacy (issue 5), access to essential services (issue 6), and fair marketing, factual and unbiased information and fair contractual practices (issue 1) play a secondary role (about 35 % of all WSC). The core subject *community involvement and development* is often expressed with issues like social investment (issues 7), health (issue 6), education & culture (issue 2) as well as community involvement (issue 1). Technology development and access (issue 4) are important for only every 4th company, just one of them is a SME.

Some companies describe their involvement in the CSR field rather prescriptive than with respect to specific areas: "Our CR strategy addresses the challenges of our core business. It covers ten areas for action, bringing themes and issues together, where we are most required at CR aspects. These include climate change, energy efficiency, security of supply, but also supply and demographics. For each of these fields we have set ourselves a binding and measurable goal. Learn more about this on these pages and in our CR Report 2010." Whether the performance factor, reputation index 'and the target size, the highest reputation among comparable companies in the industry' in the section on Corporate Social Responsibility describes in a sufficient way is questionable. Positive to stress is the FWA mbH's solid support in Sri Lanka in the core business provided on site: "... Together with six local volunteers, they purified an important part of the sewer system. With shovels, rakes, pitchforks and of course with great force the canal was cleared, at least in part."

Table 2: Pearson's r- Sustainability management tools in relation to tools and ISO 26000 items, N=65

	BM	CEB	CC	EF	EMAS	Rep	FET	GRI	ILO	IS	I_14001	MS	SD	WTM
CSR	Pearson Correlation Sig. (2-tailed) N	0,173 0,168 65	0,182 0,148 65	0,483** 0 65										
EMAS	Pearson Correlation Sig. (2-tailed) N	0,08 0,527 65	0,329** 0,007 65	0,105 0,405 65	0,237 0,057 65	0,292* 0,049 65	0,359** 0,003 65	0,314* 0,011 65	0,339** 0,006 65	0,310* 0,012 65	0,444** 0 65	0,327** 0,008 65	0,323** 0,009 65	0,324** 0,008 65
BUIIS	Pearson Correlation Sig. (2-tailed) N	0,099 0,434 65	0,419** 0,001 65	0,283* 0,275 65	0,237 0,057 65	0,245* 0,049 65	0,305* 0,014 65	0,252* 0,043 65	0,316* 0,01 65	0,213 0,088 65	0,432** 0 65	0,264* 0,033 65	0,297* 0,016 65	0,399** 0,001 65
Rep	Pearson Correlation Sig. (2-tailed) N	0,281* 0,023 65	0,242 0,052 65	0,211 0,091 65	0,16 0,203 65	0,441** 0 65	0,277* 0,025 65	0,136 0,278 65	0,196 0,641 65	0,004 0,117 65	0,333** 0,007 65	0,154 0,222 65	0,223 0,074 65	0,134 0,287 65
FET	Pearson Correlation Sig. (2-tailed) N	0,373** 0,002 65	0,147 0,243 65	0,254* 0,041 65	0,205 0,102 65	0,224 0,073 65	0,281* 0,023 65	0,109 0,372** 65	0,217 0,109 65	0,109 0,389 65	0,109 0,001 65	0,109 0,001 65	0,109 0,001 65	0,109 0,001 65
ILO	Pearson Correlation Sig. (2-tailed) N	0,186 0,137 65	0,139 0,578 65	0,139 0,27 65	0,089 0,48 65	0,018 0,888 65	0,217 0,083 65	0,109 0,389 65	0,217 0,109 65	0,109 0,389 65	0,109 0,001 65	0,109 0,001 65	0,109 0,001 65	0,109 0,001 65
IS	Pearson Correlation Sig. (2-tailed) N	0,227 0,069 65	0,178 0,155 65	0,124 0,324 65	0,085 0,502 65	0,096 0,445 65	0,268* 0,031 65	0,227 0,069 65	0,396** 0,001 65	0,159 0,207 65	0,159 0,207 65	0,159 0,207 65	0,159 0,207 65	0,159 0,207 65
IPP	Pearson Correlation Sig. (2-tailed) N	0,109 0,389 65	0,334** 0,007 65	0,263* 0,035 65	0,022 0,86 65	0,219 0,08 65	0,139 0,269 65	0,109 0,389 65	0,109 0,389 65	0,109 0,389 65	0,109 0,001 65	0,109 0,001 65	0,109 0,001 65	0,109 0,001 65
I_9001	Pearson Correlation Sig. (2-tailed) N	0,231 0,064 65	0,169 0,178 65	0,089 0,481 65	0,127 0,312 65	0,031 0,804 65	0,250* 0,045 65	0,1 0,428 65	0,221 0,077 65	0,536** 0,048 65	0,246* 0 65	0,246* 0 65	0,246* 0 65	0,246* 0 65
I_14001	Pearson Correlation Sig. (2-tailed) N	0,297* 0,016 65	0,227 0,069 65	0,089 0,481 65	0,249* 0,045 65	0,195 0,119 65	0,446** 0,119 65	0,297* 0,016 65	0,221 0,077 65	0,455** 0,967 65	0,519** 0 65	0,519** 0 65	0,519** 0 65	0,519** 0 65
SBSC	Pearson Correlation Sig. (2-tailed) N	0,205 0,102 65	0,204 0,102 65	0,085 0,502 65	0,484** 0 65	0,105 0,405 65	0,019 0,879 65	0,025 0,844 65	0,025 0,653 65	0,089 0,48 65	0,085 0,502 65	0,085 0,502 65	0,085 0,502 65	0,085 0,502 65
SD	Pearson Correlation Sig. (2-tailed) N	0,297* 0,016 65	0,006 0,964 65	0,245* 0,049 65	0,175 0,162 65	0,134 0,287 65	0,23 0,065 65	0,359** 0,003 65	0,314* 0,011 65	0,262* 0,035 65	0,310* 0,012 65	0,389** 0,001 65	0,184 0,422 65	0,152 0,228 65
SuS	Pearson Correlation Sig. (2-tailed) N	0,260* 0,037 65	0,103 0,938 65	0,299* 0,416 65	0,310* 0,015 65	0,323** 0,012 65	0,401** 0,009 65	0,173 0,168 65	0,14 0,266 65	0,348** 0,004 65	0,306* 0,43 65	0,306* 0,43 65	0,306* 0,43 65	0,306* 0,43 65
UNGC	Pearson Correlation Sig. (2-tailed) N	0,205 0,102 65	0,067 0,597 65	0,085 0,502 65	0,484** 0 65	0,102 0,42 65	0,16 0,203 65	0,205 0,102 65	0,559** 0 65	0,134 0,289 65	0,145 0,045 65	0,199 0,113 65	0,175 0,162 65	0,175 0,162 65
WTM	Pearson Correlation Sig. (2-tailed) N	0,448** 0 65	0,006 0,964 65	0,151 0,229 65	0,181 0,149 65	0,009 0,945 65	0,265* 0,033 65	0,511** 0,008 65	0,324** 0,008 65	0,123 0,329 65	0,325** 0,008 65	0,218 0,082 65	0,23 0,065 65	0,354** 0,004 65

a. Cannot be computed because at least one of the variables is constant.

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 3: Pearson's r of ISO 26000 items, N=65

		c1				
c2	Pearson Correlation	,600**				
	Sig. (2-tailed)	0				
	N	65	c2			
c3	Pearson Correlation	,448**	,740**			
	Sig. (2-tailed)	0	0			
	N	65	65	c3		
c5	Pearson Correlation	,384**	,437**	,503**		
	Sig. (2-tailed)	0,002	0	0		
	N	65	65	65	c5	
c6	Pearson Correlation	0,205	,287*	,378**	0,112	
	Sig. (2-tailed)	0,102	0,021	0,002	0,374	
	N	65	65	65	65	c6
c7	Pearson Correlation	0,241	,366**	,503**	,503**	,329**
	Sig. (2-tailed)	0,053	0,003	0	0	0,007
	N	65	65	65	65	65
*. Correlation is significant at the 0.05 level (2-tailed).						
**. Correlation is significant at the 0.01 level (2-tailed).						

6 Discussion

Based on the key question to what extent water companies implement sustainability and responsibility in their management processes, in this study the investigation showed very clearly that general management tools or the economic performance (cost-related) in comparison to the ecological performance (eco-efficiency) or more sustainability-integrated instruments are in the foreground. The found tools and concepts fulfill more the management tasks of participation and targeting than others. Innovative, system-oriented approaches regarding economic resources (material flow management, life cycle assessment, ecology-oriented procurement strategies and management, etc.) are not sufficiently used by WSC and transformed into the strategic management - which also shows the low frequency of the Sustainability Balanced Scorecard. Environmental policy instruments and management approaches, such as EMAS III must be implemented by private-financed companies stronger. Sustainability reporting is "to develop local businesses in width only" in the spirit of Gebauer (2011, p. 421). This study shows that the WSC have to develop them widely in the entire sector - private companies included. As the average of implemented sustainability management tools is about six (of 31), there is a long way to go for integrating sustainability issues more comprehensively.

Furthermore, the CSR representation at the WSC is insufficient. The dominance of the environmental considerations can be understood against the history of environmental policy and the current climate discussions as well as its characteristics

of a natural resource. The underexposure of information about organizational leadership, human rights and labour practices is to balance in the external communication in the future. The companies should make organizational processes and structures more transparent. Specific references and descriptions of what CSR means in the core area of the respective companies are almost not given. Only one municipal company describes its responsibility in project-based assistance in foreign water companies. Those companies that publish GRI guidelines have even the highest value in the field of CSR - 36 of 37 indicators are addressed adequately and publicly presented.

According to Porter and Kramer (2006) CSR requires the implementation of responsibility into the entire value chain. This comprehensive integration, communication and public presentation is insufficient in the sample. A credible commitment to CSR does hardly any WSC have, as the qualitative content analysis shows. But the communication of ISO 26000 keywords does not indicate core activities within its own or the total value added chain. Here the visibility of social responsibility is showed by specific supply chain-related activities. The actual use and communication of the respective management tools would be a first step. Whether the lack of visibility of CSR activities is primarily grown in the existing structures or in the fear of green-washing accusations has to be clarified further (Marquis and Toffel, 2012). The size of a company does not have a constant significant influence on the corporate sustainability performance. Some single CSR elements having a tendency to be picked out a central theme by large WSC can be seen. Regarding the financial forms the EMAS frequency is conspicuous in municipal companies.

In this connection it is necessary to think about possible transformation paths of the existing water systems, also in the municipalities. Taking the perspective of transformation, it makes some starting points and instruments to manage disruptions and discontinuities obviously. It can be also seen as a 'thinking in options and possibilities' and further steps and activities in order to actively manage regime alternatives and transformation paths. A subtly diversified debate between the actors involved (municipalities, companies, networks, etc.) is necessary to be able to demonstrate conclusions and consequences of plans and implementations. Subtly diversified systems gain importance in this context (Hanjra and Qureshi, 2010). These systems can only be successful when existing systems are adopted and rearranged gradually form today. At the same time it is necessary to ensure the specific functions, to fulfil the conditions of corporate management and to shape the transformation process socially and environmentally. Innovative service, distribution and disposal strategies have to be developed and implemented in decreasing as well as in rapidly growing regions (Howard, 2010). Municipalities and der WSC are equally challenged. The influence mechanisms of environmental and social aspects on the economic corporate success may not be underestimated because environmental and social

issues have a marketable and a non-marketable character, whose effectiveness can have an effect on the company's success with the help of market, social and political processes (Schaltegger and Wagner, 2006). According to Schaltegger and Wagner (2006) ecology and economy work as pushing elements towards social sustainability. Here, companies are especially challenged to develop a social-ecological appreciation of the difficulties and sustainability challenges as well as to take proactively influence on structural and political processes.

To realize system changes economic and ecological as well as social value chain processes have to be managed in an integrative way to generate a measurable contribution to the increase of the eco- and social-efficiency in the sense of corporate social responsibility. The main focus of a sustainable change should not only be directed towards the final goods and services of a company, however, above all result in an increase in the value of companies and society. In order to achieve acceptance and understanding of necessary developmental processes and to promote innovation modern participation and cooperation structures as well as continuous technical and methodological training of all stakeholders are needed (Grambow, 2013:383). The author highlights further that in the 21st Century planning has to change increasingly towards a process management including highly participatory, combining informal and formal instruments as well as transparent development processes highlighting the responsibility of public authorities, municipalities, citizens and owners. However, finally there must be a binding plan that regulates the availability of land and the implementation of water management measures.

7 Conclusions

The ecological and social responsibility of a WSC depends crucially on how environmental and social challenges are addressed conceptually, institutionally and instrumentally, i.e. social learning processes are initiated and integrated into the long-term economic management. From this perspective, sustainability is a challenge for organizational learning in the three management dimensions (ecological, economic, social) to enable the sustainable management of a company. Good approaches provide WSC having own power generation and a strategic approaches concerning sustainability management. This can also be found in the municipal area. The energy management of water utilities, in this context, is of fundamental importance (including the application of ISO 16001) and addresses strategic decisions on a local, decentralized power grids and a central power supply decoupling processes.

Corporate governance and ethical business leadership in the sustainability context requires explicit integration of environmental and social challenges in the corporate sustainability management of water utilities by improving the eco-efficiency (e.g.

through implementation of EMAS, ISO 14001 or a) and the socio-effectiveness (ILO , SA 8000 or ISO 26000; of ecological and socio-efficiency, such as ISO 9001, ISO 50001, sustainability reporting, SBSC as well as management tools that are increasing the credibility and visibility of social responsibility of WSC). In particular, climate change and sustainability are major challenges for WSC, but are still insufficiently integrated into management processes and external communications. However, a paradigm shift from cost to eco-efficiency and sustainability is necessary. This includes integrated strategic management approaches. These are available, although they have not been adapted yet in the WSC comprehensively. Therefore a more explorative design would be necessary, like a questionnaire study.

Grambow (2013) stresses that sustainable development needs a clear political and societal will concerning sustainability (behaviour) and a an anchor in society and politics. Yet, this will is mainly a result of a complex societal process and based in fractals. Thus, individuals are able to influence strategic decisions by means of fractal structures towards or against sustainability. A clear first step would be the development of a mission statement containing specific and valuable sustainability elements. A second step would be a clear plan for the implementation of diverse sustainability management tools highlighting social as well as environmental issues. A solid contribution of social responsibility of water companies, which is transparent and credible, is the implementation of the "Water Safety Plan" (WHO 2005). In contrast to the European water law the "Water Safety Plan" was implemented by the WHO in Germany and with the new drinking water regulations implemented in German law by law. The icing on the cake is the implementation of a nationwide multi-barrier system such as the extension of the existing filtration systems on ultra-and nanofiltration would ensure organic micropollutants (pharmaceutical residues, X-ray contrast agent) to be able to more efficiently eliminated from the surface waters and of "self-responsibility principle of the WSC" - without amendment of the West German Drinking Water Regulation - in keeping with the Charter of the World Health Organization. The necessary costs should be internalized in accordance with the polluter pays principle from the affected industries, the pharmaceutical industry.

In accordance with the current discussion of water privatization Ostrom's studies of decentralized structures are further evidence of criteria of success of commons (Grambow, 2013). Their success is dependent of so divers parameters that there is no good case scenario or general approach. However, the investigation also stresses the high degree of complexity between the participating actors, particularly their personal interests, their actual knowledge as well as the influences from existing standards. As there – at least in this sample – most of the companies are not able or willing to implement a plain standard of sustainability with their daily activities or strategic orientation, the questions is - within the meaning of Grambow (2013) – is the pure market able to manage it.

8 References

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CSR and its Potential Role in Employer Branding: An Analysis of Preferences of German Graduates

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Abstract

Due to an increasing bottleneck on major labour markets in developed countries, Employer Branding has gained momentum over the past years. At the same time, Western societies and as such employers have experienced a major paradigm shift: The demand for a socially, ecologically, as well as economically responsible behaviour of society and its members, for companies known as CSR. Hence, CSR might be a powerful way to successfully position the employer on the labour market. Before this background, the objective of this paper is to evaluate the significance of CSR from a future employees' perspective, and as such, its potential role in Employer Branding. Based on theoretical insights into the role of CSR for current and future employees and its resulting significance for employer branding, a survey amongst 679 students at German Universities was conducted in order to check the actual relevance of workplace related CSR and other, general CSR aspects for potential employees' preferences and attitudes towards companies. The results partly confirmed the assumptions made in the theoretical part: Over 90% of all respondents consider some aspects of workplace CSR as important or very important. Nearly 30% include selected workplace CSR characteristics even in their top 3 criteria when it comes to employer selection. Other, general CSR, however, seems to be of minor importance for employer choice in Germany. When evaluating the spread in importance ratings of workplace CSR aspects within different identified sub-segments, the sample proved major differences in preferences for CSR related job attributes.

Keywords

CSR, Workplace CSR, trust, employer choice, employer branding

1 Introduction

What had begun in the 90ies with an increasing public interest in ecological issues has been growing into a new and more holistic idea about responsible business behaviour over the last decade. Both social and ecological responsibility has become part of what society expects from companies today. The growing importance of CSR especially for consumers is reflected in an increasing number of CSR or sustainability related certifications, seals and tests – the CSR test for consumer products of the state owned German product test foundation “Stiftung Warentest” (Stiftung Warentest 2010) being just one example. CSR seems to be a signal for trust and is integrated into marketing and branding concepts of more and more companies.

Consumers and society as a whole represent only an excerpt of a multitude of strategically relevant stakeholder groups. With the constantly decreasing share of working population in Europe (Frosch et. al., 2007), current and potential employees become a critical bottleneck factor for entrepreneurial success. Future employees are rare, but also challenging, mobile, less employer loyal and aware of their potential role as a competitive edge of a company (Lesley, 2009). Given this, companies should be able to sensitively respond to the altering values and expectations of potential company members, and create a strong and convincing employer identity and image correspondingly.

The integration of CSR into employee directed communication might be one way to attract potential and retain current employees. A large body of contemporary international research provides evidence that CSR is an important aspect for job selection (Albinger & Freeman, 2000; Brammer et al., 2007; Galbreath, 2010; Kim & Park, 2011; Lin et al., 2012). Already in 1997, Turban and Greening (1997) showed that managers prefer working for responsibly acting companies. A study of Montgomery and Ramus (2003) revealed, that more than ninety percent of MBA students from European and American Business Schools were willing to forgo financial benefits in order to work for an organization with a better reputation for CSR and ethics.

However, none of the mentioned studies focuses on the German Labour market. Moreover, most of the studies relied on voluntary participation bearing the risk that only people with a specific interest in CSR are participating in the study. Finally, few studies explicitly investigated the importance of different aspects of CSR – especially of workplace related CSR.

Therefore, it is the purpose of this paper to investigate the relevance of CSR related compared with general workplace attributes for employer preference in more detail, focusing on last year students (MBA and Bachelor) from Business Study Programs in Germany. In a first step, we give a brief outline of CSR – especially of

workplace related CSR – and its potential role for employer choice. We will then highlight the importance of employer marketing and employer branding in order to communicate CSR performance and influence attitudes and intentions. Subsequently the results of a survey amongst 679 students (most of them with work experience) will be presented, dealing with important criteria for job selection, general attitudes towards job and career and CSR associations of companies. Students were asked to fill in the survey within class anonymously, leading to an almost 100 % response rate. Finally, we will summarize the main results and give a brief outlook.

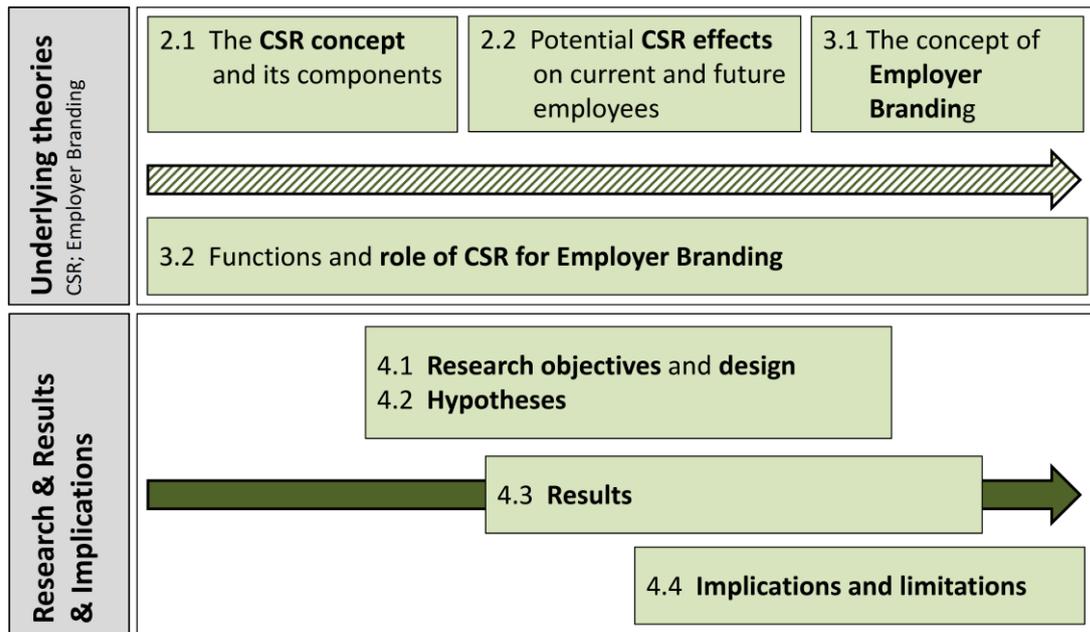


Figure 1: The design of the study

2 The role of CSR for current and potential employees

2.1 The concept and components of CSR

Corporate Social responsibility (CSR) can be understood as an integrative management concept, which establishes responsible behaviour within a company, its objectives, values and competencies and the interests of relevant stakeholders (Meffert & Münstermann, 2005). According to the latest EU definition, it refers to “the responsibility of enterprises for their impacts on society” and implies the integration of “social, environmental, ethical, human rights and consumer concerns into business operations and core strategy in close collaboration with their stakeholders”(European Commission, 2011).

While the compliance with legal norms and agreements with social partners is the basis of responsible management, CSR goes further and implies the voluntary acceptance of responsibility for people, actions or their consequences (Göbel, 2006).

The scope of responsibility can be derived from general values and ethical considerations reigning in a society (see for example Carroll, 1979) or dialectically from the expectations of legitimate stakeholders of a company.

Depending on the framework, different components or core subjects of CSR can be identified: The European Union (2008) distinguishes four main areas of responsibility, with “workplace CSR” being the component which is most prominently directed to employees as one of the most important stakeholder group (see Figure 2). Within seven core subjects of responsibility of the ISO 26000, especially “Human Rights” and “Labor Practices” contain CSR aspects with high relevance for employees (see Figure 3).

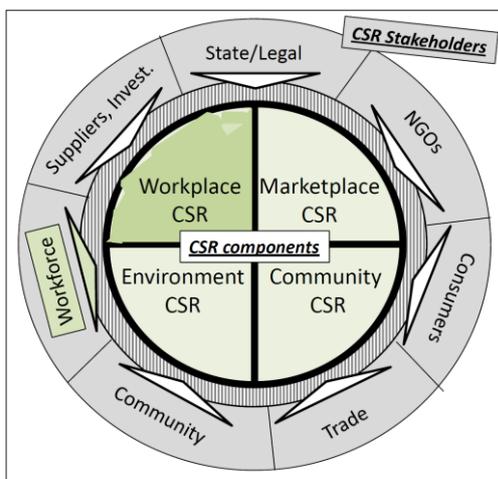


Figure 2: Stakeholder oriented CSR (Source: own illustration, based on Commission (2008))

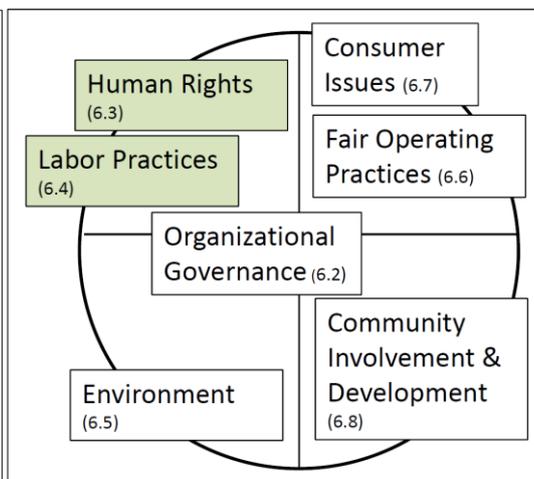


Figure 3: Core Subjects of ISO 26000 Components (Source: own illustration, based on European ISO (2010))

There are many issues associated to workplace CSR (see appendix for an overview). Based on the frequency of entries in ratings and CSR frameworks (ISO 26000, OEKOM) we identified the following issues as most relevant for workplace CSR:

- Diversity/equal opportunity:e.g. Equal opportunity policy, percentage of women/minorities of workforce/lower & upper management, payment
- Work-life balance
- Social benefits / support for employees & families
- Health & Safety
- Training & development of employees
- Job security & Safeguarding
- Labor relations/freedom of association
- (Employment & human right issues in supply chain)⁴.

⁴ The last attribute was not considered in the empirical research.

2.2 Potential effects of CSR on current and future employees

Depending on the field of CSR (workplace, marketplace etc.) and the particular stakeholder group (current vs. future employees), different theories and arguments can be used to explain positive effects of CSR on employer attractiveness and herby on employer choice and employee motivation (Figure 4).

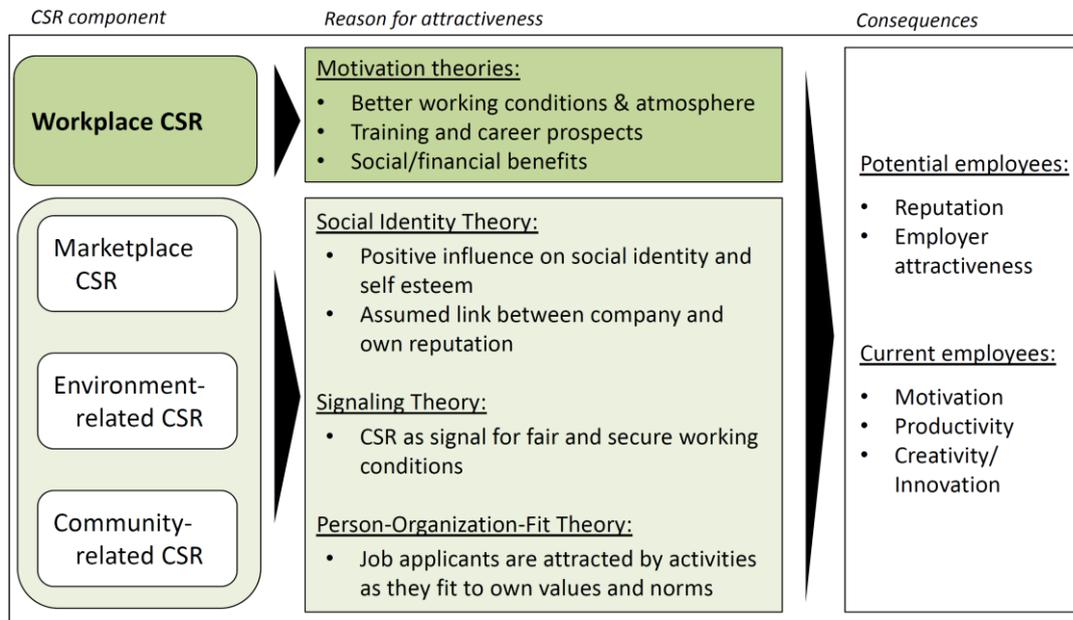


Figure 4: Positive effects of different CSR components (Source: own illustration)

It is straightforward, that workplace CSR – such as work-life balance, social benefits and health management - has a direct effect on job satisfaction, staff commitment and loyalty of current employees and may lead higher motivation, productivity and innovation (see European Commission 2008 for an overview of studies). As far as potential employees are able to evaluate workplace characteristics beforehand, they also have a positive effect on their cognitive and affective judgment of the company in question.

What is more interesting is the potential effect of “general” CSR performance on employer attractiveness and employee motivation. According to Social Identity Theory, people classify themselves into social categories based on their affiliation with organizations or groups; the membership in these groups is thought to influence their self-concept (Ashforth& Mael, 1989; Dutton et. al., 1994). Cable & Graham (2000) conclude that CSR – if appreciated by society - positively influences social identity and self –esteem. Building on the same theoretical framework, Herrbach & Mignonac (2004) argue, that (potential and current) employees expect a positive link between companies’ (CSR) image and their personal reputation. According to signaling theory (Spence, 1974; Rynes, 1991), organizational attributes may be interpreted as signals for other unknown attributes. Turban & Greening (1997) therefore argue that

employees take CSR as a signal for fair behaviour towards the employee, when information about workplace characteristics is incomplete (Turban & Greening, 1997).⁵ Finally, based on the observation, that people are attracted to organizations they view as having values and norms they deem important (Chatman, 1989)), for job aspirants being socially or ecologically conscious, CSR activities of a company might be an important aspect for job selection (Greening & Turban , 2000).

CSR hence influences not only the knowledge about workplace attributes (cognitive level), but also emotions and feelings (affective level) (Zajonc & Markus (1982)), and potentially shapes attitudes towards potential employers.

3 The case for CSR related Employer Branding

3.1 The concept of Employer Branding

Analogue to the modern understanding of the simple notion of a “brand”, an “Employer Brand” can be defined as the “the package of functional, economic and psychological benefits provided by employment, and identified with the employing company” (Ambler, Barrow 1996, p. 187).As such, it refers to both, the distinctive image of the company in the eyes of its potential and former employees (cf. Meffert 2000, p. 169) as well as to the grounding of this image – the self-perception of all internal stakeholders of the company (Grobe 2003, S 76; Burmann et al, 2012, pp. 20-31)⁶.

The term “Employer Branding” then refers to the identity based development and positioning of a company as a credible and attractive employer, both for existing and potential employees (Deutsche Employer Branding Akademie, 2007). It comprises the planning, steering, coordination, and controlling of the Employer Brand (Sponheuer, 2010, p. 27).

Potential employees usually interact with a company in different stakeholder roles – as a consumer, investor, neighbour or other (Roj, 2012, p. 5). As a consequence, employer branding is to be integrated into an overall branding strategy (Petkovic, 2008, pp. 239-240, Figure 5), and needs to be coordinated with other stakeholder directed branding approaches (Sponheuer 2010, p. 215).

⁵ According to signalling theory, different organizational attributes may be interpreted as signals for other attributes where signal receiver have incomplete information about (Spence 1974).

⁶ Burman et. al. understand the image as a result induced by the identity of the company.

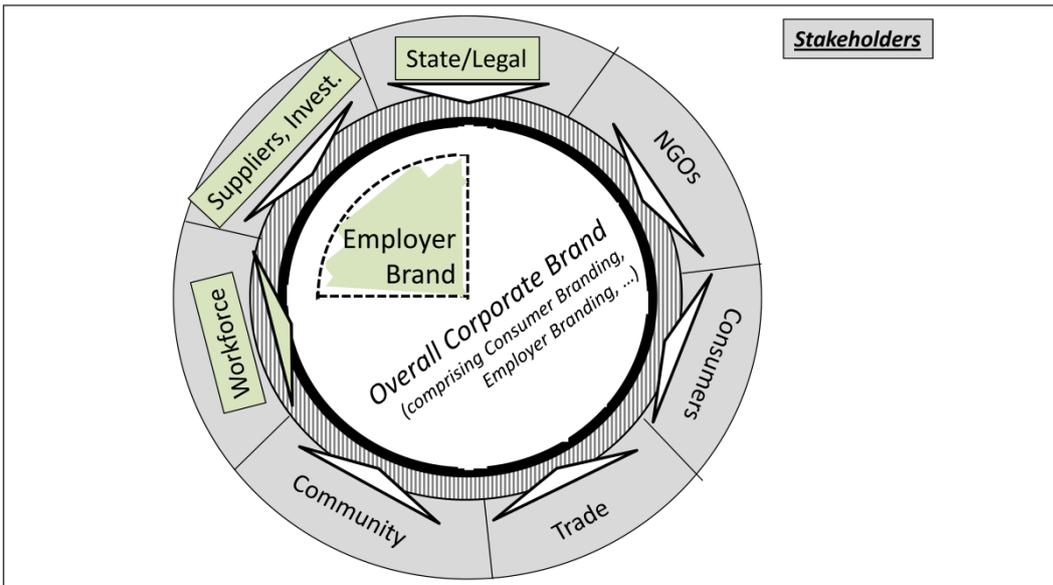


Figure 5: The Employer Brand as part of an overall Corporate Brand (Source: own illustration)

3.2 Functions of employer branding and the role of CSR

Employer branding– from the employer perspective – is above all an instrument to form preferences in favour of a company as an employer, by differentiating itself from other potential employers (McShulskis, 1996; Althaus, 2001; Petkovic, 2008). Due to the difficulty to make oneself stand out based on objective workplace criteria, companies increasingly try to “emotionalize” the brand, creating sympathy and affection (Scholz, 1992; Petkovic, 2008; see Figure 6).

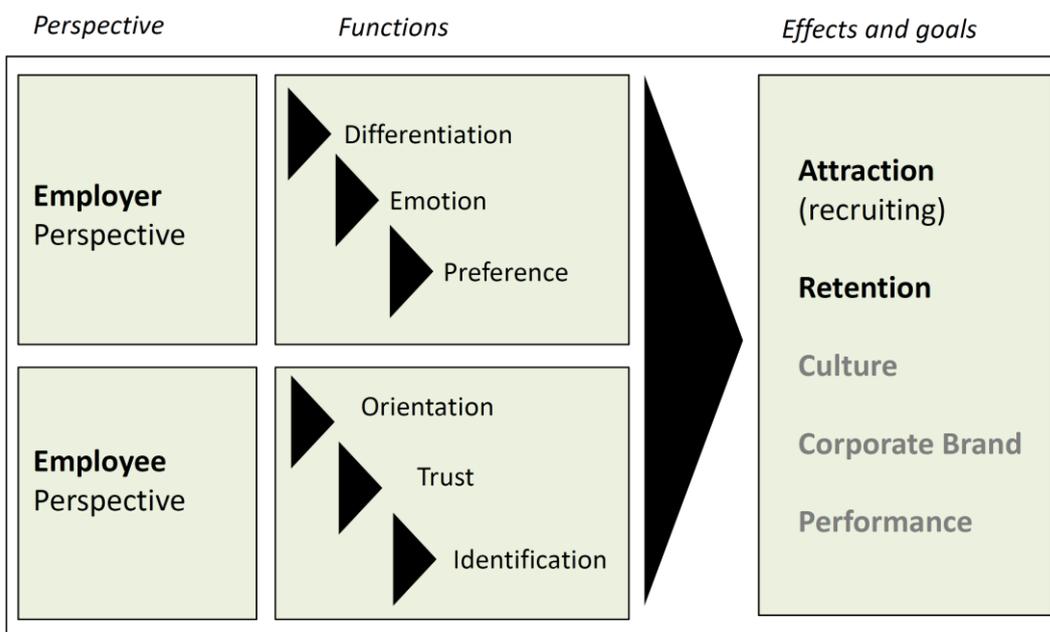


Figure 6: Functions and effects of the employer brand (Source: own illustration, based on Stotz & Wedel-Klein (2013))

From the perspective of (potential) employees, the employer brand serves three major goals (Petkovic 2008, Figure 6): It should give orientation in an intransparent environment, bundling functional and emotional information about a company and its requirements. It also should establish trust and reduce uncertainty and risk. Due to a high share of experience and trust components of the future workplace, potential employees cannot judge beforehand the characteristics of the employer and need to rely on its “promises” (Petkovic, 2008; Böttger, 2012)⁷. Finally it may provide an emotional benefit, allowing identification (Meffert et. al., 2002) and social reputation (Herrmann, 2005). Usually, there is a high degree of involvement in the employer choice: Even if the workplace loses importance in relation to other aspects of life (v. Rosenstiehl, 2001), work is still an important part of peoples’ life. People increasingly look for jobs that give not only room for personal development, but that also allow for individual and social identification (v. Rosenstiehl, 2001). The (employer) brand as a value promise serves as reference point for potential and current employees, who compare perceived company values with their self-concept and aspired value system (Ross, 1971; Herriot, 2002).

Building on the assumptions in chapter 2, the integration of CSR in the Employer Brand could benefit the strength of the Employer Brand and its potential to attract and retain employees with respect to each of the three goals: If “responsible” workplace attributes play a decisive role for job aspirants, they should be communicated in order to convince job aspirants on a cognitive level. If CSR is taken as a signal for trustworthiness, its integration in the positioning allows strengthening the image of the company as a trustful, reliable and fair employer. Finally, if ecological and social consciousness and fairness is part of the value system of the target employees of a company, its communication enhances identification and perceived “added value” of the employer in question.

3.3 Understanding preferences of the target group

Even if we assume, that CSR attributes play an important role for job selection and employee retention, the development of a strong employer positioning and value proposition requires a deeper understanding about the demands and expectations of the respective target groups of the company. There is a multitude of studies and surveys aiming at identifying preferences and user values of current and potential employees. Within analytical preference studies, participants of the studies are asked to evaluate or choose between potential job offers that consist of different components, such as salary, benefits, work-life balance etc.(e.g. Grobe 2003, Hinzdorf

⁷ This is also the result of the immateriality of the „product“ and its dependency on superiors and colleagues (Petkovic, 2008)

et. al. 2003). Other surveys, such as the trendance graduate barometer or the Universum graduate surveys ask respondents to rank or evaluate the importance of selected workplace relevant attributes.

Graduate surveys mostly segment respondents based on career level (students at different levels, young professionals) and professional (Business, Engineering/IT etc.) orientation. Grobe (2003) additionally identifies clusters based on expectation profiles in order to distinguish differences in preferences of the surveyed respondents. Both approaches show, that preferences vary significantly for different segments.

While analytical studies give a better insight in the relative importance of different workplace attributes and the benefits of “attribute bundles”, the design of more simple ranking surveys are easier to conduct and still render interesting results. However, none of the above mentioned studies focuses on the role of different aspects of CSR and its relative importance of CSR specific workplace attributes in comparison with other job-relevant aspects.

4 Analysis of CSR related workplace preferences of German graduates

Objectives and Methodology

In order to shed some light on the importance of (workplace) CSR for employer choice, the expectations, judgments and workplace related attitudes of German business graduates were examined. The focus of the study was on identifying which aspects of workplace CSR were particularly important for potential employees of companies and if there are differences between male and female students and other identified sub-segments with respect to preferences and requirements. At the same time, our research interest was on clarifying, if CSR, and explicitly workplace CSR is a decisive factor for employer choice, compared to Other/Non-CSR criteria.

The research was conducted based on a non-random written survey of 679 last year students, most of the with work experience. Due to the research design (students were asked to fill out the survey within class), the response rate was almost 100 %, such that distortions due to self-selection could be avoided. 83% of all respondents were bachelor students in dual business study programs, 15% and master and MBA students, 2% other - such as diploma or magister, or non-responding. 62% of the respondents were female, 34% male, with 4% non-responding. The survey induced gender imbalance was corrected via extrapolations over the course of this study, in order to allow a holistic picture (quota sample): 52% female; 48% male).

The written survey consisted of questions regarding the importance of general and CSR-related criteria for employer selection as well as ideas about and attitudes towards work and about responsibilities of companies. Besides, associations with responsible companies were surveyed.

The choice of criteria for employer choice was based both on existing results about factors for attractiveness (e.g. trendance studies) as well as additional CRS-related attributes (see Figure 7). The latter were derived from explorative interviews within a focus group.

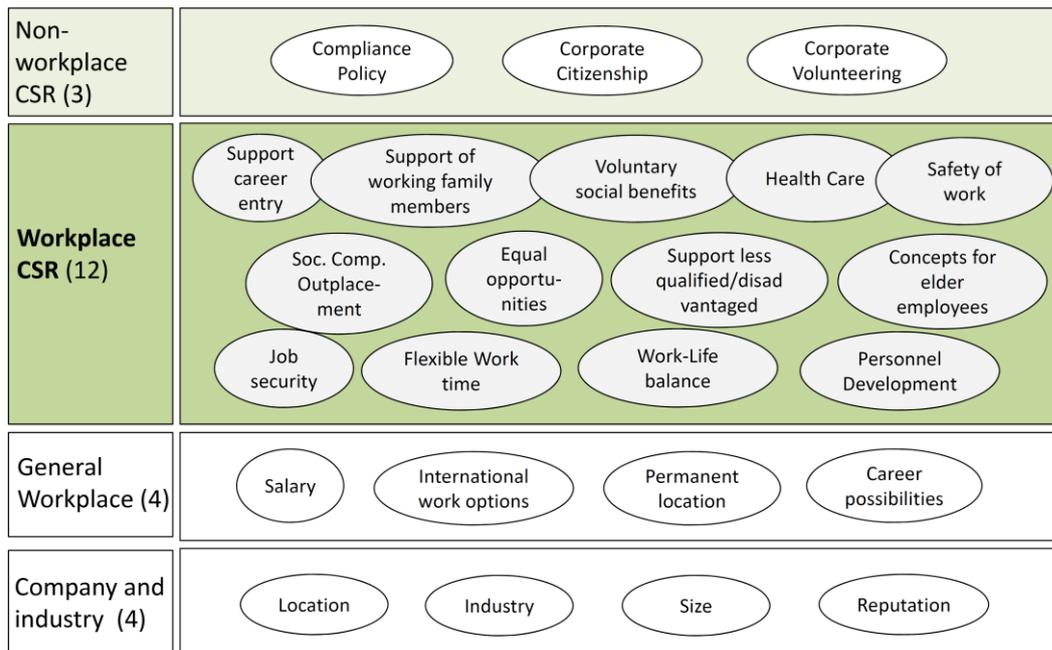


Figure 7: Surveyed criteria for employer choice (Source: own illustration)

The importance of each criterion was evaluated using scales from 1 (not important) to 4 (very important), and by letting the panel participants rank their top five employer selection criteria.

Hypotheses

In order to be able judge the assumptions made in chapter 2 and three, the following hypotheses were proposed:

Hypothesis 1: Workplace CSR has become a basic requirement for future employees.

We propose the confirmation of the hypothesis, when at least one workplace CSR - attribute is perceived as “important” or “very important” criterion by 90% of respondents or at least 4 workplace CSR attributes are perceived as “important” or “very important” criteria by more than 66 % of respondents. Additionally, at least two attributes should be among the top rankings of at least 25 % of respondents.

Hypothesis 2: Other CSR activities have also become an important requirement of future employees.

A confirmation of this hypothesis is assumed, if at least 2 of the three general CSR attributes are considered to be important and very important by at least 50 % of the respondents. However, due to the design of the survey, the result of the study can only render tentative results with respect to this hypothesis: We only integrated three attributes for general CSR and did not take into account important aspects such as ecological responsibility or general fairness in the marketplace. We still think that with attributes such as corporate citizenship and compliance, we cover an important part of general CSR.

Hypothesis 3: The perceived importance of (workplace) CSR related attributes differs significantly

a) between preference based sub-segments of the sample.

b) between male and female students.

We assume confirmation of this hypothesis, if there is a significant difference in average importance ratings between sub segments and the total sample higher than an absolute 0.25 for at least 2 (workplace) CSR related attributes in at least 3 of the 5 defined segments or if there is a difference of at least 10 percentage points in Top 3 rankings of at least 5 (workplace) CSR related attributes.

5 Results

5.1 Importance of workplace attributes for employer selection

As the study revealed, of the workplace CSR related attributes (marked with dark green), only “personal development” seems to be of high importance for the majority of and of importance for over 90 % of the respondents (see figures 8 and 9).

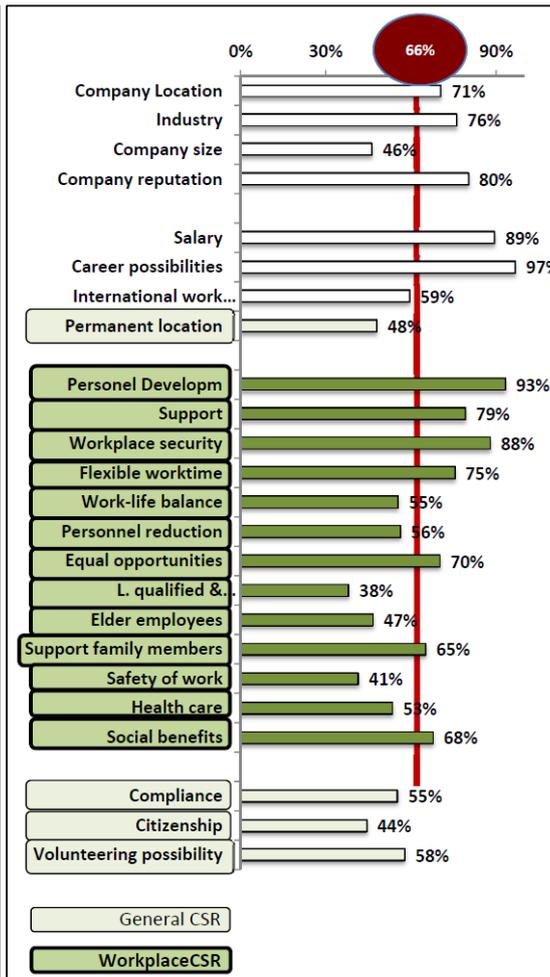
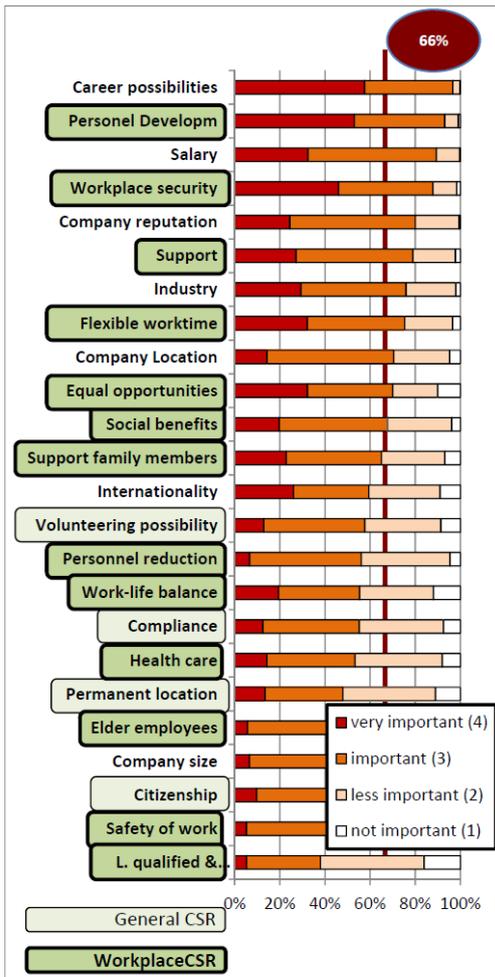


Figure 8: Importance of attributes (% of respondents, n=679) (Source: own illustration, n=679 based on survey)

Figure 9: Perceptions of attributes as (very) important (% of respondents, n=679) (Source: own illustration, based on survey)

However, six of the workplace CSR related attributes are perceived as important or very important by at least 66 % of respondents. Moreover, two of these attributes are ranked top 3 by at least 25 % of respondents (see Figure 10):

Ranked amongst Top 3	all	male	fem
Career possibilities	42	44	41
Workplace security	42	41	42
Salary	39	51	27
Personel Developm	29	30	29
Industry	18	23	13
Internationality	15	11	18
Company Location	14	16	12
Flexible worktime	12	11	12
Company reputation	10	13	7
Support	9	8	9
Equal opportunities	7	0	13
Permanent location	6	4	8
Support family members	5	2	9
Work-life balance	5	2	7

Figure 10: Percentage of 3 top rank attributes (workplace CSR attributes marked in grey, green frames; n=679) (Source: own illustration, based on survey)

The results allow us to confirm Hypothesis 1: Workplace CSR has become a basic requirement for future employees.

The most important aspects of workplace CSR seem to be “personal development”, “workplace security”, “support at career entry” and “flexible work time”. “Support of family members”, “Socially compatible personal reduction”, and “work-life-balance” is considered as important by more than 50% or more of all respondents, and thus might be of major relevance for competitive employers, too. The well-being of “distant” employee groups such as elder and disadvantaged employees does not have major significance for young job-aspirants: just about 5% of the sample consider these criteria as “very important” for employer choice. Also other CSR attributes seem to be of major significance for the respondents. None of the three considered attributes is ranked as top 3 by more than 5 % of respondents, and all of them are not or less important for the majority of respondents. Consequently, we need to refute the above stated Hypothesis 2 and can follow:

Other CSR activities have not (yet) become an important requirement of future employees.

5.2 Segment specific differences in workplace preference

In order to get a deeper understanding of preference profiles of respondents, we divided the total sample

- into sub-segments based on respondents' highest-ranking employer choice criteria.
- into male and female respondents.

The latter resulted in six internally homogeneous, externally heterogeneous job seeker segments (see Figure 11): "Careerists" (18% of total sample), "Security Seekers" (25%), "Mainstreamers" (32%), "Equalizers" (8%), "Self-fulfillers" (11%), and "Corporate Posers" (6%).

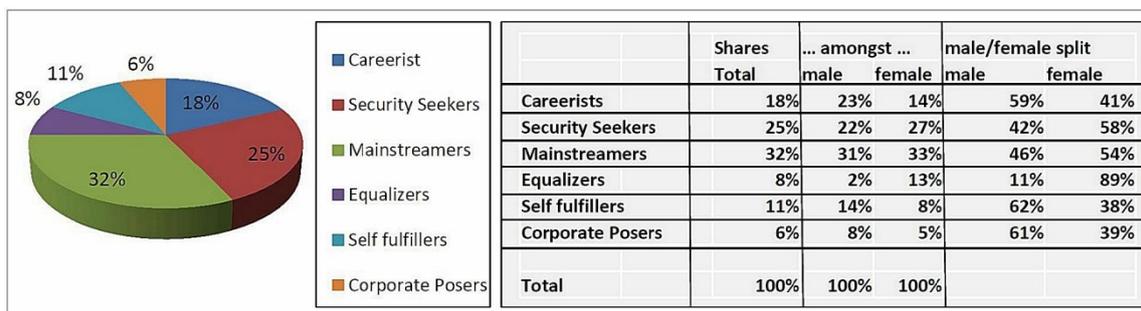


Figure 11: Sub-segments based on top-ranking employer choice criteria (n=679) (Source: own illustration)

The identification of differences in preferences among the segments was mainly done based on the comparison of "average importance" rates (total sample as compared with the respective sub-segment) (Figure 12). We also compared the percentage of respondents evaluating an attribute as important in sub-segments with the whole sample, which confirmed our results. For the sake of simplicity, this analysis is neglected for preference-based sub-segments, as it confirmed our results (see Appendix 1 for the respective table). We will refer to it, however, in case of gender analysis, as it gives a clearer result to what is important to women and men (see below Figure 12).

Average importance (4=high, 1= low)										Deviation from Average							
Av. Importance (4=highest)	All	M	F	Careerists	Security Seekers	Main-streamers	Equalizers	Self fulfillers	Corp Posers	M	F	Careerists	Security Seekers	Main-streamers	Equalizers	Self fulfillers	Corp Posers
Company-/Industry Related																	
Company Location	2,80	2,75	2,85	2,74	2,92	2,73	2,81	2,69	2,90	-0,06	0,05	-0,07	0,12	-0,07	0,01	-0,11	0,10
Industry	3,03	3,03	3,04	3,02	3,00	3,04	3,14	3,14	3,24	0,00	0,00	-0,02	-0,03	0,01	0,11	0,11	0,20
Company size	2,46	2,48	2,44	2,61	2,38	2,46	2,23	2,46	2,72	0,02	-0,02	0,15	-0,08	0,00	-0,23	0,00	0,26
Company reputation	3,04	3,00	3,07	3,03	2,99	3,00	2,95	3,14	3,29	-0,04	0,04	0,00	-0,04	-0,04	-0,09	0,10	0,25
General workplace-related																	
Salary	3,22	3,34	3,10	3,56	3,23	3,20	3,11	2,95	3,12	0,13	-0,12	0,35	0,01	-0,02	-0,11	-0,26	-0,10
Career possibilities	3,54	3,56	3,52	3,78	3,43	3,55	3,59	3,63	3,45	0,02	-0,02	0,24	-0,11	0,01	0,05	0,09	-0,09
International work	2,77	2,66	2,86	2,73	2,57	2,66	2,63	3,05	3,30	-0,10	0,10	-0,03	-0,20	-0,10	-0,13	0,28	0,53
Permanent location	2,50	2,45	2,55	2,39	2,79	2,51	2,35	2,48	2,18	-0,05	0,05	-0,11	0,29	0,00	-0,15	-0,02	-0,33
Workplace CSR																	
Personel Developm	3,45	3,44	3,47	3,37	3,41	3,34	3,59	3,86	3,18	-0,02	0,02	-0,08	-0,05	-0,11	0,13	0,41	-0,27
Support work entry	3,04	2,94	3,13	2,95	3,11	3,00	3,09	3,00	2,92	-0,10	0,09	-0,09	0,07	-0,04	0,05	-0,04	-0,12
Workplace security	3,32	3,23	3,41	3,27	3,94	3,54	3,21	2,97	2,63	-0,09	0,08	-0,06	0,61	0,21	-0,12	-0,35	-0,70
Flexible worktime	3,04	2,94	3,13	2,94	3,03	3,18	3,16	2,91	2,75	-0,10	0,09	-0,10	-0,01	0,14	0,12	-0,13	-0,29
Work-life balance	2,63	2,55	2,70	2,40	2,29	2,70	3,03	2,57	2,78	-0,08	0,07	-0,23	-0,34	0,07	0,40	-0,06	0,15
Personal reduction	2,58	2,47	2,68	2,36	2,73	2,54	2,49	2,51	2,52	-0,11	0,10	-0,22	0,14	-0,04	-0,10	-0,07	-0,06
Equal opportunities	2,92	2,38	3,43	2,87	3,23	2,90	3,55	2,99	2,78	-0,55	0,50	-0,05	0,30	-0,02	0,63	0,06	-0,15
L. qualified & disadvantageded	2,27	2,09	2,44	1,95	2,30	2,31	2,56	2,24	2,25	-0,18	0,16	-0,32	0,03	0,04	0,28	-0,03	-0,02
Elder employees	2,41	2,33	2,48	2,17	2,57	2,39	2,57	2,36	2,30	-0,08	0,07	-0,24	0,16	-0,02	0,16	-0,05	-0,11
Support family members	2,81	2,64	2,97	2,74	2,97	2,68	3,41	2,35	2,60	-0,17	0,16	-0,07	0,16	-0,13	0,60	-0,46	-0,21
Safety of work	2,36	2,22	2,50	2,10	2,40	2,40	2,89	1,06	2,29	-0,15	0,14	-0,26	0,04	0,04	0,52	-1,31	-0,08
Health care	2,60	2,60	2,60	2,42	2,62	2,44	2,71	2,45	2,78	0,00	0,00	-0,17	0,02	-0,16	0,11	-0,15	0,18
Social benefits	2,84	2,88	2,80	2,77	2,94	2,80	2,85	2,72	2,85	0,04	-0,04	-0,06	0,10	-0,04	0,02	-0,11	0,01
General CSR																	
Compliance	2,60	2,62	2,59	2,38	2,54	2,45	2,98	2,42	2,60	0,02	-0,02	-0,22	-0,06	-0,15	0,38	-0,18	0,00
Citizenship	2,39	2,17	2,59	2,33	2,14	2,14	2,67	1,10	2,56	-0,22	0,20	-0,06	-0,25	-0,25	0,28	-1,29	0,17
Volunteering possibility	2,62	2,69	2,56	2,40	2,56	2,56	2,69	2,65	2,98	0,07	-0,06	-0,22	-0,06	-0,06	0,07	0,03	0,36

Figure 12: Average Importance of workplace attributes by sub-segment (from 4= very important to 1 = not important; n=679) (Source: own illustration, based upon survey)

Analysing the average importance ratings led to the following comparative description of sub-segments (see Figure 12 for an overview):

- “Careerists” (18% of total; male/female: 59%/41%):
This segment is composed by all respondents that had both “career possibilities” as well as “salary” on their top three priority list. Accordingly, careerists assigned significantly higher average importance ratings to these attributes than the total

sample. Apart from this also “company size” received slightly higher average importance than in the total sample (+0.15). What is striking is that – compared with the total sample – most workplace and general CSR aspects are perceived as less important, with deviations from average importance between -0.06 (workplace security) and -0.32 “support of less qualified and disadvantaged employees”. “Concepts for elder employees” and “work-life balance” are both assigned average importance rates, differing from average by -0.24 and -0.23 respectively. Workplace CSR seems to be of major disinterest for this group.

- “Security seekers” (25%; male/female: 42%/58%): For “Security seekers”, a secure workplace is one of the most important criteria for employer choice. The average importance of this aspect is by far higher than in any other sub-segment (+0.61). A permanent job location is also valued comparatively high (+0.29), as well as equal opportunities (+0.3). Besides, there is a below average preference for internationality (-0.2) and work-life balance (-0.34). Apart from this, their expectations are near average.
- “Mainstreamers” (32%; m/f: 46%/54%): “Mainstreamers” do not exhibit any specific orientation in their answers and can be judged as almost average. They assign a lower average importance to Citizenship activities (-0.26), Health care (-0.15) and compliance (-0.15) and a slightly higher than average importance to workplace security (+0.21) and flexible work time (+0.14).
- “Equalizers” (8%; male/female: 11%/89%): “Equalizers” ranked social aspects such as “family support” and “work-life-balance” as top criteria for employer choice. Mostly women compose the segment. They assign very high importance to attributes such as equal opportunities (+0.63), support of working family members (+0.61), safety of work (+0.49) and work-life balance (+0.4). Their sense for fairness is also expressed in comparatively high importance ratings for compliance (+0.38) and support of less qualified and disadvantaged employees (+0.28). Equalizers rank all aspects of other CSR higher than other segments.
- “Self-fulfillers” (11%; male/female: 62%/38%): Self-fulfillers” were assigned on the basis of criteria such as “personal development” and “internationality” amongst their top 3 - whilst having no interest in a career and high salary, or social aspects. 62 % of this segment is male. All in all, they can tentatively be described as less materialistic, adventurous and socially oriented: They assign higher average importance to personal development (+0.41) and inter-national work options (+0.28). At the same time, salary (-0.26), safety of work (-1.34), workplace security (-0.35) and support of family members (-0.35) seem to be considered as less important compared with the sample average.

- “Corporate Posers” (6%; male/female: 61%/39%): Corporate posers constitute the smallest segment and chose at least two of the four company related criteria “location”, “reputation”, “industry”, “size” as top employer choice criterion. Members of this segment are over proportionally interested in working in a reputable (+0.25), big (+0.26), international (+0.53) corporation, whilst neither assigning particular importance to permanent location (-0.33) personnel development (-0.27) and workplace security (-0.7). Additionally, below average importance is assigned to flexible work time (-0.29) and high importance is attributed to volunteering possibilities (+0.38). However, the segment is too small to allow reliable results, such that it was not considered for evaluation of hypothesis 3.

Summarizing, there are marked differences in preferences for general and CSR related workplace attributes between segments. Mainly “equalizers” and “self-fulfillers” differ clearly from the average score, with deviations up to nearly 0.6. Equalizers appreciate support of family and less advantaged as well as work-life balance and equal opportunities. The opposite picture is true for the “self-fulfillers”, who score significantly over-average in terms of self-development, and have a way lower need for the support of family members. But also “careerists” and security-seekers have their own preference profile with specific importance ratings for selected CSR and non-CSR related attributes. As there are also considerable differences in Top 3 rankings between the different segments (see appendix), we can confirm

Hypothesis 3a: The perceived importance of (workplace) CSR related attributes differs significantly between different sub-segments of the sample.

Analysing average importance ratings of men and women (see Figure 13), there seem to be no major gender differences except for preferences for equal opportunities: Average importance is 2.38 for male respondents, but reaches 3.43 for female respondents. The differences in preferences for other attributes are mostly lower than differences between other sub-segments. However, it is worth noting, that almost all the female sample exhibits slightly higher average importance in almost all CSR criteria (except social benefits, compliance and volunteering), whereas slightly lower importance is attributed to salary, company size and career possibilities. Comparing the top 3 selection criteria shows, that far more men rate company related criteria such as “industry” and “reputation” amongst their topselection criteria than their female counterparts. The most striking difference is the selection of “salary” having been mentioned as a top 3 criterionsby 51% of all male, and just 27% of all female respondents. At the same time, looking at (workplace) CSR related attributes, it can be seen, that almost all attributes are more often selected as a top criterion by women than by men - 8 of the attributes even showing differences of 10 percentage points or more. Consequently, we would partly confirm *Hypothesis 3b: There are no*

significant gender-specific differences in the average importance of (workplace) CSR related attributes. Worth mentioning, though, are the differences in the top 3 ranking (workplace) CSR criteria – and in the non-CSR criteria.

	Top 3 Rank	All	Male	Female	Gap
Company & Industry	Company Location	71%	69%	72%	-3%
	Industry	76%	75%	77%	-2%
	Company size	46%	48%	44%	4%
	Company reputation	80%	77%	83%	-6%
General WP	Salary	39%	51%	27%	24%
	Career possibilities	42%	44%	41%	3%
	International work options	59%	55%	64%	-9%
	Permanent location	0%	0%	0%	0%
WP CSR	Personel Developm	29%	30%	29%	1%
	Support	79%	74%	84%	-10%
	Workplace security	42%	41%	42%	-1%
	Flexible worktime	75%	71%	79%	-8%
	Work-life balance	55%	54%	56%	-2%
	Personnel reduction	56%	50%	62%	-12%
	Equal opportunities	70%	46%	92%	-46%
	L. qualified & disadvantaged	38%	31%	44%	-13%
	Elder employees	47%	45%	48%	-3%
	Support family members	65%	60%	70%	-10%
	Safety of work	41%	35%	48%	-13%
	Health care	53%	55%	52%	3%
Social benefits	68%	70%	66%	4%	
Non-WP CSR	Compliance	55%	56%	54%	2%
	Citizenship	44%	32%	56%	-24%
	Volunteering possibility	58%	63%	53%	10%

Figure 13: Top 3 ranking workplace attributes (in %, n=679) (Source: own illustration, based upon survey)

6 Implications and limitations

According to the survey, preferences for workplace CSR seem to be high. Not only “traditional” attributes such as workplace security and personnel development, but also flexible work time, support at career entry and equal opportunities are important for more than 2/3 of respondents and are considered as Top-criteria for employer choice by many students and graduates. Other CSR aspects such as corporate citizenship or volunteering however seem to be less critical for their employer choice. Looking deeper in the data, it can be seen that preferences for workplace CSR are not the same for all respondents. Instead, there are significant differences between preference based sub-segments, e.g. with respect to diversity (equal opportunities, support for working family members etc.) or security related attributes. Differences between men and women are by far less pronounced than between other sub-segments, but preferences for workplace CSR are almost consistently higher in the female sub-segment. Also, the analysis of top ranking criteria suggests gender distinctions in a number of attributes. Most striking is the difference in perceived importance for equal opportunities and some other “social” aspects (ranked higher by women), as well as for salary and company size (ranked lower by women).

Building on these results, we suggest that the companies should carefully define and analyse their target employee group and accordingly consider (workplace) related aspects in their employer positioning and identity.

However, there are some shortcomings of the survey worth mentioning and reducing the significance of the results:

- General CSR attributes are only partly integrated in the survey. Especially ecological aspects were neglected due to the focus on workplace related aspects. However, we believe, that attributes such as corporate citizenship and voluntary engagement at least partly represent students ideas about general responsibility of a company.
- Several attributes focusing on “soft” characteristics of the workplace (such as corporate culture, working climate) were not integrated into the survey. We believe, that cognitive attributes such as equal opportunities are an expression of the underlying culture and values of a company.
- Sub-segments were formed based on the most important criteria for employer choice. Psychographic characteristics of respondents were only indirectly surveyed. Sub-segments are hence only tentative, which reduces the significance of results. Further research is necessary to link workplace preferences and personal characteristics of job seekers.

7 Summary and outlook

The aim of this paper was to contribute to the understanding of the importance of workplace and other CSR for employer attractiveness and hence for employer branding strategies. According to selected theoretical frameworks, both perceived workplace CSR and other CSR seem to strengthen positive associations with potential employers, both because of an appreciation of workplace CSR related attributes (such as health care or work-life balance) and because of positive effects on the trustworthiness of the employer in question and the self- and social identification of the employee. Hence, employer branding, having similar objectives (orientation, but also trust building and identification) could be fomented by integrating CSR into Employer Positioning.

Empirical research however cannot completely confirm the assumptions made in the theoretical part. Even though selected workplace CSR related attributes seems to be of high importance for business students and graduates in Germany, general CSR is not. Moreover, workplace CSR is not equally important for different sub-segments; there are even sub-segments that are not interested at all in workplace CSR related criteria, but focus on non- CSR factors such as career, internationality and salary, only. Hence, employer-branding experts need to carefully analyse target groups and their preferences in order to shape image and identity accordingly.

Future research should go more into detail in the importance of general CSR criteria for employee preferences. At the same time, classical criteria such as corporate culture, working climate or responsible tasks should be more explicitly confronted with CSR related aspects. On top of the consideration of how to recruit new employees, it will be critical to better understand how to retain them, too. Sub-segments such as elder employees or employees with migrant background might need a further analysis.

Also, the effects of CSR on a cognitive and affective level should be investigated. Finally, a better understanding of the target group requires deeper research in attitudes and values of surveyed graduates.

Research respective the relation between CSR and Employer Branding has just begun. Proactively addressing the demands of stakeholders, especially current and future employees will pay off in terms of corporate success. (Workplace) CSR criteria do have a major impact. And Employer Branding can make sure everybody gets the message.

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9 Appendix

Basic requirements in %	All	M	F	Careerists	Security Seekers	Main-stream	Equalizers	Self fulfillers	Corp. Posers
Personel Developm	93	92	94	87	97	86	97	100	85
Support	79	74	84	80	88	73	77	75	69
Flexible worktime	75	71	79	72	76	86	81	65	63
Equal opportunitis	70	46	92	66	85	66	94	78	65
Support family members	65	60	70	60	73	59	87	48	53
Health care	53	55	52	44	57	42	53	46	68
Volunteering possibility	58	63	53	44	56	56	55	58	70
Work-life balance	55	54	56	42	37	59	79	51	65
Elder employees	47	45	48	28	55	41	56	45	43
L. qualified & disadvantagd	38	31	44	17	37	41	52	40	40

Figure 14: Workplace CSR attributes valued as „very important“ or „important“ (numbers in %; n=679);
Source: own illustration, based upon survey

Stakeholder engagement in pharmaceutical industry

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Abstract

The purpose of this paper is to outline the ISO 26000 and the development of stakeholder management as it has come to be applied in strategic management. Organizations around the world and their stakeholders are becoming increasingly aware of the need for and benefits of socially responsible behaviour. ISO standards regulate many international norms. ISO 26000 exposes seven core subjects in which an honest behaviour supports success; all of them are linked by two crucial concepts: (1) interdependence and (2) holistic approach. However, stakeholder engagement can be defined as interactive activities initiated by an organization with its stakeholders. The organization typically has many stakeholders and it is itself “a stakeholder within the community”. Managers should recognize all stakeholders, including those that are frequently forgotten but can have a major impact on the organization’s activities and reputation. As a matter of fact, the Krka Group is a responsible organization which identifies and interacts proactively with the stakeholders impacted by its activities. Stakeholder identification and engagement are central to addressing an organization’s social responsibility. One of the general CSR principles within ISO 26000 concerns respecting stakeholder interests. Brief discussion of managing for stakeholders and the role this plays in achieving value creation and competitive advantage. The stakeholder theory is about value creation and trade – it is a managerial theory about how business works. It asks both business and ethics questions about stakeholder relationship. Finally, ISO 26000 adds that the active engagement of stakeholders is based on trust and goes beyond public relations. Moreover, it is also important to realise that stakeholder engagement is not a one-off event but a continuous process.

Keywords

Stakeholders, stakeholder theory, strategic management, corporate social responsibility, ISO 26000.

1 Introduction

One of the most referred definitions is the one by the World Business Council for Sustainable Development (WBCSD, 1999) that defines CSR as ‘the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large’. Many organizations joined the path toward business and quality excellence and utilized quality tools, quality and environmental management systems standards (ISO 9000 and ISO 14000), responsibility standard (ISO 26000) and business excellence models EFQM and Baldrige to assist them in this transition. Evolution moves on and is heading now toward Corporate Social Responsibility (CSR) or Social Responsibility (SR) Excellence to Total Responsibility Management (Waddock, 2006; Waddock and Bodwell, 2007: 72-73). In this paper we discuss the roles of ISO 26000 guidance standard on social responsibility and stakeholder engagement in the pharmaceutical company of Krka Group from Slovenia.

The paper is organized in the following way. To set a scene, we define ISO 26000 and outline general features of the progression from ISO 26000 including corporate social responsibility, CSR Excellence and stakeholder engagement (Freeman et al., 2010: 236-240). Here we stress the complexity of this issue by seeing the pathway as a set of interlinked developments and a set of tools and guidelines (such as ISO 26000). Out of these vast set of activities, initiatives and developments, we limit the scope for this paper to the discussion of the role of ISO 26000, CSR and stakeholder engagement in this particular area. Secondly, we expose ISO 26000 (interdependence and holistic approach) and discuss the CSR and stakeholder engagement. Here we argue that ISO 26000 and stakeholder management provide a framework for the view of strategic positioning as well as operations in organizations.

2 ISO 26000 – guidance on social responsibility

Research conducted by Moratis and Cochius in 2009 (Moratis and Cochius, 2011: 83-99) commissioned by the Dutch Directorate General of Public Works and Water Management among social responsibility (SR) champions in both the Netherlands and abroad showed that these organizations mainly engage in SR because it adds values – SR directly and indirectly contributes to the bottom-line of the organization. Some of the benefits reported were: direct cost savings, better labour market positioning, more market opportunities, and reputation, increasing employee pride and engagement and improved relationship management. SR can add value to different areas or functions of an organization. It can also add the value for stakeholders. This broad perspective

offers a visionary organization the space and opportunity to engage in SR in its own organization-specific way.

The development of ISO 26000 started in 2005. Despite many initiatives in the field of social responsibility (SR), such as the development of standards, codes, norms and guidelines, an international, broadly oriented, comprehensive, and overarching SR guideline was issued by a well-known authority - International Standard Organization (ISO) – ISO 26000 (2010) is a CSR guideline that enables all organizations to define and implement CSR in their corporate strategy. The ISO 26000 guideline contributes to obtain a comprehensive overview and hence makes it easier for organizations to engage in CSR. On the other hand, the ISO organization offers several important advantages for the development of a global SR guideline, from the perspective of the organization's objectives. For instance, ISO is one of the few organizations that are broadly acknowledged internationally – it is known all around the world and the organization's activities are of great importance to every single individual in the world. It can also be expected that ISO 26000 will receive visibility in many organizations that already work with other ISO management systems but which have not yet engaged meaningfully with SR. The research by Brandsma et al. (2009) confirms this: between 55% and 60% of the respondents that work with the ISO-certified or related management system standards are considering applying ISO 26000 in their organizations. In addition, ISO has the extensive experience with the development and dissemination of standards and has the organizational capacity to do this. Significantly, the development of ISO 26000 has been based on the largest multi-stakeholder process that has ever been organized. In addition, the guideline is applicable to all organizations, in all countries, in all stages of development, all sectors and does not conflict with other SR standards or demands – it has no intention of replacing these. The ambition of ISO 26000, as a generic, overarching SR guideline, is to enable its integration with any existing SR or CSR standard.

The research that was conducted by Brandsma et al. (2009) showed that most organizations that indicated an interest in ISO 26000 are still at an early stage in terms of SR implementation – 23.33% we are currently determining our attitude towards SR; 31.42% we took the first steps in implementing SR; 20.95% we are quite far in implementing SR; 9.05% we have finished the implementation of SR and are 'maintaining' it; 0.48% we have finished the implementation of SR and are finished with our SR activities and 14.76% we have not taken any of the steps mentioned before. Organizations that have already developed SR strategies and initiatives are more likely to apply ISO 26000 to increase the credibility of their own SR claims, e.g. by referring to the guideline in their SR communications. The ISO 26000's origin as the work of a huge range of stakeholders has also perhaps unsurprisingly resulted in a very strong emphasis on stakeholder identification, dialogue and engagement. The guideline identifies the entire range of possible stakeholders of organizations. At the

same time, organizations, guided by ISO 26000, are encouraged to define and describe their own social responsibilities and to reduce the negative effects of their actions and decisions on people, the planet, society and their stakeholders. Therefore, ISO 26000 can be defined as a hybrid standard: it contains elements of a process standard, of a performance standard (even though, despite recommending compliance with certain minimum achievements in a select number of SR core subjects and an emphasis on continuous improvement, it does not specify concrete achievement levels), a principles standard and a basic standard. It is clearly that this is not a certification standard.

ISO 26000 emphasizes the morality and takes a view on the equity of standards, guidelines and behavioural rules; on the other hand it states that this depends on the specific context of an organization. However, within ISO 26000 the following general SR principles are mentioned: accountability, transparency, ethical behaviour, respect for stakeholder interests, respect for the rule of law, respect for international norms of behaviour and respect for human rights. The starting point of ISO 26000 that every organization should engage in SR in its own, unique way, depending on its organizational characteristics and external environment, offers organizations the opportunity and legitimacy to formulate their own SR principles.

The ISO 9000 family is often seen as a starting point in a journey toward the business excellence (Ho and Fung, 1994) and CSR Excellence (Castka et al., 2004a; Castka et al., 2004b; Castka et al., 2004c) including ISO 26000 (Castka and Balzarova, 2007). This often means that ISO 9000 (or quality management systems) in general are understood as a building block that gives a platform to integrate other systems or requirements (Castka et al., 2004b) and to expand toward wider business developments. It is suggested that organizations use ISO 26000 as a key guidance and decision making tool to: review strategic positioning of their organizations and review quality (business) management systems in their organizations. Furthermore, by using ISO 26000, organizations can demonstrate their leadership role in terms of CSR Excellence. This is a chance for organizations to demonstrate their leadership role in CSR Excellence.

Stakeholder identification and engagement - One of the general CSR principles within ISO 26000 concerns respecting stakeholders' interests. Identifying stakeholders, knowing their expectations and enabling stakeholder engagement therefore play an important role in the guideline as they are a key to understanding, addressing and implementing social responsibility. Stakeholders are seen as a starting point for CSR policies and fulfil an essential role in determining the organization's social responsibilities. Therefore, ISO 26000 is full of references to stakeholders and stakeholder involvement, dedicating an entire clause to this concept.

Respecting stakeholder interests is one of the general SR principles specified in ISO 26000 as well as a starting point for any SR policy. To identify its social responsibility properly an organization should, according to ISO 26000, understand three specific relationships. The first is the relationship between the organization and society. Secondly, an organization should understand the relationship with its stakeholders (to be aware of who its stakeholders actually are and be aware of their expectations, interests, demands and wishes). Stakeholder's expectations, as emphasised by ISO 26000, are not necessarily the same as expectations of society. Here is the third relationship that needs to be understood: the relationship with society as a whole. Therefore, it is always useful for an organization to consider whose or which interest a certain stakeholder represents. ISO 26000 finds it important in these stakeholder relationships that an organization uses its influence to encourage stakeholders to address SR (Moratis and Cochius, 2011: 83-86). According to ISO 26000, determining an organization's sustainability impact is the most important way to identify stakeholders.

The reasoning behind this is that stakeholder engagement helps an organization to address its social responsibilities by creating the conditions for the informed decision-making and can produce advantages in a variety of ways. ISO 26000 specifies numerous reasons to engage with stakeholders - researching informed decisions, including stakeholders in the process of the performance evaluation, reconciling or preventing conflicts, aligning interests and expectations, integrating different perspectives and developing partnership (ISO 2010: 18). Other reasons include: minimising the possibility of reputational damage or bad press; the possibility of generating new ideas for products or services; building a critical sounding board; and increasing the credibility of the organization's SR initiatives. However, according to ISO 26000 that is not always necessary since some stakeholder expectations have been institutionalised within the law, culture or societal norms. In fact, ISO 26000 as a guideline that is largely based on many international conventions, guidelines and standards is an example of this in itself. The guideline also states that an organization should not give preference or favour to any particular organized group to garner friendlier stance towards its own goals (ISO 2010: 19). Finally, ISO 26000 adds that the active engagement of stakeholders is based on trust and goes beyond public relations. Effective stakeholder engagement is thus important for an organization and if an organization wants to obtain maximum value from it, it should properly organize this process, as stated in ISO 26000 (ISO 2010: 19). Moreover, it is also important to realise that stakeholder engagement is not a one-off event but a continuous process. Stakeholders, their interests and expectations, their influence and the ways to actively engage them can and will change over time. Therefore, every organization should periodically review its policies and activities in the field of stakeholder engagement

3 Strategic corporate social responsibility

At this point, it needs to be emphasized that substantial business benefits can be achieved through conducting strategic firm activities (Alperson, 1995). Therefore it is important to highlight the business-related benefits gained through implementing and executing strategic CSR activities.). First of all, it will help companies in following the generic strategy. Basically, it is argued that cost leadership or differentiation can be achieved through the effective use of strategic CSR activities (Porter and Kramer 2006). On the one hand, CSR can contribute to the achievement of cost leadership, since companies can benefit from the above-mentioned advantages and thus are likely to gain a favourable cost advantage. On the other hand, the image of a socially responsible and environmentally sensitive or conscious organization can be realized through strategic CSR. CSR is likely to contribute to the development of new business opportunities (Bhattacharya, 2010: 87).

Porter and Kramer (2006: 13) add that by engaging in strategic CSR, new product offerings are likely to emerge, which are in turn benefiting both, social and environmental issues in addition to a company's long-term competitiveness. In a similar vein, Brugmann and Prahalad (2007: 2) emphasized that companies engage and interact with a number of different stakeholders as well as with communities when implementing strategic CSR activities. At the same time organizations have begun to experiment with new business models due to the help and influence of CSR. CSR strategy will help a firm to manage stakeholder-related risks better (Bonini et al., 2006: 20-32).

Furthermore, in addition to the mentioned benefits Heslin and Ochoa (2008: 128-131) point out that growth in market share, increased organizational learning, retention of deeply engaged employees, and support from external stakeholders as well as favourable relationships with investors can be the result of executing strategic CSR. First of all, increased sales of both, premium products and services can result from a company's intense CSR efforts. Secondly, companies can learn through conducting strategic CSR, like for example through projects in which they invest. The knowledge accumulated can be subsequently used to develop a firm's core competencies further or to drive new innovations, in addition to contributing to the improvement of social and environmental conditions (Heslin and Ochoa, 2008: 128). Thirdly, Heslin and Ochoa (2008: 129) state that more and more employees are looking for socially responsible companies to work for. Therefore CSR, especially strategic CSR, represents a powerful instrument in order to motivate and retain committed and engaged employees. The survival and prosperity of organizations is highly influenced by various external stakeholders and the credibility of companies is increasingly measured by the degree of a firm's CSR involvement (Heslin and Ochoa 2008: 130).

There are numerous benefits that can be achieved through the company's commitment to CSR.

4 Strategic Stakeholder Management

The main ideas of the stakeholder theory are the following: (1) Business creates (and sometimes destroys) the value for customers, suppliers, employees, financiers and communities (or society); (2) There is a jointness to the interests of these stakeholders and (3) Great companies recognize the intersection of stakeholder interests and continuously build and reimagine this intersection. The main idea of stakeholder theory is as old as commerce itself. Origins of the stakeholder theory are (adopted from Freeman et al., 2010: 30-62):

1. The Freeman (1984) story (ties to Rhenman – SRI, development in the disciplines of management, primarily a way to organize information about environment, from strategic planning to strategic management);
2. Slinger's revision (two definitions at SRI, tie to action is earlier influence of Rhenman, tie to survival of the firm is later, engagement rather than planning - Tavistock influence, roots of idea in early 20th Century Christian communities) and
3. The Nordic contribution:
 - a. Nasi's Nordic Story (Rhenman interested until the late 1970s, industrial democracy in Sweden, stakeholder theory the dominant theory in Finland until the 1980s, taught in major business schools, became one among many).
 - b. Rhenman's (1964) definitions: (stakeholders in an organization are the individuals and groups who are depending on the firm in order to achieve their personal goals and who the firm is depending on for its existence).
 - c. Contributions and rewards rather than stake.
 - d. Firms have no goals in themselves.
 - e. Seen as a theory of the firm embedded within society.
 - f. Primary use of ST as a way to solve conflicts among stakeholders.
 - g. "It is the crucial task of management to take care of 'stakeholder balance'."
 - h. Importance varies over time.
 - i. Turn contributions and rewards into organizational/individual activity.
 - j. Bengt Symne (2004) says: "Goals are a product of the exchange process among various stakeholders that make up the firm. What one stakeholder contributes will serve as a reward for another. Through

mutual adjustments, an unstable balance between contribution and rewards in temporarily created. Like a drunk on this way from the pub, the firm is stumbling along to regain the balance it is constantly on the verge of losing. The goal of the firm could be imputed from his perspective, if any, is not one set by management or the owner but rather is to obtain an unstable balance so as to survive”.

- k. Hints from Scandinavian thinkers, (according to Stymne) but not fully developed ideas: innovation comes from conflict (Follett), jointness of interests (Trist and Tavistock thinkers), the importance of relationships and engagement (Follett and Tavistock thinkers).

Origins of ‘stakeholder idea’ are: (1) Barnard, Follet, Simon and the Carnegie School; (2) Robert Wood Johnson, Robert Wood, J. Irwin Miller and other executives; (3) Owen, Ruskin, and utopian Christian communities; (4) Indian scriptures and others. The future of stakeholder theory and corporate social responsibility will be oriented to: (1) the rich beginnings of stakeholder theory have been turned into CSR; (2) need a return to ‘value creating stakeholder theory or ‘corporate stakeholder responsibility’; (3) traditional CSR has outlived its usefulness; (4) not an American vs. European debate, but a global one. The Nordic are and will lead with their companies (like Novo Norsk, Novozymes, Lego, Outokoumpo, KIVA, Nokia and hundreds of others) who are integrating stakeholder thinking and CSR into their value creation models.

We live in the era of markets but we are just beginning to understand their power for organizing society and creating value. If we put stakeholder theory in the centre of our thinking about business we can avoid the mindless pursuit of gains for stakeholders at the expense of other stakeholder a pursuit which ultimately destroys both shareholder and stakeholder value.

Stakeholder capitalism – Freeman et al. (2010: 208) suggest the new vision of capitalism – stakeholder capitalism – which is founded on libertarian and pragmatist lines. Stakeholder capitalism is not based solely on private property, self-interest, competition, and free markets – such a view requires constant justification based on achieving good outcomes or avoiding authoritarian alternatives. Rather, stakeholder capitalism is “based on freedom, rights, and the creation by consent of positive obligations”. Adults have freedom to do what they want, including making voluntary agreements that are sustainable over time. Individuals have right protecting them in those agreements. And those individuals can decide to cooperate and obligate themselves to others through those voluntary agreements. Freeman et al. (2010: 281) offer six principles that together build a framework for our value creation and trade that infuses ethics at the foundations, respects the complexity of human beings, fosters innovation, and can help us move beyond the problems outlined above. His

argument is that if people on the ground make sense of their activities and their system of value creation in this way, they will act in ways that will make our capitalism more responsible and more resilient. Freeman et al.(adopted from 2010: 281-284) point to the following principles of the stakeholder capitalism:

1. The principle of stakeholder cooperation – Value can be created, traded and sustained because stakeholders can jointly satisfy their needs and desires by making voluntary agreements with each other that for the most part are kept. Foregrounding the social nature of business gives us insight into the problem of value creation and trade because it puts the focus on human relationships and the shared sense making that creates value.
2. The principle of stakeholder engagement – To successfully create, trade and sustain value, a business must engage its stakeholders. Almost every business transaction involves customers, suppliers, communities, employees and financiers. Other stakeholders such as media, additional civil society representatives, NGOs and so on are often affected or can affect value creation. Instead to try to find and create arguments for one group's right to trump the rest, engaging stakeholders in creating as many win-win situations as possible lies at the heart of creating sustainable value.
3. The principle of stakeholder responsibility – Value can be created, traded and sustained because parties to an agreement are willing to accept responsibility for the consequences of their actions. When third parties are harmed they must be compensated, or a new agreement must be negotiated with all of those parties who are affected. Responsible business does not need the external imposition of morality. Finally, this redescription of capitalism helps managers to embed ethics in the way they think about their day-to-day activities.
4. The principles of complexity – Value can be created, traded and sustained because human beings are complex psychological creatures capable of acting from many different values and points of view. Individuals are socially situated and their values are connected to their social context.
5. The principle of continuous creation – Business as an institution is a source of creation of values. Cooperating with stakeholders and motivated by values, business people continuously create new sources of value.
6. The principle of emergent competition – Competition emerges from a relatively free society so that stakeholders have options. Competition is an emergent property rather than a necessary assumption to capitalism.

By making these assumptions explicit and optional rather than implicit and mandatory, we hope that we can move a step closer to overcoming the deeply troubling issues that surface our current practice of value creation. Business should be about the best that we can create together, rather than about avoiding the worst. If we critically embrace a new set of assumptions about how value is created, the practice of business will soon follow. We do not have to sacrifice the great strides forward to solve some of the deeply troubling issues with capitalism. We need to think critically, acknowledge the social nature of value creation, and work with an insatiable passion to create value for our stakeholders.

5 Stakeholder management in the Slovenian pharmaceutical industry

The Krka Group (Krka) is one of the leading international generic pharmaceutical companies from Slovenia which was included in our research. Their developmental strength is the result of clear strategies, development strategies and dedication to their common values: speed and flexibility, partnership and trust, creativity and efficiency. Numerous new products, investments and the knowledge of their employees around the world are the foundation on which they will continue to create added value in the future. They set high standards in all areas of their work and business operations. The respect of their partners and trust of their end-users commit them to the continuing success in development, production and sales.

Problem definition - The main researches on stakeholder management, CSR, and competitiveness have not included synergies between stakeholders. Stakeholder management and ISO 26000 are the issues for researchers and management. Not just shareholders but all stakeholders, who have direct and indirect influence to the business operations, are important for sustainable competitiveness and long term partnership with all stakeholders. According to GRI recommendations all big companies will have to present a sustainable report prepared according to ISO 26000 and GRI guidelines. It means the big challenge for companies because they need strategy, knowledge about stakeholder management as well as about indicators and way of reporting. The companies which will not report about their sustainable activities will be forced to give an explanation including reasons. Krka (one of the biggest exporters and employers in Slovenia) is one of very successful and responsible companies as well as a stakeholders-oriented company. Its stakeholder orientation started in the socialist system (self-management system) through very long period.

Hypotheses - Strategic stakeholder management and implementation of the holistic and innovative Total Responsibility Management (TRM) into corporate strategy are elements of successful CSR and sustainable development which lead company to

sustainable development and long-term responsible competitiveness as well as long-term partnership with the Krka's stakeholders. Krka implemented stakeholder management into corporate strategy and reports about it.

Methodology - In-depth interview with a representative manager in the company. Annual reports, news, award, campaigns, presentations published at web page were investigated.

Research questions – the main topics – sustainable development, corporate social responsibility, stakeholder management and reporting. How the stakeholder strategy and stakeholder management are implemented into corporate strategy? How do you evaluate your stakeholders, which indicators have already been implemented and how do you report about your stakeholder and sustainable activities? How would you describe your CSR behaviour from social, environmental and economical view? How do you implement the ISO 26000, are the guidelines standard for systemic and holistic orientation where interdependence plays an important role? Which positive results do you expect for your company when we discuss about stakeholder management? How awards contribute to Krka's image and its competitiveness in global market?

Research findings - Mission of Krka is 'Living a healthy life'. Their basic task is to enable people to lead a healthy, good quality life. They consolidate continually their position as one of the leading generic pharmaceutical companies worldwide. They achieve this on their own by strengthening the long-term business connections and by establishing partnerships in the fields of development, product supply and marketing: Krka's main values are: speed and flexibility, partnership and trust, creativity and efficiency. Krka's basic line of business is the production and sale of prescription pharmaceuticals, non-prescription products and animal health products. Krka's products give it a presence all over the world. Research and development - At Krka they develop innovative generic medicines, i.e. generic medicines with value added, which are the product of their own in-house knowledge and provide their products with major advantages for years after market entry. All their pharmaceuticals offer high quality, efficacy and safety. Their products are marketed under their own brands. The company markets its products under its own trademarked brands, which further enhances the added value of Krka products. Ensuring high quality of products and services and the continual improvement of key processes is a major Krka strategy. Krka's systematic approach is intended to ensure it exceeds customer requirements and achieves its operating objectives. Integrated management system (IMS) and quality system, business excellence - The excellent performance of the IMS is supported by the centralized document management system, which Krka set up in 1993 and which has also been continually improved. The credibility of each system and the IMS as a whole is confirmed by the certification acquired from independent external agencies. The process management system covers every step from customer

requirements via marketing, research and development, product supply and sales, to the monitoring of customer satisfaction. The Krka quality system's compliance with the standards is also reviewed and confirmed by external bodies (domestic and foreign state regulatory bodies and assessed by certification organizations and Krka partners). The function of all major quality processes are also periodically reviewed by the Quality Committee and the company management board, which together propose strategic guidelines for the implementation of Krka's development strategy. One of Krka's key objectives is to achieve excellence in every area of operation, which led to the IMS being upgraded to take into account the principles of the EFQM excellence model, which is produced by the European Foundation for Quality Management.

Krka's strategy for own-brand generic pharmaceutical development is achieved through investment in the research and development capacity and Krka's own production and distribution centres around the world. According to our research stakeholders management, CSR and competitiveness we can confirm that it is included into strategy. We highlight three points: (1) strengthening the professional and cost synergy within the Krka Group, and maximizing the competitive advantages offered by the business environments of Krka companies outside Slovenia. (2) Maintaining the economic, social, and environmental responsibility to the surroundings in which they operate. (3) Operating in accordance with the principles of business excellence and thereby strengthening the visibility and positive public profile of the Krka Group.

Social responsibility - Krka's business performance is based on the commitment and knowledge of its employees. At Krka they are committed to acquiring, motivating and retaining dedicated and capable staff and building an international corporate culture. The Krka Group offers capable employees interesting work in an international environment and an opportunity to develop and advance in business, professional and personal spheres. Together at Krka they are building a culture of mutual trust, respect, effective collaboration and teamwork, involving lifelong learning and responsible and effective.

Environmental protection – The Krka commitment to care for health and the quality of life is also reflected in their attitude to the environment. Environmental responsibility is an essential element of all areas of Krka's operations. Given its principles of sustainable and balanced development, Krka respects the obligation to reduce emissions as much as possible (natural resources, introducing cleaner technologies and reducing their environmental impact. Responsible environment management has been included in Krka's key strategies.

Sponsorships and donations - Society at large is very important for Krka, and they support it through their sponsorship and donation programs. Because Krka's overall mission is summed up with the words "Living the Healthy Life" most of their donation

and sponsorship work involves projects relating to the health and quality of life. They believe that their focus on sustainable development and listening to the needs of the society that they are a part of are proof of their success. This is the reason they support numerous healthcare and humanitarian projects through sponsorship and grants, and investing in sport, education, science and culture.

6 Conclusions

Nowadays participants in stakeholder partnerships come together specifically to achieve social benefits through joint action. This is accomplished in part by enabling individual partners to pursue their own interests, which may include the direct or indirect commercial interest of participating companies, as well as the interests of other stakeholders. Governance structures are changing fundamentally at all levels of society – locally, nationally and globally. In the final analysis, the stakeholder management is unattainable without moral and ethical leadership. Stakeholder management is included in the corporation strategies but the indicators need to be implemented. Long-term sustainable competitive advantages are expected. The relationship and potential synergies between the stakeholders and their measurement (indicators) lead companies to long-term competitiveness and long-term partnership development. The case company typically makes an effort to provide products that guarantee the satisfaction of stakeholders and meets their expectations. The result of this study presents a positive contribution to the progress and development of management in case company, to discussion and debates on innovative stakeholder management and ISO 26000 (which is standard of CSR), and conformation furtherance of theories important in studying stakeholder management and sustainable development and its measurement. Theories and discussions on stakeholder management and sustainability are still evolving. As shown in this study, the responses in the case company are positive and substantiated by its programs directly addressing how to develop and improve stakeholder management by implementation ISO 26000 into corporate strategies. This underscores the need for better measurement models (indicators, according ISO 26000 an GRI) of sustainable stakeholder management, sustainable development that capture and estimate clearly the effects of a company's actions on its stakeholders (direct and indirect). The synergies between stakeholders and responsible stakeholder management lead responsible and sustainable oriented companies to long-term competitive advantages by contributing to requisitely holistic stakeholder management of innovative companies. The aim – to highlight the characteristic features of case company (Krka) stakeholder management and ISO 26000 compare them to other researches (theoretical and empirical) with available empirical published studies – is achieved. Finally, this case adds to the mounting

evidence that stakeholder management in general, has created a new dimension in managing sustainability at the corporate level.

Future research could focus on companies following low-cost (and cost-benefit) strategies, as the strategic CSR and corporate citizenship imperatives should vary with a different responsible competitive positioning. As the case study analyzed in this paper was exploratory, future research could concentrate in a survey of different companies within a single industry or region in order to provide further valuable insights into how sustainable business practices are incorporated into company (holistic) strategy. Further research might also analyze the moderating role of consumer personality traits such as innovativeness, that may also impact corporate character and contribute to consumer-company identification in dimensions other than those generated by corporate citizenship, as well as CSR, initiatives and may benefit the development of a scale that captures the entire domain of corporate citizenship and CSR. We have to understand innovative and holistic TRM and corporate citizenship not as a mere public relations activity, but as an important device of new governance structures on an international and global level. We need a global dialogue between politicians, business and research institutions about 'best practice' and ways to enhance and effectively coordinate CSR activities. Scandinavian countries are an excellent case of holistic and systemic sustainable development, responsible stakeholder management and sustainable competitiveness. Introduction of sustainable stakeholder management may hence be a management innovation.

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Futuro as a monetary methodology for sustainability assessment based on the origin of components

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Abstract

Currently, the market price and the external costs do not directly correlate. In fact, long-lasting products with assumingly lower external costs are more expensive than disposable products. To this end, the futuro methodology aims to label goods with their sustainable prices, which shall include the external costs in order to serve as a valuable and understandable sustainable assessment indicator – for consumers as well as for producers. The research described in this paper concentrates on latest futuro research: The algorithm is based on the origin of components to allow straight-forward impact estimations. These estimations refer to national statistics and have the target to identify and assess key influencing parameters, which reflect a maximum share of the whole effects making an individual product (and in total the world) unsustainable. The results show the impact of unfair production and low wages and identify the debt of the Austrian population according to the selected social and ecological indicators. A detailed Life-Cycle-Assessment analysis of all products manufactured in the world would be very extensive. In contrast, the presented futuro methodology describes an approach which estimates the external costs with a comparable low effort.

Keywords

External costs of products, GHG, virtual water, wage disparities, sustainability assessment

1 Selection of key influencing parameters

During the globalisation a production dislocation from the countries of the North to the countries of the South occurred. However, the mainly consuming countries are still the countries of the North. The working and production conditions in the countries of the South differ significantly from the countries of the North. Consequently, the Northern countries import products which are manufactured cheap and with bad environmental performance. *“Resource-intensive products are exported by developing countries to industrial countries...such a resource-intensive pattern of international trade can have damaging effects on the global environment”* (Chichilnisky and Galloping, 2008). The current market price does not reflect these external effects. Thus, the futuro methodology aims to label goods with their sustainable and fair prices which consider these effects. Thus some indicators needed to be chosen to represent these external costs, as well as a price for each indicator needed to be defined.

The futuro research team has been working on the algorithm and the different methodological aims of futuro since 2002 (Jakubowicz et al., 2004; Bußwald et al., 2009). The method initially combined ten different indicators by monetary assessment. Actual research intended to reduce the number of indicators while possibly not losing comprehensiveness by identifying key influencing parameters. The futuro methodology targets to consider all three pillars of sustainability. Thus, environmental, social and economic indicators are chosen, which allow constituting the social and economic disparities as well as the environmental consequences of the predominant current economic model. The indicators should reflect main problems of this century, such as climate change, availability of clean water and fair wages and thus social equity. As a result the indicators “wages”, “water” and “Greenhouse Gases” are included in the algorithm. These indicators have an impact on the ecology (our basis of life) and define fair living conditions- both need to be enhanced and saved. They have macroeconomic effects and can also be defined on a product level.

It is evident that the differences in wages are a major influencing factor regarding sustainability (Gallo, 2012; Downs, 2008; Nghia, 2010). Thus, the wages indicator has always been an important part of the futuro methodology. Previously, social issues were integrated in the futuro algorithm separately from wages. However, social issues such as cohesion, security and public social expenses, literacy rates and educational budgets - as important indicators for welfare levels - are already considered by the wages indicator, due to data overlaps (wages for people working for social services included in social expenses), transitive effects and correlations (Beça and Santos, 2010). Therefore, the current research concentrates on the wage indicator to reflect the social and economic effects.

Second, the availability of clean water is also connected to (toxic) emissions in water and soil. Consequently, for the ecological side, the indicator “water” as a major parameter for the ecosystem is integrated. Third, greenhouse gas (GHG) emissions have been selected to reflect climate and energy aspects.

Comparing to other sustainability assessment methodologies, the futuro-methodology has a certain advantage due to the results in monetary units. These results ease comparing certain products. Other product-related assessment methods (such as life-cycle assessment) might be more comprehensive than the futuro-methodology. However, these methodologies are only considering the product level and are not suitable for macroeconomic measurements. Another drawback is that LCA-tools are very complex and time-consuming (Singh et al., 2012). The futuro-methodology is simpler and thus less time-consuming. Therefore many products can be assessed easily. Another advantage is that the futuro-methodology considers two levels, a macroeconomic (the national) and a product level. In general, methodologies which consider such a macroeconomic level are very rare (e.g. the ecological footprint). In addition, many of the existing sustainability assessment methodologies are developed for evaluating the performance of a company but not for the products manufactured there. Therefore, an aim of the futuro methodology is to complement the predominant ecological assessment methods while considering both levels.

The paper is structured as follows: First the scope of the methodology is analysed. Second the principal approach is defined, followed by the detailed analysis of the single indicators (first on the national then on the product level), as well as their results and limitations.

2 Product and national level

“On the national level the methodology shall be used to calculate how much the consumers of one specific consuming country of the North “save” by unpaid/uncompensated external effects caused in the producing countries of the South” (Bußwald et al., 2009). Manufacturing plants were dislocated from the North (North-America, Europe) to the South (South America, parts of Asia and Africa) during the globalization (Chichilnisky and Galloping, 2008). Consequently, former “production countries” in the North turned to mainly consumption-countries and still many products manufactured in the South are mainly consumed in the North (Boitier, 2012).

GHG-emissions, virtual water and unfair wages, our selected key representatives for external effects, are embodied in the product imports: In the countries from the South workers earn low wages, work under poor working conditions and have few rights. Few environmental standards exist and thus severe pollution and high GHG-

emissions are frequent in these countries. Often, there are only few renewable water resources and a high level of water pollution and contamination.

GHG emissions, due to current rules of emission schemes, are allocated on the national level based on production figures (territorial principle). As a result, countries from the North account for decreasing or less increasing GHG-emissions (if not compensated by other effects) although consumers of the products predominantly living in the North. A consumption-based approach of the GHG-emissions allocation considers this discrepancy (Peters et al., 2011). Such an approach is also integrated in the research described in this paper.

If the national external effects of production are assigned to single products based on exports and production activities of the respective country, they can be further delegated to the consumers of the products.

3 The principal approach of the futuro methodology

The futuro-methodology is structured as follows:

1. Determination of the national or worldwide consumption (for input-parameters as virtual water) or emissions (for output-parameters as GHG) or status quo values (for wages) based on statistics and research results
2. Calculation of the input/output-intensities (virtual water/GHG) per produced or exported € from each country
3. Integration of the indicators in a pricing model to assess the consumption/emissions in monetary units.

The result of the futuro-methodology is a value (in €) which ought to be added to the market-price of a certain product. The futuro-value demonstrates social and environmental fairness and sustainability. This additional charge supports consumers as a basis for decision-making. Thus, consumers can estimate which products are produced under more sustainable and fair conditions. At the same time the futuro value can serve producers as marketing tool and argumentation support.

Important basic parameters for the methodology are the Gross Domestic Product (GDP) and the export values from “producing countries” to “consuming countries”. Of course, each country can take the role of a producing as well as a consuming country. Austria, as the location of the futuro research team, is the main country analysed within this research project. The export values to Austria are not directly taken from statistics. Instead, the values are calculated as a GDP-ratio from the exports of the world in the EU. Formula (1) shows this calculation.

$$(1) X_i^{\ddot{O}} = X_i^{EU} * \frac{BIP_{\ddot{O}}}{BIP_{EU}}$$

With:

$X_i^{\ddot{O}}$ = exports from country i to Austria (Ö) in €

X_i^{EU} = exports from country i in the EU in €

$BIP_{\ddot{O}}$ = GDP from Austria in €

BIP_{EU} = GDP from the EU (as the sum of GDPs from the 27 member states) in €

GDP data for each country are taken from the World Bank (World Bank, 2012) and export data from the UN database comtrade (UN, 2011). EU internal trade is deliberately excluded to focus on the North-South differences. The researchers are aware of the limitations of the GDP, but within the futuro-methodology the GDP serves as a purely economic indicator and not for quality of life or welfare. Table 1 shows an overview of the export values of different countries to Austria.

Table 1: Export value of selected countries to Austria 2011 in €

Countries	Export value to Austria in €
China	6,901,592,746
Brazil	894,044,821
Tunisia	233,234,026
India	930,392,431
Burkina Faso	1,494,665
Nigeria	570,378,517

4 Analysis and methodology for wages

The indicator „wages“ pinpoints the pay gap and therefore the wage inequity between the classical consumption country (here Austria) and the classical production countries. It illustrates main social and economic impacts by calculating how much a certain product ought to be more expensive if it was manufactured in the consuming-country or if the workers in the producing-country would earn as much as the workers in the consumption-country.

The “real-wages-ratio” between the production- and consumption-country is calculated to show this gap (Formula (3)). It is based on data of wages from men and women from each country of the world taken from the “Global Gender Gap Report” (World Economic Forum, 2012) combined with data of the economically active population from LABORSTA (ILO, 2012) to represent the mean estimated earned

income per capita (Formula (2)). The differences in purchasing power are correctly considered (World Bank, 2012).

$$(2) G_i = \frac{G_{i,m} * n_{i,m} + G_{i,f} * n_{i,f}}{n_{i,m} + n_{i,f}} * P_i * \gamma$$

With:

G_i = mean estimated earned income per capita weighted by the economically active population of the country i ($G_{\ddot{O}}$ = of Austria) in PPP-USD

$G_{i,m}$ and $G_{i,f}$ = mean estimated earned income of the country i for men (m) and women (f) in USD

$n_{i,m}$ and $n_{i,f}$ = number of economically active men (m) and women (f) of the country i

P_i = purchasing power parity of the country i

γ = exchange rate USD/€

Formula (3) shows the calculation of the real-wages-ratio.

$$(3) R_i = \frac{G_{\ddot{O}}}{G_i}$$

With: R_i = real-wages-ratio between Austria and the country i

The calculation of the wage-debt is defined by formula (4):

$$(4) Q_i = R_i * X_i^{\ddot{O}} - X_i^{\ddot{O}}$$

With: Q_i = wage-debt Austria - country i in €

4.1 Results

As a result, on the national level, each Austrian saves 5,243 € per year (44 billion € in total) by consuming products from low-wages countries. Figure 1 shows the total wages debt of Austria broken down to the continents.

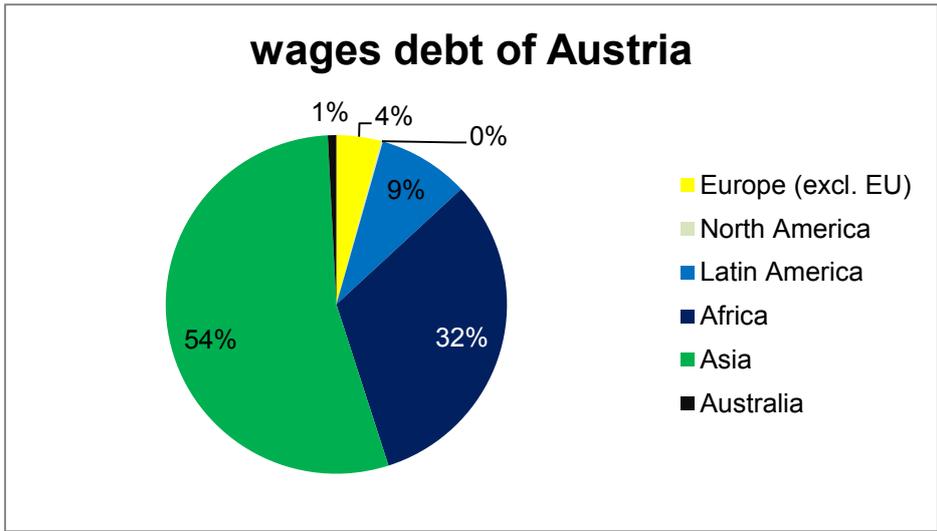


Figure 1: Austria's wages debt, 2013

The majority of the wages debt to Africa and Asia corresponds to the countries shown in Figure 2.

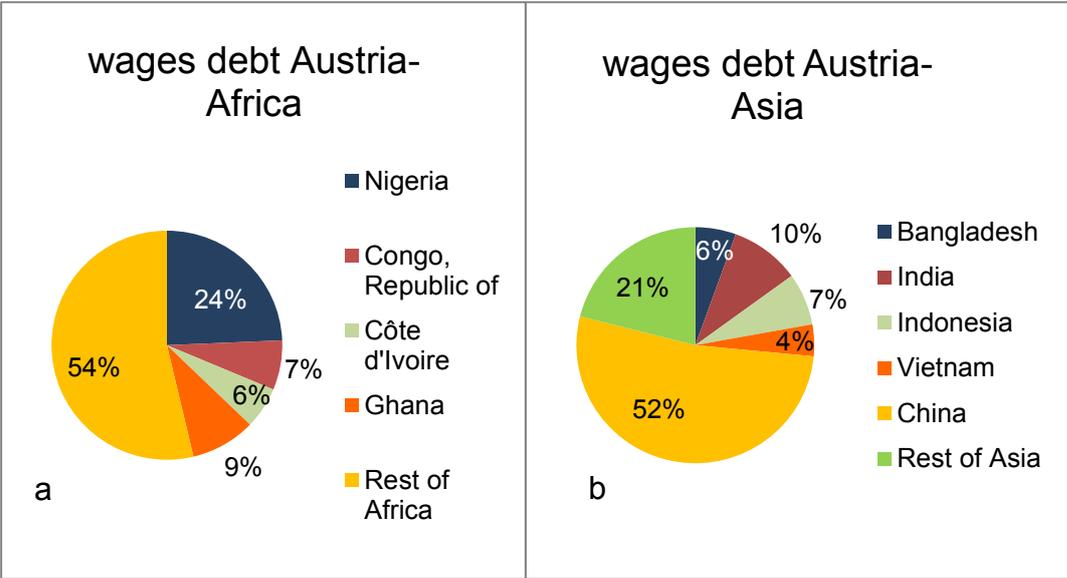


Figure 2: Wages debt of Austria to Asia (a) and Africa (b), 2013

The wages debt is determined by the real-wage-ratio and by the volume of the exports to Austria.

4.2 Limitation

The indicator “wages” cannot completely depict reality. Data which could improve the indicator are not available at the moment, for instance, self-employed incomes are missing in the income-statistics. Furthermore, income data do not relate to the working hours, which would augment the precision. In addition, data about sectoral incomes would be important for the interpretation of the results on the product level.

5 Analysis and methodology for water

By importing a product, virtual water which is needed during the production process and the whole product life cycle is also imported. This becomes especially crucial, if production-regions suffer from water stress. Water stress, defined by the UN (UN, 2013), implies less than 1,700 m³ renewable water resources per capita and year. Countries who suffer from (absolute) water scarcity dispose of less than (500) 1,000 m³ renewable water resources per capita and year. Mekonnen and Hoekstra have calculated the amount of virtual water exports from each country (Mekonnen and Hoekstra, 2011), which are used as follows to calculate the virtual water imports to a consuming country (formula (5)):

$$(5) W_i^{\ddot{O}} = W_i * \frac{X_i^{\ddot{O}}}{X_i}$$

With:

$W_i^{\ddot{O}}$ = virtual water exports from country i to Austria (Ö) in m³

W_i = total virtual water exports of country i (in the world) in m³

$X_i^{\ddot{O}}$ = total exports from the country i to Austria in €

X_i = total exports of the country i (in the world) in €

Additionally, the waterintensity (I_w) of the exports of the country i is calculated:

$$(6) I_{w,i} = \frac{W_i m^3}{X_i €}$$

The costs of the virtual water exports to Austria are calculated by formula (7).

$$(7) Mw_i^{\ddot{O}} = I_{w,i} * \psi * X_i^{\ddot{O}}$$

With:

$Mw_i^{\ddot{O}}$ = Austria's costs of the virtual water exports from country i to Austria in €

ψ = water price in € per m³ water

5.1 Results

Austria's renewable water resources amount to 6,538 m³ per capita and year (FAO, 2012). Austria imports 13,399 Mm³ virtual water each year (Mekonnen and Hoekstra, 2011), from which 1,019 Mm³ are from regions under water stress, 377 Mm³ from regions under water scarcity and 780 Mm³ from regions under absolute scarcity. Based on a water price of 3.50 € per m³ the total costs of Austria's water imports are 945 € per capita. The virtual water exports from regions who dispose of enough (=1,700 m³) renewable water resources after their virtual water exports are not priced. The following Table 2 shows key figures:

Table 2: Virtual water key figures of selected countries 2013

Countries	Renewable water resources in m ³ /capita/year	Water-intensity of the exports in m ³ /€	Virtual water exports in the world in Mm ³	Virtual water exports to Austria in Mm ³	Renewable water resources after water exports in m ³ /capita/year
China	2,041	0.1	142,697	661	1,935
Brazil	27,551	0.56	112,492	501	26,972
India	1,165	0.53	124,875	491	1,0656
Tunisia	396	0.70	9,765	163	-508
Burkina	737	1.49	2,713	2	582
Nigeria	1,360	0.08	7,485	43	1,316

5.2 Limitation

If a region suffers from water stress before or after its water exports in the world, those water exports should be valued higher than those from regions with enough water resources. As a result, the water exports from regions with enough water are not included in the calculation. In addition, the water exports from regions under water stress have been assigned the costs relating to seawater desalination costs as follows:

Apparently, there are enough seawater resources worldwide. The costs of the seawater desalination vary. They depend on the method used, the energy source used and the capacity. The costs per m³ seawater desalinated in a plant which uses solar energy or photovoltaic are at least 3.50 € (Karagiannis and Soldatos, 2008). This water price is chosen.

6 Analysis and methodology for greenhouse gas emissions

The GHG-emissions, which correlate to the consumption of a country, are not accounted by the conventional production-based approach of emissions-allocation on the national level (Steinberger et al., 2012). Our futuro approach is consumption-based properly integrating emissions which are imported and exported.

However, a very precise allocation of the GHG-emissions due to international trade would be very complex, thus a simplified allocation method was developed by the research team, simpler than multi-regional-input-output models (Andrew and Forgie, 2008; Lenzen et al., 2007; Peters, 2008), as follows:

First of all the GHG-intensity [kg/€] (formula (8)) of the production in each country is calculated. The data of the local GHG-emissions are taken from the International Energy Agency (IEA, 2012). The GHG-exports from one country to Austria are calculated by multiplying the total exports from the country to Austria with the GHG-intensity of the production (formula (9)).

$$(8) I_{c,i} = \frac{E_i}{BIP_i}$$

With:

$I_{c,i}$ = GHG-intensity of the country i in kg CO₂-equivalent (CO₂e) per €

E_i = local, production-based CO₂e emissions of the country i in kg

BIP_i = Gross Domestic Product in € of the country i

Austria's GHG-intensity is 0.32 kg/€ and the arithmetic mean worldwide is 0.76 kg/€.

$$(9) C_i^{\ddot{0}} = I_{c,i} * X_i^{\ddot{0}}$$

With:

$C_i^{\ddot{0}}$ = GHG-exports from the country i to Austria in kg

$X_i^{\ddot{0}}$ = total exports from the country i to Austria in €

To integrate the GHG-emissions into the final futuro-value, a proper CO₂-price is required. The GHG-exports to Austria are then multiplied with this defined price (formula (10)). Thus, the GHG-costs of the imports to Austria can be quantified as follows:

$$(10) \quad Mc_i^{\ddot{0}} = C_i^{\ddot{0}} * \varphi$$

With:

$M_{C_i}^{\ddot{O}}$ = GHG-costs of the exports from the country i to Austria in €
 φ = CO₂-price in € per kg CO₂e

The GHG-exports of Austria are calculated again as a part of the GHG-exports of the EU.

6.1 Results

The consumption-based GHG-emissions of Austria are defined by the local GHG-emissions, the GHG-imports and the GHG-exports.

Austria's GHG-emissions account for 89.9 Mt on a production-based approach, which are 10.58 t per capita. On a consumption-based approach the EU-internal trade is neglected and Austria's GHG-imports and exports are quantified as a share of the EU-imports and –exports. The GHG-imports of the EU amount to 1.7 Gt CO₂e (billion tons) and the GHG-exports amount to 741 Mt CO₂e. Austria's share of the EU-imports is 38 Mt CO₂e and of the EU-exports 16 Mt. Thus, Austria's consumption-based GHG-emissions without the EU internal GHG-trade are 115.7 Mt, which are 13.6 t per capita. Thus, 33 % of the consumption-based emissions are related to imports. The sustainable level of the GHG-emissions is 2.7 t per capita each year to achieve the 2-degree-goal with a probability of 75 %. With a rising population the sustainable level will decline to 1 t per capita (WBGU, 2009). As a result, Austria emits nearly 4 times those emissions which are sustainable on the production-based approach and 6 times on the consumption-based approach.

The result of the futuro-methodology, which states that about 30 % of the consumption-based GHG-emissions are related to the imports, is consistent with the results described in the literature. For instance, the OECD countries consume 30 % more GHG-emissions than they produce (Bruckner et. al, 2010). The G7 countries import 36 % of their consumption-based GHG-emissions (Chen and Chen, 2011). The economic powerful European countries import 20-50 % of their consumption-based GHG-emissions and totally 23 % of the global GHG-emissions are traded all over the world (Davis and Caldeira, 2009). Table 3 shows GHG key figures of selected countries.

Table 3: GHG key figures of selected countries 2013

Countries	Local GHG-emissions in Mt	GHG-intensity in kg/€	GHG-exports to Austria in kg
China	10.693	1,197	8.263.297.967
Brazil	1.604	0,886	792.551.345
Tunisia	37	0,463	107.929.303
India	2.694	0,757	704.331.739
Nigeria	223	0,691	393.945.978,66

The Chinese GHG-exports to Austria account for 10 % of the local, production-based GHG-emissions of Austria, 10.5 % of the total GHG-imports of Austria (including EU-internal) and 21.7 % of Austria's GHG-imports without the EU-internal-trade. Table 4 shows the consumption and production-based GHG-emissions of selected countries.

Table 4: Consumption-based GHG-emissions of selected countries in Mt CO₂-equivalent

Countries	Local GHG-emissions in Mt	GHG-imports in Mt	GHG-exports in Mt	Consumption-based GHG-emissions in Mt
Austria	89.90	38.33	10.53	115.70
China	10,693.30	1,847.64	1,783.96	10,756.98
Brazil	1,603.50	177.31	178.14	1,420.63

Table 5: Consumption-based GHG-emissions of selected countries in t CO₂-equivalent per capita

Countries	Local GHG-emissions per capita in t	Consumption-based GHG-emissions per capita in t
Austria	10.58	13.61
China	07.92	07.97
Brazil	08.25	07.31

The costs of the consumption-based GHG-emissions from Austria amount to 870 € per capita. The GHG-debt of Austria's inhabitants is calculated based on the costs of all consumption-based GHG-emissions which exceed the sustainable level of 2.7 t per capita.

To define a CO₂-price which refers to the damage GHG cause is problematic. While prices for CO₂-compensation are available, they are not "eligible" for the futuro-

methodology as GHG-emissions emitted today exceed a rate which could be compensated: To compensate the emissions which exceed 2.7 t per capita, 194 billion ha worldwide or 5,677 ha per capita are necessary (the total arable land corresponds to 14.9 billion ha (FAO, 2013)). According to the Stern Review (Stern Review, 2006) the costs of the damage CO₂ causes are at least 80 USD (=66.7 €) per ton in 2006. According to Bowen (Bowen, 2011) the costs of CO₂ rise 3 to 5 % each year which means that CO₂ per ton costs at least 80 € today (this price is chosen for the futuro-methodology).

6.2 Limitation

The calculated GHG-intensity of production might be even higher in reality, because the GDP includes not only the products manufactured in one country but also services delivered which of course include a lower GHG-intensity.

The definition of a proper CO₂-price is another limitation further discussed in chapter 7.

In addition, the transport of the goods and the transport related GHG-emissions are not explicitly considered in the current methodology (only via GDP values). Consequently, the GHG-emissions on the consumption-based approach and the GHG-imports and exports are rather underestimated and can thus be seen as a first, conservative estimate.

The calculation of the GHG-intensity differs from the approach for water-intensity. The GHG-intensity describes the intensity of production and the water-intensity describes the intensity of the total exports. This difference occurs due to the better data availability of water exports and total exports than production key figures as they are available for GHG.

7 Pricing

One of the biggest problems with the indicators “water” and “GHG” was to define an adequate price. A worldwide water price which includes several costs (e.g. groundwater exploration, transport, water treatment, water supply) is not available. In addition, the local water prices in the different countries are not consistent and are distorted by market and local policy mechanisms.

With the prices currently chosen for water and GHG-emissions, Austria’s GHG-imports only cost 360 € per capita, which seems low compared to the water debt (=945 €) and the wage debt (=5,240 €). However, Austria’s totally GHG-debt accounts

for 868 € per capita which is defined by the costs of Austria's consumption-based GHG-emissions which exceed the sustainable level of 2.7 t per capita.

The following Table 6 shows the main countries of Austria's aggregated futuro-debt with the chosen prices for water and GHG.

Table 6: Main countries of Austria's futuro-debt 2013

Country	Exports to Austria (Mio. €)	wage-debt (Mio. €)	GHG-debt (Mio. €) ¹	Water-debt (Mio. €)	Total futuro debt (Mio. €)
China	6,901.59	12,651.25	658.25	-	12,651.25
India	930.39	2,290.01	56.11	1,718.50	4,008.51
Nigeria	570.38	3,467.13	31.38	151.52	3,618.65
Brazil	894.04	2,091.77	63.13	-	2,091.77
Bangladesh	202.82	1,332.15	14.55	591.97	1,924.12
Indonesia	381.93	1,724.51	66.04	-	1,724.51
Ghana	81.85	1,297.15	15.24	242.28	1,539.43
Pakistan	108.00	357.10	7.54	1,154.07	1,511.17
Ukraine	355.92	555.33	42.51	587.50	1,142.84
Rest of the World	28,227.68	18,798.72	1,631.97	3,754.80	22,553.53
Total	38,654.61	44,565.14	2,586.72	8,200.65	52,765.78

¹⁾ Please note that only Austria's GHG-imports are included in this table (the costs of Austria's total consumption-based GHG-emissions which exceed the sustainable level is 7,412 Mio. € (considering imports, exports and production-based emissions))

8 Application of the methodology for products

On the product level the external costs of products are calculated as the sum of the wages debt, the included virtual water and the included GHG, all based on the import values of products or product groups.

8.1 Wages

To define the wage dept of a certain product, the futuro wages factor is multiplied with the import value of the product. The wages factor is calculated by dividing the national wage-debt (Q_i - formula (4)) by the export value of the country i to Austria.

8.2 GHG

The calculation of the included GHG in a certain product from one country is based on the GHG-intensity (formula (8)) of the production country multiplied by the CO₂-price.

This approach includes a kind of a national mean GHG-intensity of a country, a sectoral calculation of GHG-intensities would be more precise and could be realized by sectoral weighing factors.

8.3 Virtual water

To define the quantity of included virtual water in products from certain regions, the water-intensity is viable. The water-intensity (formula (6)), m³ water per imported €, is multiplied with the water price (=3.50 €). Again, weighing factors to reflect sectoral differences in water-intensities would improve the results.

8.4 Futuro-value

The three indicators are added and thus the final futuro-value results, which represents the external and additional costs of certain products or product groups from certain countries or regions. Therefore, the futuro-value needs to be added to the market price of a product. Table 7 shows an overview of the three indicators and the futuro-value of selected countries and Table 8 of the constituted regions.

Table 7: Futuro-value and indicators of selected countries 2013

Countries	Wage inequity [€/€]	GHG- intensity [kg/€]	GHG- intensity [€/€]	Water- intensity [m ³ /€]	Water- intensity [€/€]	Futuro- value per imported €
China	1.83	1.20	0.10	0.10	0.00	1.9
Brazil	2.34	0.89	0.07	0.56	0.00	2.4
India	2.46	0.76	0.06	0.53	1.85	4.4
Tunisia	0.68	0.46	0.04	0.70	2.44	3.2
Burkina Faso	12.20	0.00	0.00	1.49	5.23	17.4
Nigeria	6.08	0.69	0.06	0.08	0.27	6.4
Russia	0.02	1.05	0.08	0.16	0.00	0.1
USA	0.00	0.56	0.04	0.27	0.00	0.0
Australia	0.38	0.84	0.07	0.46	0.00	0.4
Japan	0.39	0.39	0.03	0.02	0.00	0.4
Turkey	0.09	0.41	0.03	0.22	0.00	0.1
Thailand	1.42	0.92	0.07	0.29	0.00	1.5

Table 8: Futuro-value and indicators of regions (individual countries are aggregated by using weighing factors according to import shares to Austria) 2013 in €

Region	wage-inequity in € per imported €	GHG-intensity in € per imported €	water-intensity in € per imported €	futuro value in € per imported €
Central and East Africa	12.55	0.42	3.08	16.04
Central Asia	4,49	0,19	7,25	11,94
West Africa	6.91	0.08	0.54	7.54
South Asia	2.72	0.09	1.14	3.95
Southern Africa	2.23	0.10	0.61	2.93
Eastern Europe and North Africa	1.45	0.07	0.84	2.36
South America and East Asia	1.40	0.07	0.03	1.50
Australia, West Asia	0.76	0.07	0.17	1.00
EU, North America	0.06	0.02	0.00	0.08

9 Research outlook

Further research plans to integrate transport effects, which are currently only roughly treated (and badly allocated) by national GHG-emissions. The calculation of sector specific factors will improve the estimation quality compared to pure national averages.

Algorithms to smoothly calculate futuro-values for local products (without including import values) will also be developed in the future.

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Improving company`s CSR reporting practices

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Abstract

A low number of service companies disclosing data on CSR activities and discovered problems of enterprises with reporting processes were the starting point for the research project “Environmental resources and energy assessment tool for service companies”⁸, conducted by akaryon⁹, plenum¹⁰ and SERI¹¹. In this project, we focused on the investigation of the difficulties of sustainability reporting. The research is based on the GRI guidelines. The project developed solutions, *inter alia* a web-based tool, for reducing efforts and maximizing quality of ecological and social data as well as sustainability reports especially in the service sector.

Keywords

Sustainability reporting, service companies, GRI

1 Developments in CSR reporting

The European Commission promotes CSR as a way of contributing to the European Union`s treaty goals of sustainable development (EC 2011, p. 3). CSR was defined by the EC in 2001 as: “a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis” (COM (2001) 366, p. 6). It was aimed at supporting the European Union`s objectives such as sustainable growth, responsible business behaviour and durable employment generation in the medium and long term (EC 2011, p. 4). In this regard the European Commission emphasizes the significance of disclosure of social

⁸ Funded by Vienna Business Agency, Koop Pro Wien 2012

⁹ akaryon Niederl & Bußwald OG, www.akaryon.com

¹⁰ plenum gesellschaft für ganzheitlich nachhaltige entwicklung gmbh, www.plenum.at

¹¹ Sustainable Europe Research Institute, www.seri.at

and environmental performance data - especially measurements based on a life cycle methodology - of companies and organizations (EC 2011, p. 12).

In April 2013 the currently voluntary character of sustainability reporting was challenged by the European Commission by submitting a proposal for the amendment of Council Directives 78/660/EEC and 83/349/EEC, concerning disclosure of non-financial and diversity information by large companies and groups. The proposal asks for mandatory disclosure of environmental and employee information for companies with an average number of employees exceeding 500. Reason is that the EC encountered an inadequate transparency of sustainability data, regarding quantity and quality of information. This was based on the following valuation: approximately 2,500 out of 42,000 large companies in the EU formally disclose non-financial information annually. Furthermore, the published information only partly meets the needs of users (COM (2013) 207, p. 4).

Although in the near future only large EU companies may be obliged to disclose information on their environmental and social matters, even many smaller companies already consider CSR reporting as a business imperative. Compared with CSR reporting in its initial stages, rather than a moral issue it is now considered to provide financial value and to drive innovation (KPMG 2011, p. 2).

1.1 CR reports of top business in Austria and globally

As KPMG stated in a study published in 2011, 95 % of the 250 largest global companies report on corporate responsibility activities. For the Top 100 businesses in the 34 countries¹² included in the survey – most of them European countries – the share was 64 % (KPMG 2011, p. 7).¹³

There are interesting regional differences concerning the share of companies reporting on sustainability: Europe is still ahead with a little more than 70 % of reporting companies, North America lacking not far behind, followed by the Middle East and Africa with a rate of approximately 61 %. Only Asian Pacific companies run far behind with less than half of businesses publishing CR reports (KPMG 2011, p. 8).

In Austria, numbers are much lower compared to global figures. Only 25% of Austria`s 100 largest companies as well as the Top 5 banking and insurance companies

¹² Australia, Brazil, Bulgaria, Canada, Chile, China, Denmark, Finland, France, Germany, Greece, Hungary, India, Israel, Italy, Japan, Mexico, Netherlands, New Zealand, Nigeria, Portugal, Romania, Russia, Singapore, Slovakia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Ukraine, United Kingdom and United States (KPMG 2011, p. 32).

¹³ There is no statistical data available for others than the top 250 globally or the top 100 businesses per country.

and 34% of Austria's 38 prime market enterprises published sustainability reports in 2012 (Ernst & Young 2013, p. 12).

The following chart shows **variations on country level**, with Great Britain being in the vanguard and Austria ranked at the bottom of the list.

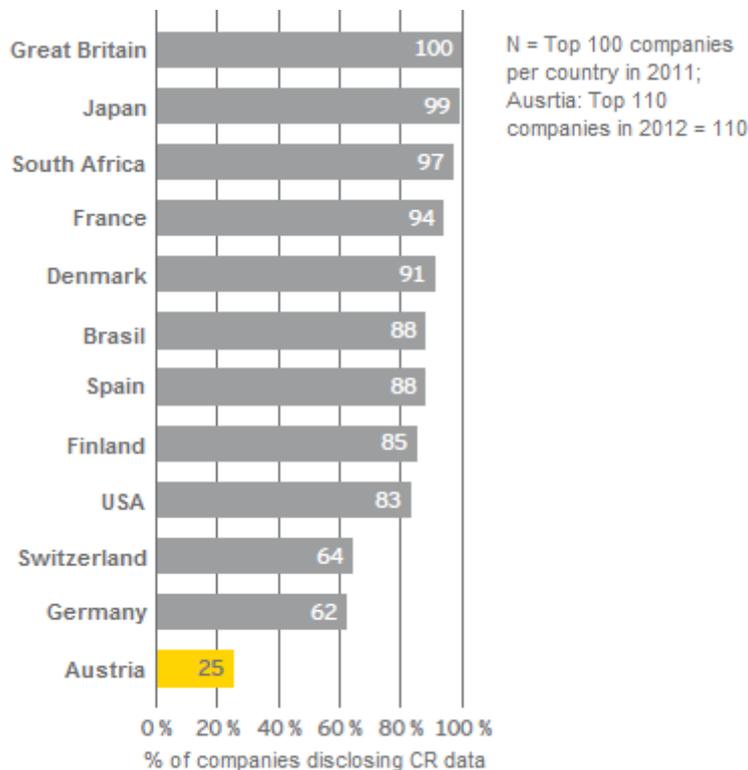


Figure 1: Percentage of Top 100 companies reporting on sustainability, Source: Ernst & Young 2013, p. 12; translated into English

1.2 Sustainability reporting differs according to business sectors

In addition to regional and country specific differences numbers of CSR reports published vary in relation to **business sectors**. While for most industry sectors, such as the energy and natural resources industry, disclosing of CSR data is the norm, other key industries, i.e. transport (about 57 %), lag behind. Except Communications & Media (74 %) the service sector shows low rates of sustainability reporting – 61 % of financial services, insurance & securities-companies, 52 % of trade and retail-businesses (KPMG 2011, p. 12f).

1.3 Multinational Enterprises (MNEs) in focus

Most studies on CSR reporting focus on the largest companies, even though there is increasing data for SMEs and other organizations sizes published by GRI (Sustainability

Disclosure Database). Of course, these figures of the GRI database only consider CSR reports following the GRI standard (see 3.1). As the share of GRI reports among all CSR reports currently amounts to 69 % or more, these figures provide an excellent indication. According to the GRI database, approximately only 11 % of the GRI reports in 2012 were published by SMEs, 60 % by large companies and more than 22% by Multi National Enterprises (MNEs) (Sustainability Disclosure Database 2013)¹⁴. We assume that the share of CSR reports of SMEs is slightly higher when including non-GRI reports. However there are no profound data available to estimate this percentage.

1.4 Positive effects of sustainability reporting

Especially the largest 250 companies globally see a lot of advantages in submitting CSR reports. Positive effects on reputation or the company's brand are cited as the main reason, followed by ethical considerations, motivation of employees, innovation, risk management and other economic considerations (KPMG 2011, p. 19). To create a CSR report appears to be less time-consuming or cost-intensive than companies that do not report on CSR activities suppose. Companies that have already submitted a sustainability report regard the difficulties of CSR reporting as less severe than enterprises that have never submitted such a report (Wensen/Broer/Klein/Knopf 2011, p. 74f). Additionally, long-term thinking as part of the sustainability concept and in this connection part of CSR strategies and reports may reveal a more comprehensive picture of the company's strengths and weaknesses. As a result, preparation of CSR information can improve the company's economic performance in the future.

In this paper we firstly describe the main goals of our research and the corresponding research questions. This is followed by our research results, where we lay emphasize on the existing GRI guidelines and the difficulty in abstracting distinct data by having a closer look at service companies which lag sustainable reporting. We define a set of indicators especially relevant for service companies and show an exemplary data set for the GRI G3.1 indicator LA1.

2 Objectives, research questions and methodology

Aside from publishing full sustainability reports, a great amount of companies is interested in acquiring information about at least some ecological parameters and communicate them to the broader public, such as their ecological or carbon footprint.

¹⁴ database.globalreporting.org, 01 August 2013

This assumption was the starting point of our research. During the research we discovered that a high percentage of companies is willing to disclose CSR data in the form of a sustainability report, but their efforts are limited or even halted by real or perceived obstacles.

Our aims of the research were:

- a) to analyse the reasons for the difficulties for the current time-consumption processes and comparatively low quality of CSR reports and their quantitative basis and
- b) to develop solutions in order to reduce the workload for creating reports and maximize quality of ecological and social data as well as sustainability reports

We especially addressed service companies. Firstly because they appear to lag behind concerning disclosure of sustainability information. Secondly because they have – due to the nature of their business activity - a common basis of relevant sustainability indicators, resources used and effects on the environment, on the society and on its employees.

In order to achieve these goals, the following **research questions** were defined:

What are the difficulties in the preparatory phase of sustainability reporting?

What are the most relevant topics or indicators in sustainability reports of service companies and how can they be interpreted according to existing guidelines?

How can sustainability data be acquired and how can companies secure a high quality of data?

The following information is abstracted from comprehensive literature research in qualified databases and institutional publications. After detailed consideration we selected 20 reports, prepared with the support of plenum, for our in-depth research. Further we conducted 10 interviews with experts on sustainability issues and stakeholders of examined companies and, additionally, performed statistical data analysis on the GRI indicator database.

3 Research results

3.1 Sustainability reporting frameworks/guidelines

Although there are different global or national frameworks that can be consulted for the preparation of CSR reports – Global reporting initiative (GRI), AccountAbility with the AA1000 Standards, Carbon Disclosure Project (CDP), WBCSD and World Resources Institute (WRI) with the GHG Protocol –, most businesses use the GRI guidelines, which are available in different versions due to upgrades. On a global level about 80 % of the top 250 companies rely on the GRI standard. Of the top 100 companies in each of the 34 countries it is 69 % (KPMG 2011, p. 21). Comparable figures were published for Austrian businesses: 85 % of the prime market companies, three-fourths of the top companies and the five largest banking and insurance companies used the GRI guidelines for disclosing information on the company's sustainability data (Ernst & Young 2013, p. 11f).

On the basis of these high percentages the consortium decided to put the Global Reporting Initiative into the focus of the research. Although more companies published GRI G315 sustainability reports in 2012 (see table 1) – we concentrated on the GRI G3.1 guideline¹⁶, because it represented the latest guideline version and it was considered to be a big step into the direction of the G4 guideline following in May 2013. In 2013, the GRI guideline trend may have reversed.

Table 1: GRI reports¹⁷

GRI guideline	2013	2012
GRI G3	260*	1322
GRI G3.1	375	1165

*) Absolute figures of companies publishing CR-reports per guideline

¹⁵ "Launched in 2006, the G3 Guidelines feature sustainability disclosures that organizations can adopt flexibly and incrementally, enabling them to be transparent about their performance in key sustainability areas." (<https://www.globalreporting.org/reporting/G3andG3-1/g3-guidelines/Pages/default.aspx>)

¹⁶ "The G3.1 Guidelines are an update and completion of the third generation of GRI's Sustainability Reporting Guidelines, G3. Launched in 2011, the G3.1 Guidelines include expanded guidance for reporting on human rights, local community impacts, and gender and introduce the Technical Protocol - Applying Report Content" (<https://www.globalreporting.org/reporting/G3andG3-1/g3-1-guidelines/Pages/default.aspx>).

¹⁷ Sustainability Disclosure Database: database.globalreporting.org, 07 August 2013

3.2 Difficulties in sustainability reporting in connection with the GRI standard

Sustainable development, its integration into activities of companies as well as the GRI guidelines for standardizing disclosed CSR information are complex issues.

Experts and sustainability consults have observed that a large proportion of the companies have no regular sustainability data collection and analysis in place when starting to report on CSR. Therefore businesses usually need to start from scratch with data acquisition, aggregation, calculations and graphical analyses in the field of ecological and social information. In detail, the following problems need to be dealt with in the starting phase:

Involving relevant departments: Employees being responsible for the management of the sustainability report process, for the preparation of data acquisition sheets, for data collection and interpretation of results at some companies are usually not CSR but marketing or communications experts, lacking the required specific knowledge. Moreover, it is often the case that these employees are not ideally linked to the departments with access to relevant data needed for the report (Edelman 2008, p. 28). The involvement of all significant departments depends on a high coordination effort, as communication structures need to be built up.

Defining topics, selecting indicators and operationalizing the guidelines: Frameworks such as the GRI guidelines facilitate decisions on sustainability topics and indicators, but they still require a comprehensive commitment of the enterprises. Companies need to gain an insight into the different frameworks, they have to choose a framework and a specific guideline (i.e. GRI 3.1). Subsequently, management must decide on the indicators that will be reported on. The GRI guideline, for instance, is not a fixed framework but offers a maximum framework where certain indicators can be selected. Selection decisions are not easy and also require in-house knowhow or expert consulting. Basically, decisions will be based on the relevance for the company's field of operation, stakeholder and company management interests and data availability.

"First reporters" are usually insecure because of their inexperience concerning questions such as *Which data needs to be collected for the indicators chosen? and How should results be calculated and presented to be GRI compliant?*. One of the reasons for this is that the GRI guidelines leave room for interpretation. Therefore indicator protocols need to be understood and where terms, data collection or calculation methods are not determined in the guidelines, companies need to define these issues themselves in accordance with the company's specific situation.

Interpretation and benchmarking of results: Companies in the beginning of CSR report processes often use self-made questionnaires and assessment tables. The quality of such self-made data collection systems directly depends on the creators' expertise and on the communication of definitions and instructions addressed to data collectors. Additionally, calculations, particularly in the context of ecological figures, necessitate deep knowledge and practice, i.e. in the field of life cycle assessment and footprint calculations. Based on these company specific processes, the individual results of one company cannot be benchmarked and it is difficult to draw conclusions for further improvements. As expertise for calculation and interpretation can hardly be found within the organization, companies will have to use specific tools or cooperate with LCA consultants.

3.3 Quantitative Sustainability Indicators for service companies

Indicators suggested by GRI G3.1 were analysed regarding their understandability, relevance for service-oriented companies and overlap regarding data acquisition with other (especially ecological) sustainability assessment indicators (carbon, material, water, area footprints).

The indicator selection process was structured in the following way:

1. As companies mainly struggle with the collection, calculation and interpretation of quantitative CSR data, we concentrated on indicators for quantitative results.
2. Companies starting to report appear to be overstrained by GRI application level A¹⁸ and therefore decide to prepare a level B or C report. 27 Indicators, consisting of 1 economic, 12 environmental and 14 social performance indicators (at least two per key performance aspect), were chosen.
3. Indicators especially relevant for industrial companies, e.g. EN11 to EN15, as these are connected to the company's impact on biodiversity, or EN20, which covers the emission of NO_x, SO_x and other air pollutants, were not considered. We additionally analysed current reporting indicators (Table 2).

¹⁸ For level A companies must report on all Profile Disclosures (1.1-4.17), address all Disclosures on Management Approach (DMAs) for every aspect, and address all core Performance Indicators. Compared to this for a level B GRI report companies in addition to Profile Disclosures and Disclosures on Management Approach only need to report on (at least) 20 Performance Indicators, either core or additional, including at least one from each Indicator Category (Economic, Environmental, Labor Practices and Decent Work, Human Rights, Society and Product Responsibility) (<https://www.globalreporting.org/information/FAQs/Pages/Application-Levels.aspx>).

Table 2: Selected indicators in GRI reports (arithmetic average)

Performance Indicator	Fully reported	Partially reported	Not reported
EC1	85%	12%	3%
EC2 - EC9	53%	11%	36%
EN1	40%	18%	42%
EN2	35%	10%	55%
EN3	68%	14%	18%
EN4	66%	15%	18%
EN5	52%	19%	29%
EN7	43%	19%	38%
EN8	62%	12%	26%
EN16	77%	7%	16%
EN17	46%	8%	46%
EN18	60%	13%	27%
EN22	48%	29%	22%
EN29	31%	12%	57%
EN6, EN9 – EN15, EN19 – EN21, EN23 – EN28, EN30	31%	6%	63%
LA1	73%	24%	3%
LA2	48%	40%	11%
LA7	48%	29%	23%
LA10	49%	31%	19%
LA12	71%	8%	21%
LA13	60%	26%	13%
LA14	46%	9%	46%
LA15	41%	11%	48%
LA3 – LA6, LA8 – LA9, LA11	58%	6%	36%
HR1	34%	11%	56%
HR4	68%	4%	28%
HR 2, HR3, HR5 – HR11	49%	6%	45%
SO3	59%	14%	27%
SO4	63%	4%	32%
SO1, SO2, SO5 – SO10	50%	6%	44%
PR6	51%	8%	41%
PR8	57%	5%	37%
PR1 – PR5, PR7, PR9	49%	6%	45%

The results for service companies¹⁹ that submitted a G3.0 or G3.1 GRI report, have gone through a GRI application level check and are part of the GRI benchmarking tool; *) Indicators in black: selected GRI G3.1 indicators; *) Indicators in red: sorted out through selection process

Indicators in black show the selected GRI G3.1 performance indicators, lines marked in red represent reporting figures for indicators that were sorted out in the

¹⁹ Commercial, Financial, Healthcare Services, Logistics, Media, Non-Profit/Services, Public Agency, Railroad, Real Estate, Retailers, Telecommunications, Tourism/Leisure, University

course of the selection process. On average, companies more often report on indicators in black than those in red, this is especially true in the field of economic (EC) and environmental (EN) indicators. Concerning social indicators (LA, HR, SO, PR) distribution is much more balanced, hence indicators were chosen particularly based on type of result (quantitative) and relevance for average service companies.

Research resulted in the definition of a common data set catering both for automatic calculation of GRI performance indicators as well as for other economical results and ecological key figures (CO₂, ecological, water footprint etc.).

Table 3: List of Indicators selected for service companies

Dimension/Category	Aspect	Indicator
Economic	Economic performance	EC1
Environment	Materials	EN1
Environment	Materials	EN2
Environment	Energy	EN3
Environment	Energy	EN4
Environment	Energy	EN5
Environment	Energy	EN7
Environment	Water	EN8
Environment	Emissions, effluents and waste	EN16
Environment	Emissions, effluents and waste	EN17
Environment	Emissions, effluents and waste	EN22
Environment	Transport	EN29
Social/Labour practices and decent work	Employment	LA1
Social/Labour practices and decent work	Employment	LA2
Social/Labour practices and decent work	Employment	LA15
Social/Labour practices and decent work	Occupational health and safety	LA7
Social/Labour practices and decent work	Training and education	LA10
Social/Labour practices and decent work	Training and education	LA12
Social/Labour practices and decent work	Diversity and equal opportunity	LA13
Social/Labour practices and decent work	Equal remuneration for women and men	LA14
Social/Human rights	Investment and Procurement Practices	HR1
Social/Human rights	Non-discrimination	HR4
Social/Society	Corruption	SO3

Social/Society	Corruption	SO4
Social/Product responsibility	Marketing Communications	PR6
Social/Product responsibility	Customer Privacy	PR8

As the definition of GRI for each indicator is still broad, research included the elaboration of a concrete list of data necessary to calculate the indicator according to GRI rules (considering service-oriented companies) (i.e. Table 4).

For example compilation of LA1 (Total workforce by employment type, employment contract, and region, broken down by gender) is explained by GRI as follows:

“Identify the total workforce (employees and supervised workers) broken down by gender working for the reporting organization at the end of the reporting period. Supply chain workers are not included in this Indicator.

Identify the contract type and full-time and part-time status of employees based on the definitions under the national laws of the country where they are based.

Combine country statistics to calculate global statistics and disregard differences in legal definitions. Although the definitions of what constitutes types of contract and a full-time or part-time employment relationship may vary between countries, the global figure will still reflect the relationships under law.

Report the total workforce broken down by employees and supervised workers, and by gender.”

Therefore we derived a concrete list of data which needs to be collected in order to report on LA1 in Table 4.

Table 4: Data set for LA1

Indicator	Data*
LA1	Male full-time employees
	Female full-time employees
	Male part-time employees
	Female full-time employees
	Male employees with permanent positions
	Female employees with permanent positions
	Male employees with temporary work contracts
	Female employees with temporary work contracts
	Male executive staff
	Female executive staff
	Supervised male workers
	Supervised female workers

*) Derived data information list from GRI on LA1 to facilitate data acquisition for companies.

Based on these data tables, data collection procedures should be possible without pre-existing knowledge on GRI and sustainability assessment. To support this data acquisition process, information on each of the data has also been prepared:

Example – Female employees with permanent positions: Please enter the number of female employees with permanent positions. Permanent position refers to an employment contract which is not limited in terms of its duration, independent of whether it is a full or part time contract.

Data quality, completeness and transparency were regarded as key issues. In order to improve these factors, there should be continuous ratings to each data aspect. We suggest using a quality scale, consistent over all indicators, ranging from “estimated” to “accurate”. For auditability, additional information or verifications on data aspects, such as invoices, should be documented.

All these steps – including automatic calculation of GRI and footprint indicators (based on a policy paper drafted by the OECD (2007a, 2007b) and elaborated on by Giljum et al. (2011) (see also: United Nations, 2003) - have been integrated into a web-based tool²⁰, which supports growing understanding on indicators as well as flexible analysis and benchmarking.

²⁰ www.mona-tool.com

4 Summary and Implication

The research identifies the business sectors and companies that are most lacking on CR reports and the major reasons for it. By a closer look at the GRI guideline G3.1 it was possible for us to abstract potential problems and difficulties for companies in the service sectors. Our research results can mainly be consulted for GRI G3.1 as well as G4 reports as there are only small variations concerning the interpretation of the indicators examined. But according to the changes in the application level system there is a need for further research, focussing on the selection of indicators for G4 reports.

The guidelines leave a wide scope for individual interpretations of companies – this will not be different with GRI G4 - which in turn requires expertise on sustainability and a solid interaction between company's departments. As this might be the cause for the slow development in sustainability reports we provide a list of indicators and data sets to facilitate the data collection which can easily be used by non-experts. Our paper will hopefully constitute the starting point for development in improving the CR guidelines and help raise the company's commitment to sustainability goals as outlined in the European Union's treaty goals of sustainable development.

In addition this subject surely needs more research to provide a deeper understanding on the influential causes for CR report lacks.

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Towards a Model for Integrating Management and Communications Theory in Sustainability/CSR Research

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Abstract

To answer the question of how organisations should communicate effectively their sustainability and CSR claims, this paper adopts a broadened integrative approach. It proposes a model to identify and assess the linkages and relationships between the management of sustainability/CSR – in particular, the stage of a firm's adoption of sustainability/CSR principles and practice – and the type and approach of marketing and corporate communications most appropriate and efficacious for this stage. The paper identifies the substantial body of work currently available on the management and communication of sustainability/CSR. Further, it highlights the importance of understanding the ethical and philosophical underpinnings of the various types and levels of embrace, and promotion, of sustainability/CSR. Thinking holistically becomes key in finding a solution.

Keywords

Sustainability, corporate social responsibility, sustainability/CSR adoption models, marketing and corporate communications.

1 Introduction

This paper seeks to address a dilemma that challenges practitioner and scholar alike. Put simply, how, to what extent, and to whom should firms and organisations promote their sustainability and corporate social responsibility strategies and actions. Should there be a strident and broad promotion of aspirations or a more low key and focused approach to such claim making? What role does the company's level of sustainability/CSR adoption or readiness play in this process? What are the challenges in communicating to different types of stakeholders whether senior management, employees, customers, suppliers or NGOs. There are no easy answers to these

questions, and current scholarly insight and practitioner knowledge offer limited understanding of this dilemma (Mejri & Wolf, 2012; Morsing, Schultz, & Nielsen, 2008; Signitzer & Prexl, 2008).

Yet these are questions businesses, PR practitioners and academics are asking themselves and which make the relationship between sustainability/CSR and communications a timely research topic. Such decisions clearly impact on the fortunes of the firm or organisation. But they also impact on the 'reputation' of sustainability/CSR itself. A signal failure to achieve certain outputs may prejudice stakeholders outside the firm against the broad project of sustainability/CSR (Assadourian, 2010). In contradistinction, significant success on the part of the firm may provide a useful societal and educational endorsement.

2 Why Sustainability/CSR

It is widely acknowledged by scholars and practitioners that the concept of corporate social responsibility (CSR) is "vaguely defined and widely applied" (Crane et al., 2013:66). Carroll (1994) describes CSR as an area that is "an eclectic field with loose boundaries, multiple memberships, and differing training/perspectives; broadly rather than focused, multidisciplinary; wide breadth, brings in a wider range of literature; and interdisciplinary"(Carroll, 1994). This thinking is shared by many academics (Crane et al., 2013; van Marrewijk & Werre, 2003; Votaw, 1973). Consequently several attempts have been made to classify existing definitions of the concept (Dahlsrud, 2008; Hopkins, 2007) but a common consensus has yet to emerge.

Due to the blurred definition of the concept of CSR, it is considered necessary to briefly elaborate on the use of the terminology in this paper. In this paper the term sustainability/CSR is used to capture the reality that two lines of scholarly and practice-driven contributions, sustainability thinking and corporate social responsibility (CSR), have developed with a different provenance. Sustainability focuses on issues of global warming, resource depletion, and the 'green' opportunities arising (Belz & Peattie, 2009; Lubin & Esty, 2010) CSR traditionally concentrates on issues such as business ethics, corporate social responsibility, and philanthropic endeavour (Carroll, 2001; Smith & Lenssen, 2009).

However, both lines of thinking essentially focus on the same outcomes. Business researchers now speak of a 'triple' bottom line – economic, societal, and environmental (Elkington, 1999). In other words, firms and organisations must sustain themselves in a profitable or cost effective way, must exhibit a broader societal responsibility, and respect ecological and resource-scarcity considerations.

3 Sustainability/CSR Management Theory

The practice of sustainability/CSR has undoubtedly changed and evolved over the years. Traditional sustainability/CSR is defined by a focus on risk management, is of a reactive nature, and considered as value distribution rather than value creation. However, a more contemporary manifestation focuses on reaping rewards (such as cost efficiency and competitive advantage) and is motivated by increased performance. It is of a proactive nature, that sees sustainability/CSR as value creation (Crane et al., 2013; Porter & Kramer, 2006). In order to classify these evolutionary shifts within the practice of sustainability/CSR, stages, or levels of adoption models, are commonly used (Benn & Bolton, 2011). Figure 1 illustrates such a generic model of sustainability/CSR adoption. The figure deliberately uses a spiral-like representation rather than a linear continuum to emphasise the iterative, learning process involved in the take-up stages.

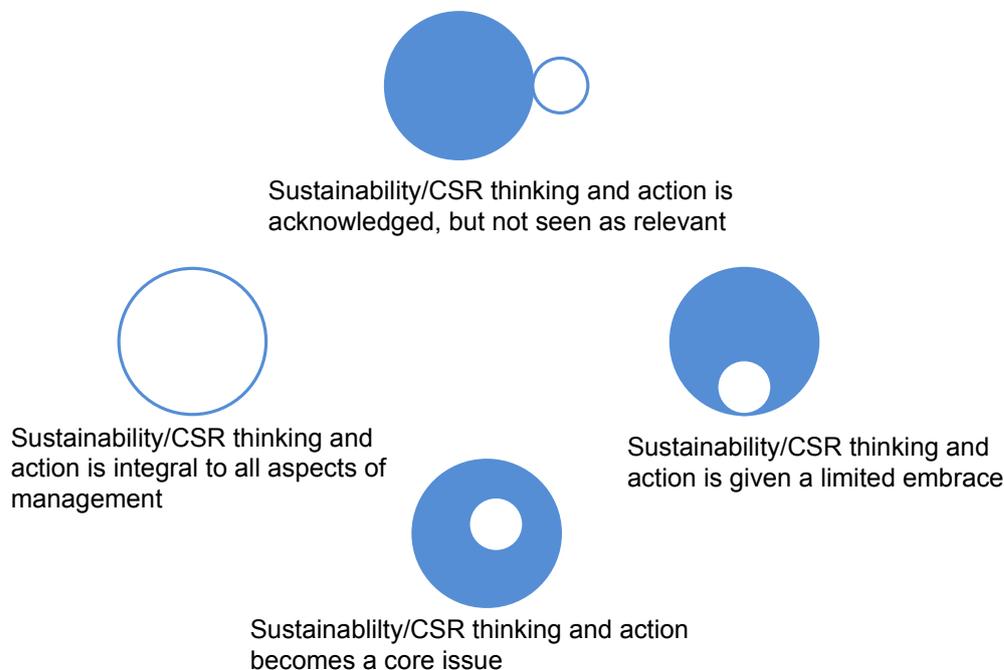


Figure 1: Sustainability/CSR Adoption Model

Authors that have sought to analyse conceptual shifts of sustainability/CSR in management theory include Baumgartner & Ebner, 2010; Bowd et al., 2006; Carroll, 1979, 1991, 2001; Lee, 2008; McElhaney, 2008; Schwartz & Carroll, 2003; Shrivastava, 1995; van Marrewijk, 2003. At one level, this is a very impressive scale of contribution. But in order to understand the variables and factors impacting on the management of sustainability/CSR, and the various stages of embrace at which organisations may be positioned, it is important to gain an insight into the ethical and philosophical underpinnings of various approaches.

To help conceptualise these different sustainability/CSR approaches, several academics have attempted to categorise them. Melé carried out a detailed review of sustainability/CSR classification theories (Melé, 2008). In this review three main classification theories by three different authors are outlined (Garriga & Melé, 2004; Klonoski, 1991; Windsor, 2006). Klonoski (1991) separates sustainability/CSR theories into three groups: fundamentalism (businesses' only obligation is to increase profits), moral personhood/moral agency (businesses are morally responsible for their actions), and social institutions (businesses are social institutions with social responsibilities). Klonoski's categorisation is based on the organisations' role within society, but does not directly address the motivations for engaging in sustainability/CSR per se.

Garriga & Melé's (2004) classification approach differs in that it groups sustainability/CSR theories according to the focus of the aspects of social reality. As a result theories are split into four groups: instrumental (business seen purely as instrument for wealth creation, e.g. shareholder value approach), political (business has social power and responsibility, e.g. corporate citizenship), integrative (e.g. stakeholder approach) and ethical theories (e.g. normative stakeholder theory).

Windsor (2006) divides sustainability/CSR theories according to the motivations and conceptions that underlie the practice of sustainability/CSR: ethical (based on altruism and moral reflection), economic (based on wealth creation) and corporate citizenship (based on economic and ethical arguments).

However, the individual theories contained in classification models for the most part examine the motivation, organisation and management of sustainability/CSR, with limited discussion of the communications dimension. There is a manifest need to further develop these models (McDonagh, 1998) and, in particular, discover how communications should be effectively executed at different stages in the adoption cycle.

4 Sustainability/CSR Communications Theory

There has been a growing interest in sustainability/CSR in the marketing and communications disciplines (Podnar, 2008). This research interest is reflected in the number of journal articles published in the marketing and corporate communications arenas. Sustainability/CSR communication is now understood as a new sub-field within corporate communications (Cornelissen, 2011).

This interest in sustainability/CSR communication within academia has also been strengthened by the business case for it. Without effectively communicating about sustainability/CSR activities companies are missing out on some of the associated

benefits of engaging in it, such as creating favourable stakeholder attitudes, positive corporate image and reputation (Du et al., 2010). However, market research indicates many organisations simply use sustainability/CSR as PR and media relations exercise (McKinsey, 2006) and that they fail to embed the practice in other ways, illustrating the need to define and outline effective sustainability/CSR communication.

Podnar defines sustainability/CSR communication as a “process of anticipating stakeholders’ expectations, articulation of sustainability/CSR policy and managing of different organization communication tools designed to provide true and transparent information about a company’s or a brand’s integration of its business operations, social and environmental concerns and interaction with stakeholders” (Podnar, 2008:75).

Sustainability/CSR communication is rooted in communications theory including particular ways of conceptualising communication. For instance communication can be viewed as information transmission (Shannon & Weaver, 1948), as information processing (Maletzke, 1998), as dialogue (Rogers & Kincaid, 1981) or as social action (Fairclough, 1992). In recent years the field of sustainability/CSR communication has been defined by a shift from ‘traditional’ to ‘alternative’ underpinning, where sustainability/CSR communication is not simply considered a process to inform and persuade about CSR objectives and activities, but is viewed as a way of constructing sustainability/CSR and negotiating its meaning (Christensen & Cheney, 2011; Schultz & Wehmeier, 2010).

Nielsen & Thomsen (2012) and Golob et al. (2013) provide detailed systematic reviews of research streams and themes in sustainability/CSR communication. Whilst the first review divides the research landscape into the management communication and marketing communication approach to CSR communication (Nielsen & Thomsen, 2012), the second review categorises academic sustainability/CSR communication contributions into three main research clusters: process oriented, disclosure/accountability oriented, and outcome/consequence oriented research (Urša Golob et al., 2013).

Whilst all of the conceptual models that are covered in the systematic reviews provide good insights into the sustainability/CSR communication process and the various factors impacting on the practice, they do not provide any guidelines of how to best communicate about sustainability/CSR activities dependent on the level of sustainability/CSR embrace. This is further supported by calls for research to be carried out in relation to the impact of mediating mechanisms on the effectiveness of sustainability/CSR communication (Du et al., 2010).

5 Integrating Management Theory and Corporate Communications Theory in Sustainability/CSR Research

Management literature continues to influence sustainability/CSR and its communication. The communication of sustainability/CSR depends on how it is defined and which perspective is adopted (Bartlett & Devin, 2011), meaning that some organisations will adopt a more instrumental viewpoint on CSR whilst others will have more societal goals in mind, shaping the way they choose to communicate about it. This strengthens the premise that a detailed understanding of the ethical and philosophical context surrounding both the management and communication of sustainability/CSR is required.

The review of existing theories in the fields of management and corporate communications has highlighted a number of parallels in the way sustainability/CSR and its communication is ethically and philosophically conceptualised. Theories in both disciplines are found to be divided into either 'financially' or 'societally' motivated. The overview of common classifications of both sustainability/CSR adoption and communication theories below (Figure 2) highlights how theories in both disciplines are classified along a sliding continuum with either a financial or societal focus, highlighting the different epistemological orientations of the models.

These similarities are also mirrored in definitions of the various sustainability/CSR communication perspectives. In their commentary on sustainability/CSR from a corporate marketing perspective, Hildrand, Sen & Bhattacharya highlight the parallels between the practice of corporate marketing and the motivations and objectives of sustainability/CSR (Hildebrand et al., 2011). These authors draw on Balmer's definition of corporate marketing (Balmer, 1998) and conclude that it is a process that seeks value creation rather than just profit maximisation, and that seeks to address issues of business survival and satisfaction of present and future societal needs.

Despite the growing body of knowledge on the topic of sustainability/CSR adoption and communication, a model linking both the level of sustainability adoption, communication intensity and effectiveness has not been conceptualised. Fassin & Buelens (2011) contribute a model that links sustainability/CSR intent and drivers, and adoption with communication. However, this model focuses on the sincerity/hypocrisy content of the communication and does not address the effectiveness of outcome.

In sum, there is substantial and growing literature available about the management and adoption of sustainability, about the challenge of its communication, and about the importance of the ethical and philosophical underpinnings of different approaches. However, thinking appears very bunkered, with very little overlap between the constituent parts.

In order to address this research gap the authors seek to connect two important streams of literature on sustainability/CSR: firstly, the management of sustainability/CSR, in the sense of its evolution, organisation and delivery in the firm, and secondly, communications about these activities to various 'stakeholders' outside the firm. While there is a substantial and growing body of knowledge within these two streams, there have been limited attempts to explore the interconnections and relationships between the two. A number of scholars have called for a more holistic and integrated approach in this regard (Dhanesh, 2012; McElhaney, 2008; Signitzer & Prexl, 2008).

Figure 3 sets out an early stage, parsimonious model (Leonard-Barton, 1992) to analyse these interconnections drawing on current relevant literature. It comprehends the interrelationships between the firm's organisational readiness and particular configuration to sustainability/CSR principles (the 'management theory' dimension) *and* the most effective way to communicate these intentions and actions to various stakeholders (the 'communications theory' dimension). For example, it may be hypothesised that where a firm has medium level of sustainability/CSR adoption, allied to a strong motivation to become more sustainable, then a high internal and medium external intensity of communications to selected stakeholders may be expected to be effective. The model also tries to reflect the role of the ethical and philosophical

context, which as already mentioned will heavily influence decisions and actions in relation to both the management and communication of sustainability/CSR.

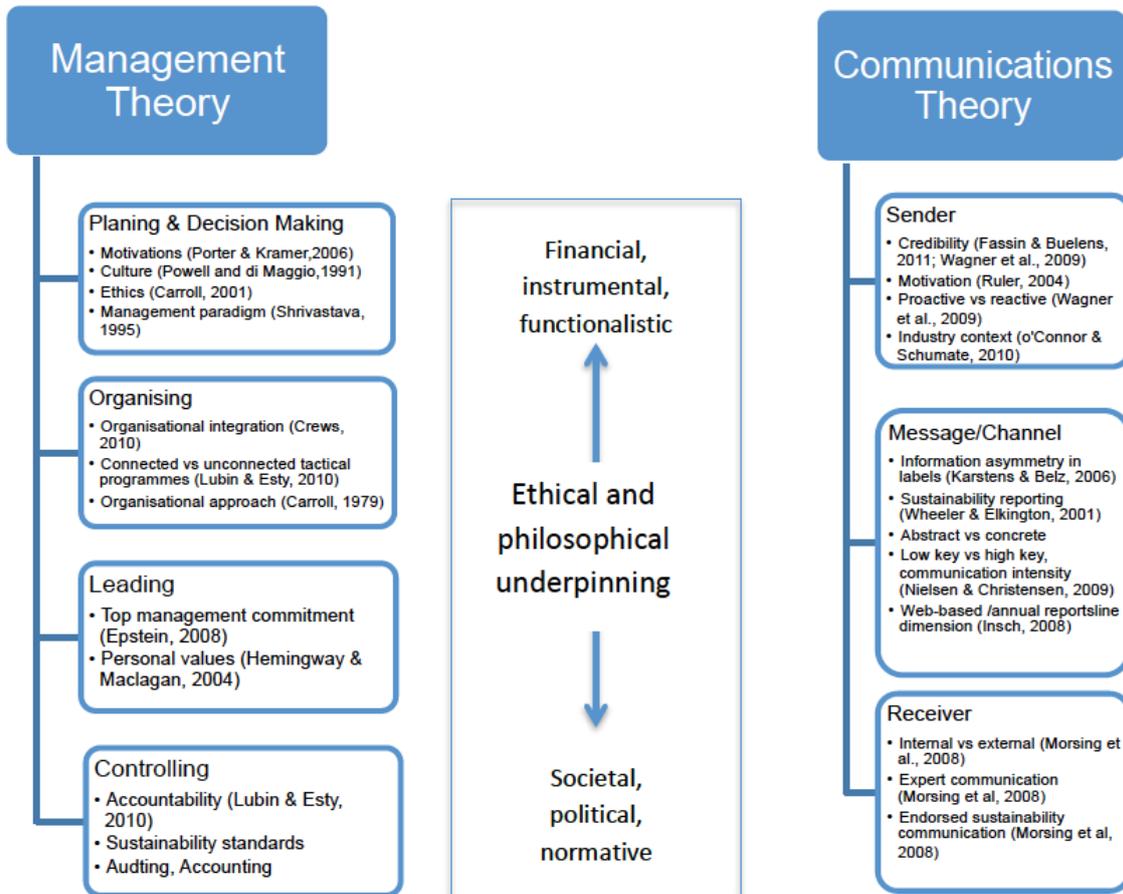


Figure 3: Parsimonious Model Linking Management Theory and Communications Theory in Sustainability/CSR

The caselets below of four global firms in regard to their communication approach illustrate in a practical way the kind of dilemmic issues that must be addressed in communicating sustainability/CSR claims. In each case the company has embraced sustainability/CSR principles and practice to a varying extent. The discussion highlights the complexity of choosing how, to what extent and to whom to communicate, and confirms the calls of the scholars above for more research on this topic.

illycaffé: illycaffé has a long established top management commitment to sustainability/CSR and runs a number of social and environmental programmes to promote sustainability/CSR. illycaffé’s business strategy is centred on producing a high quality product and the company feels maximum quality can be achieved by focusing on sustainable coffee growing practices. illycaffé has been awarded the Responsible Supply Chain Process certification. Despite its high level of commitment to sustainability/CSR, the intensity of communication is very low key and centred on quality rather than sustainability/CSR of itself.

Should illycaffé communicate more loudly about its sustainability/CSR practices? Are its sustainability/CSR programmes a by-product created by its focus on a quality coffee?

Innocent Drinks: Innocent Drinks has fully embraced sustainability/CSR since the company was founded in 1998. Its business strategy is to bring fresh, healthy and sustainable products to market. Since its start, Innocent Drinks has focused on promoting healthy nutrition, high quality, sustainably grown, non-air freighted ingredients, innovative packaging made of nearly 100% recyclable materials, and has set up the Innocent Foundation. Innocent Drinks have always incorporated sustainability/CSR in their advertising and communication campaigns and employ a high intensity approach to communication.

Is Innocent Drinks' communication campaign too intense? Is it vulnerable to outsider criticism in case of any sustainability/CSR conflicts?

Ryanair: Ryanair has a low level of sustainability/CSR adoption. Whilst in terms of environmental impact due to fuel consumption, Ryanair is ranked in the top 5, this fact should be mainly attributed to Ryanair's business strategy of efficiency, cost minimisation and up to date fleet aircraft. Ryanair has no known record of implementing any social programmes to promote sustainability/CSR and has received negative press due to its employee and customer relations. Ryanair's sustainability/CSR communication intensity is minimal as the communication focus is on offering low cost, no frills air travel.

Is it fair to say that Ryanair is not sustainable because sustainability is a by-product of efficiency? Should the firm communicate more intensely? Is it a good strategy not to have a dedicated, proactive sustainability/CSR programme?

Walmart: Walmart is involved in a number sustainability/CSR programmes ranging from waste reduction, adoption of renewable energies, to selling sustainable products. Its business strategy is focused on capturing a high market share and maximizing profits. In order to achieve this, Walmart recognizes the need to be perceived as a sustainable company. However, on-going exposures of unethical business practices in Mexico and in regard to female employees in the US challenge just how sustainable Walmart's practices are. They employ a high intensity communication strategy with regards to their sustainability/CSR programmes.

Can Walmart's credibility issues with regard to its sustainability/CSR efforts be attributed to its loud communications campaign? Should Walmart be considered a sustainable or unsustainable company? Is it guilty of greenwashing? To what extent are sustainability/CSR programmes communicated internally?

The matrix below illustrates four major combinations between levels of sustainability/CSR adoption and intensity of communication, and positions each company in a particular cell. Information based on which the authors loosely positioned the companies on the matrix was gathered during an initial brief review of publically available company data such as company reports, websites and press releases and newspaper articles. The depiction of the companies on the matrix is the authors' first cut to position the companies. However, the positioning is open to query and shows the complexity of classifying companies according to sustainability/CSR adoption and communication. Furthermore, the matrix does not indicate which combinations are effective and successful, and suggests that these dilemmas can only be fully answered by combining management and communication theory in the context of sustainability/CSR, research work that has been so far underdeveloped.

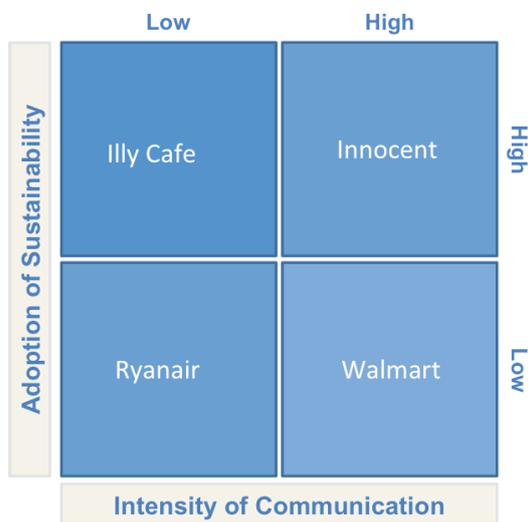


Figure 4: Matrix Classifying Sustainability/CSR Adoption and Communication Intensity

The discussion highlights the complexity, and need, of choosing how, to what extent and to whom to communicate on issues of sustainability/CSR. These decisions clearly impact on the profits, performance and competitive standing of the firm or organisation. But as has been argued earlier, they also impact on the reputation of sustainability/CSR itself. The failure to achieve certain targets may prejudice stakeholders outside the firm against the broad project of sustainability/CSR (Assadourian, 2010). In contrast, significant success will illuminate a path forward.

Based on the parsimonious model and the type of dilemma and thinking in the caselets, the authors have developed a number of hypotheses taking into account the level of sustainability adoption and communication intensity suggesting various possible outcomes (see Figure 5).

Figure 5: Sustainability/CSR Adoption and Communication Continuum – Hypotheses

Sustainability/CSR Adoption and Communication Continuum - Hypotheses			
Sustainability adoption	Communication intensity	Possible outcome	
low sustainability/CR has been acknowledged, but not seen as relevant	high	high external communication intensity via company reports and website, as well as marketing	may be perceived greenwashing if not backed up by action and implementation
low sustainability/CR has been acknowledged but not yet implemented	high	high internal communication to get employees onboard	may be effective to create a positive setting to get the sustainability/CR project off the ground
low sustainability/CR has been acknowledged but not yet implemented	low	minimal communication with stakeholders in relation to organisations sustainability	may be considered lack of externally demonstrated aspirational commitment
high sustainability/CR has been fully integrated into the business model and culture	low	minimal communication with stakeholders in relation to organisations sustainability	competitive advantage may not be fully leveraged/minimal educational benefits about sustainability/CR
high sustainability/CR has been fully integrated into the business model and culture	high	high internal and external communication	maximum benefits in relation to achieving business success and advancing the overall sustainability/CR project through educating

The research is taking place in the food and retailing sector where issues of sustainability/CR must address a multitude of issues, ranging from transport, packaging waste, farming practice, food traceability, ethical sourcing, and electricity consumption to worker's rights.

The reasons for embracing sustainability in food are compelling. With the global population set to increase by more than 2 billion by 2050, the world will need to produce 70% more food from limited resources in terms of water and land. Fears surrounding food sustainability, and indeed global warming, are leading to significant actions by food manufacturers and retailers (Board Bia, 2012; Killeen, 2000; Maughan & O'Driscoll, 2012).

An enterprise partner in this research project is Bord Bia (Irish Food Board), the government agency charged with developing Ireland's food and drink exports. Bord Bia is committed to Ireland becoming a world leader in sustainably produced food and drink with its newly launched Origin Green campaign. Currently over 200 major Irish food producers have signed up for this programme.

Further, retailers have an important role to play within sustainable development as they can initiate more sustainable supply chains (Lai, Cheng, & Tang, 2010; Weybrecht, 2010) and amplify the sustainability message throughout the entire supply chain (<http://plana.marksandspencer.com/>).

The research is currently in the early stages and it will embrace both qualitative and quantitative methodologies. To-date the authors have employed early stage qualitative research methods, in a discovery-driven mode (Gummesson, 2000), in particular, case studies and interviews. Case studies, based on both secondary and primary sources (Yin, 2009), helps to examine the management and communications of sustainability/corporate responsibility, at the level of the firm and industry sector, in both a national and international context. Interviews are currently taking place contemporaneously (Yeung, 1995) with industry, communications and sustainability/corporate responsibility experts and leaders. These case studies and interviews will shed light on current best, and less than best, practice, and provide a tangible body of evidence, in an area where there is considerable practitioner and scholarly disagreement.

The case study and interview data will enable a deepened understanding of the dynamics of the early stage model. The model will thus be further refined and developed, facilitating a quantitative approach to the research question. The connections and interrelationships between the management and organisational preparedness for sustainability/CR *and* the subsequent communications of such actions to various stakeholders within and beyond the firm, will be hypothesised. Relevant constructs and scale items will be developed, enabling the model to be tested

and validated. This will be achieved through a comprehensive survey of stakeholders in the process, i.e. senior management, employees, customers, and suppliers. By mid 2014, the researchers will be in a position to report on initial qualitative evidence and present the refined conceptual model and its hypotheses.

6 Conclusion

The review of sustainability/CSR adoption and communication models has mapped the field in both the management and communications discipline. The review has also highlighted a gap in current research in relation to the effective communication of sustainability/CSR claims dependent on the level of sustainability adoption. It is manifest that there is much thinking and research in the area. However, what is lacking is a connectedness between the individual parts. More joined-up thinking and integrated frameworks are needed.

To address this research gap the authors propose a very early-stage model that seeks to link elements from both the strategic management and communications discipline. Illustrative caselets are used to highlight the issues that are associated with sustainability/CSR communication. Early hypotheses, or speculations, in relation to the effectiveness of sustainability/CSR communication are offered based on different combinations of sustainability adoption and communication intensity.

The proposed early stage model aids to comprehend the types of interconnections and relationships between organising/managing sustainability efforts in the firm *and* the communications of these efforts to various stakeholders. Managerially, this provides valuable insights into how firms can effectively communicate sustainability/CSR depending on the stage of sustainability/CSR transformation they are at. Further, mindful that business and corporate communications can be an important driver in educating stakeholders, in particular consumers, in relation to sustainability/CSR, the successful communications of sustainability/CSR claims will also help the overall sustainability project in society.

7 References

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Socio-technical Transitions to Environmental Sustainability: A 3D Perspective at Organizational Level

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Abstract

Strategically integrating energy efficiency requirements into a technological product innovation involves taking into account several key dimensions that go beyond the development of the green technology itself. Based on a preliminary conceptual model, this theoretical paper aims at improving our understanding of the dynamics taking place when such a socio-technical system transits towards environmental sustainability. It assesses both the micro-level processes involved in constructing green technologies and the macro and meso-level patterns endogenous and exogenous to the firm, shaping the development and diffusion of those sustainable technologies inside the organization.

Keywords

Socio-technical transitions, Environmental sustainability, Multi-level perspective, Actor-network theory

1 Introduction

The increasing scale of environmental externalities related to firms' activities shows the limits of today's economic system and development path. It forces firms to integrate environmental sustainability concerns, not only in their operations but also strategically in their business processes, to ensure legitimacy and the protection of their competitive advantage. More specifically, the development of energy efficient technological product innovations - i.e. the integration of energy efficiency requirements in the innovation process of technological products- has recently received a growing deal of attention both from the business and academic worlds.

However, if a change toward a more environmental-friendly behaviour is acknowledged, strategic implementation of energy efficiency considerations remains difficult. This is partly due to a poor understanding of the micro and macro-level dynamics underlying such a transformation.

In this theoretical paper, we draw both from the multi-level perspective (MLP) and the actor-network theory (ANT) to bring light on socio-technical transitions to environmental sustainability at an organizational level.

First, we explain the need for socio-technical systems to transit towards environmental sustainability. Second, we argue that this shift towards environmental sustainability concerns can be seen as an organizational change process. We structure our argument based on the three dimensional model of strategic change developed by Pettigrew in 1987: content, context and process. Third, we show how MLP and ANT respectively account for the contextual and the processual parts of Pettigrew's model. Finally, we propose a conceptual model, which shows how MLP and ANT complement each other and gives an overview of the interrelated dimensions at stake when such a transition occurs at a firm level.

2 Socio-technical transitions to environmental sustainability

In this section, we first define 'socio-technical systems' and then explain what is meant by socio-technical transitions to environmental sustainability, and present their characteristics.

2.1 Socio-technical systems

The label 'socio-technical' is not new. It has been coined in the 1950's by some scholars of the London Tavistock Institute. The primary objective of socio-technical projects was to give equal importance to social elements (e.g. hierarchies, communication networks) and technical artefacts in the design process (Mumford, 2006; Leonardi, 2012). Socio-technical scholars recognized that technology was embedded in an internal and an external environment that have an influence on the conception, production, diffusion and use of technologies (Paredis, 2011). Geels (2002) argues that in order to fulfil its functions, technology needs to be associated with human agency, social structures and organizations.

Johnson and Wetmore (2009: 94) define socio-technical system as "a cluster of material objects, social practices, social relationships and social organization". According to Leonardi (2012), a technological organization might be conceptualized as

a socio-technical system, defined by the mutual shaping of technical and social subsystems. In a technical subsystem, people's goals and the materiality of the technology become 'constitutively entangled' (Orlikowski, 2007: 1437). Those technical subsystems are influenced by broader abstract social structures such as roles, power relations, statuses, hierarchies, referred to as institutional forces (Kallinikos, 2011). In our case, such a socio-technical approach makes sense as we look at how technologies evolve in an organization.

2.2 Socio-technical transitions

New environmental challenges such as climate change and the related anthropogenic greenhouse gases emissions have gained importance on the political agenda for the past two decades (Geels, 2010). Responses to those issues will require major structural changes, notably in the energy system. Those major transformations are called 'socio-technical transitions'. Indeed, such a system can be seen as 'socio-technical' because it entails technologies but also various elements such as user practices, cultural meanings, policy, scientific knowledge, markets, infrastructures (Geels, 2004; Geels, 2012). Transitions to environmental sustainability are complex, long-term, multidimensional and co-evolutionary processes comprising multiple actors and social groups who reproduce, maintain and transform those elements (Geels, 2011; Paredis, 2011).

Morelli defines environmental sustainability as "a condition of balance, resilience and interconnectedness that allows human society to satisfy its needs while neither exceeding the capacity of its supporting ecosystems to continue to regenerate the services necessary to meet those needs nor by our actions diminishing biological diversity" (2011: 24). Environmental sustainability is a stakeholder-oriented concept extending beyond the boundaries of the organization. It is driven by the firm's acknowledgement that its business activities have a non-negligible impact on the environment. This impact needs to be taken into account by truly integrating environmental sustainability concerns into the organization's products and strategy (Maon et al., 2009).

According to Geels (2011) transitions towards environmental sustainability differ from historical transitions for three reasons.

First of all, sustainability transitions are goal-oriented and not emergent such as many historical transitions. Private actors don't have a lot of incentives to address them because sustainability is a common good. Therefore, public authorities and civil society will play a crucial role in this regard, in particular through changing economic frame conditions such as taxes and regulatory frameworks.

Second, because sustainability is a common good, sustainable solutions don't offer obvious user benefits and might score lower on price and performance dimensions than established technologies. Therefore, in order to change existing systems, changes are required both in economic frame conditions and in policies in order to decrease resistance to change.

Finally, sustainability transitions are most needed in sectors represented by large firms, who, often, are not pioneers in sustainability transitions. However, thanks to their complementary resources and assets, their involvement might accelerate the breakthrough of environmental technological innovations. This would require a strategic reorientation of those firms who currently still defend existing systems and regimes.

All these considerations demonstrate that sustainability transitions are about interactions between technology, economics/business/market, policy/power/politics and culture/public opinion/discourse.

3 Content, context, process

A socio-technical transition at an organizational level, such as the development and implementation of energy efficiency requirements into technological innovations can be considered as an organizational change process (Verhulst and Boks, 2012). Such a strategic change draws us with further questions about the content of change under investigation, the time frame of the analysis, the different processes at stake as well as the driving and constraining factors for change present in the environment (Pettigrew, 1987; Pettigrew, Woodman and Cameron, 2001).

According to Pettigrew (1987), studying major transformations in the firm can be done by looking at the inter-connections between the content of change but also its content and process. Content refers to the particular area of change. In our perspective, content refers to the strategic integration of energy efficiency requirements into technological innovations. Context refers to the pre-existent conditions to change. The author distinguishes inner and outer contexts. Inner context refers to the internal organizational areas through which ideas for change have to proceed, such as the corporate structure, culture and political context whereas the outer context refers to the wider economic, political, social and competitive environment in which the firm operates. Finally, the process of change refers to the actions and interactions of various interested parties seeking to move the organization from its present to its future state. All in all, Pettigrew (1987: 658) sees such an organizational change as follows:

The transformation of the firm is seen as an iterative, continuous and multilevel process, with outcomes emerging not merely as a product of rational or bounded rational debates, but also shaped by the interest and commitment of individuals and groups, the forces of bureaucratic momentum, gross changes in the environment and the manipulation of the structural context around decisions.

Relying on these three dimensions, Pettigrew (1987) explains that a contextualist analysis of the environmental sustainability change at stake can be done through looking at a vertical and a horizontal axis of analysis as well as at their linkages through time. The vertical contextual axis refers to the multi levels of analysis from which a socio-technical transition can be looked at, as well as their interdependencies. In our case, from an organizational point of view, we look at the various micro and macro patterns that influence, shape and constrain, and are in turn influenced, shaped and constrained by energy efficient technological innovations. The horizontal processual axis refers to sequential interconnectedness among phenomena in past, present and future time (i.e. the pathway(s) followed by energy efficient technological innovations in the firm along time). This processual analysis requires the specification of the actors involved. Their subjective interpretation of the way they perceive, learn about and remember the process as well as the role played by power relationships help shape the emergence and the development of the process studied (Pettigrew, Woodman and Cameron, 2001).

In sections 4 and 5, we respectively present one model, the multi-level perspective model, and one theory, the actor-network theory, that can help us reach a true contextualist analysis of the socio-technical transition to environmental sustainability.

4 Multi-level perspective on transitions to environmental sustainability

Here, we present the multi-level perspective model (MLP) and show how its micro, meso and macro levels of analysis as well as their interactions account for the contextual part of the model of Pettigrew²¹ (1987).

The MLP model has been developed by Geels in 2002 to explain socio-technical transitions to sustainability. This model is based on previous works of Kemp (1994), Rip and Kemp (1998) and Geels and Kemp (2000) among others. It mobilizes insights from the science and technology studies, evolutionary economics, sociology and neo-institutional theories to show that transitions are not linear but come through

²¹ In section 6 of this paper, we will propose a model partly adapted from the MLP, considered at an *organizational* level (the MLP model goes far beyond the standpoint of the firm).

alignment and development between three analytical levels in which a technology is embedded (Geels, 2011; Paredis, 2011). Those levels are (1) the niches, (2) the socio-technical regimes, and (3) the socio-technical landscapes. Geels argue that those levels shouldn't be seen as ontological descriptions of the reality but as analytical and heuristic concepts that allow understanding the complex dynamics of socio-technical changes (Geels, 2002).

4.1 Niches

At a micro-level, novelties emerge in niches (e.g. R&D laboratories). These niches can be compared to incubation rooms (Schot, 1998) where radical innovations that deviate from existing regimes are generated and developed. Three social processes take place within niches (Kemp et al., 1998; Hoogma et al., 2002). The first one relates to the processes of learning developed by niche-actors on various topics (e.g. imperfections of technology, issues of organization, policy instruments...), the second one concerns the articulation and adjustment of expectations or visions which play a major role in guiding the innovation activities as well as attract attention and funding from external actors. The last social process is the building of social networks and the enrolment of more actors. If learning processes results in stable configuration, if visions gain in acceptance and if social networks become bigger- and hence more powerful- niches will gain momentum (Geels, 2012: 2).

4.2 Socio-technical regimes

At a meso-level, socio-technical systems comprise technologies and the well-developed systems surrounding them. These system elements are reproduced, maintained and changed by various actors (i.e. engineers, but also users, policy makers, scientists...). But those existing socio-technical relationships are locked-in in socio-technical regimes, which are the rules, established practices and networks stabilizing existing configurations (e.g. the knowledge capabilities of various actors, relevant to the maintenance of existing systems, resistance from vested interests, regulations and laws that create market entry barriers, shared beliefs that make actors blind for developments outside their scope,... (Rip and Kemp, 1998; Geels, 2012)). For those reasons, technological innovations developing at the regime level are path dependent and thus incremental (Kemp et al., 1998; Geels, 2012).

4.3 Socio-technical landscapes

At a macro-level, socio-technological landscapes refer to some deep, slow-changing structural trends such as economic growth, environmental issues or cultural and normative values that are beyond the control of individual actors. These technology-

external factors form the wider exogenous context that shapes technological trajectories via its influence on niche and regime dynamics. This level is more stable than the underlying levels, in terms of the number of actors it represents and the degree of alignment between the elements.

Transitions study the interactions between various processes at different levels which tie up and reinforce each other in time. Novelty emerges in niches, in the context of an existing socio-technical regime and landscape. The successful breakthrough of this new green technology depends on the social processes taking place within the niche but also on the developments taking place at the level of the existing regime and landscape. The landscape may put some pressure on the regime, allowing for a potential destabilization of the current regime and the opening of windows of opportunity for niche-innovations, which, in turn, may transform the landscape. Transitions thus aims at understanding how to unlock processes and stimulate path breaking changes towards more environmental sustainable systems (Geels, 2012).

The MLP model is thus characterized by (1) a co-evolutionary and systemic approach because transitions involve multiple dimensions, (2) an actor-based approach, since the model focus on strategies, perceptions and interactions between different actors, (3) stability and change because it studies resistance to change on the one hand and seeds for radical systemic change on the other hand and finally (4) complex dynamics as it emphasizes co-evolution, mutually reinforcing developments and alignments (Geels, 2012).

5 Agency²² perspective on transitions to environmental sustainability

Actor-network theory and its translation process will be presented in this section. It allows for showing the micro-level dynamics taking place at an actor level in an organization, when this organization has to deal with socio-technical transitions towards environmental sustainability. In our perspective, it accounts for the process part of the model of Pettigrew (1987).

²² Giddens (1984: 14) defines agency as “the ability to take action and make a difference over a course of events”.

5.1 What is actor-network theory?

Actor-network theory is part of the sociology of technology approach developed in the sixties, stating that science can be studied from a sociological point of view. ANT was pioneered in the 1980s by the French scholars Michel Callon and Bruno Latour (Callon and Latour, 1981; Callon, 1986).

Three main principles characterize ANT. First of all, ANT shows that the role of objects shouldn't be underestimated as they shape the people and other objects around them. This means that there is no distinction between society (i.e. actors), nature (i.e. environment) and technology. An 'actor' is defined in its performance as a 'figurehead' or a more or less 'opaque' black-box which stands for, conceals, defines, holds in place, mobilizes and draws on, a set of juxtaposed bits and pieces (Law, 1994: 101). Actors are people, organizations and objects. Second, ANT argues that technology is not to be seen as a mere autonomous artefact. There is a social shaping of technology - i.e. a situated process of co-evolution (Callon, 1986) and co-production (Latour, 1991) of human and non-human actors. Therefore, the integration of energy efficiency issues in the technological innovation process is understood as a dynamic co-constitution and transformation of artefacts, actors and practices within the firm. Finally, people and objects interact with each other and create actor-networks. Callon (1987: 93) defines an actor-network as follows: "An actor-network is simultaneously an actor whose activity is networking heterogeneous elements and a network that is able to redefine and transform what it is made of".

ANT focuses on how socio-technical networks are created, structured and maintained. It is the interplay between different actors' forces that will define the configuration of actors in an actor-network (Cordella and Shaikh, 2006).

While interplaying with the actor-network, actors negotiate their forces in a process of translation(s) – i.e. interpretation(s) that every actor makes of other actors present in the network. As reported by Callon and Latour (1981: 279), by translation we understand "all the negotiations, intrigues, calculations, acts of persuasion and violence thanks to which an actor or force takes, or causes, to be conferred to itself, authority to speak or act on behalf of another actor or force".

Four translation steps are necessary to understand the constitution and functioning of an actor-network (Callon, 1986): 'problematization', 'interessement', 'enrolment' and 'mobilization'. We detail them in the next section in the light of the specific environmental sustainability context.

5.2 ANT translation process around environmental sustainability considerations

ANT appears as a useful instrument for analysing the integration of energy efficiency requirements within a technological corporation. An organization can be seen as a set of network of actors in which a particular translation process takes place when the firm needs to strategically integrate energy efficiency concerns (Blomme, 2012). These actor-networks need to find a new 'sustainability' stability. As pointed by Benn and Baker (2009: 388) "sustainability draws on the interrelatedness of technological, social, political, and ecological systems and sub-systems (...) the relationship between human and ecological systems should be reconceptualised in terms of a dynamic co-evolution towards sustainability".

Hereunder, we analyse the four steps of the process of translation in this environmental sustainability context. The first step, 'problematization', consists in becoming indispensable. A focal actor raises an issue, and dealing with this issue requires the involvement of several other actors, whose roles and relationships configure an initial problem-solving network (Tatnall and Burgess, 2002). The organization develops an opinion as to whether the focal actor - energy efficiency concerns - is actually of importance to the other actors and should be accepted, or rejected. The problem is re-defined in terms of solutions offered by the adoption of an environmental sustainability- oriented innovation which then attempts to establish itself as an 'obligatory passage point' (OPP) (Callon, 1986). It can be thought of as the narrow end of a funnel that channels all interests in one direction (Blomme, 2012). It thereby becomes a necessary element for the constitution of a network as it mediates all the interactions between the actors in this network. If accepted, this OPP will create a 'black box' where the translation process will run automatically and isn't renegotiated anymore (e.g. the ISO 14001 norm can be considered as a black-boxed actor- network (Bengtsson and Ågerfalk, 2011)). The second step, 'interessement', refers to the art of getting actors interested. The aim is to convince other actors in the corporate network to accept the definition of environmental sustainability strategy, whose identity has been consolidated. According to Akrich et al. (2002a), the environmentally-oriented technological product innovation would spread out thanks to its intrinsic environmental and technological properties. Nevertheless its destiny also depends on the active participation of those who want to advance it. Therefore 'interessement' allows for understanding how a 'sustainable' innovation is adopted and how it spreads to become a success. The socio-technical analysis underlines that this adoption is the result of an adaptation, which itself, generally is the result of a collective development and thus of an interessement process, getting bigger and bigger in the company (Akrich et al., 2002b). The third step, 'enrolment', represents a successful interessement. Roles are specified among actors, and alliances between

them are established. The focal actor (i.e. the need for environmental sustainable innovations) has enrolled others to believe and support it (Latour, 1987). Actors that are less prescribed get more easily translated into the interest of others that are more firmly inscribed and prescribed. In this way, ANT allows studying power relationships through examining how human and non-human actors interact and negotiate. 'Mobilization' is the last step. Allies are mobilized to represent the group effectively. Some actors are used as (new) initiators and become delegates or spokespersons for the focal actor (Tatnall, 2010). Rice (2011: 35) explains: "CO2 initially acted as a spokesperson for sustainability, like a union representative on behalf of its members. Mobilization has gone further; CO2 not only speaks for others, it causes others to act on its behalf". In our case, the content and probability of success of the environmentally-oriented sustainable technological product innovation are to be found in the choice of the spokesmen (i.e. key actors and management) who will negotiate to transform and shape the sustainable technological product innovation to make it successful - i.e. make it match with business operations and strategy.

Through those steps, we get to a network of links between actors, known as the actor-network (Callon et al., 1985). Strategic environmental sustainability initiatives are successful if they stabilize in an acceptable compromise between actors. Several negotiations and iterations in the implementation of the environmental sustainability strategy may be needed to get to that point. Indeed, the beliefs but also the identities of the actors involved in the actor-network may fluctuate if there is a controversy - i.e. if the representativeness and legitimacy of the spokesmen are challenged (Callon, 1986). Actors may defend different perspectives and constitute other 'competing' networks that are intertwined and contribute to the development of a controversy (Daroit and Nascimento, 2009). As reported by Stubbs (2000) this fits well with the environmental sustainability pressures the organization suffer from internal and external actors and hence, the need to identify the most important and powerful ones.

6 Contextualist conceptual model for socio-technical transitions to environmental sustainability

In this section, we introduce a preliminary conceptual model that maps the key elements of the MLP and the ANT at an organizational level (cf. Figure1). It brings light on the micro and macro dynamics taking place both at the actor level and at the firm level and interrelating when a socio-technical transition to environmental sustainability occurs. This allows us to realize a contextualist analysis of such a strategic corporate change, as suggested by Pettigrew (1987).

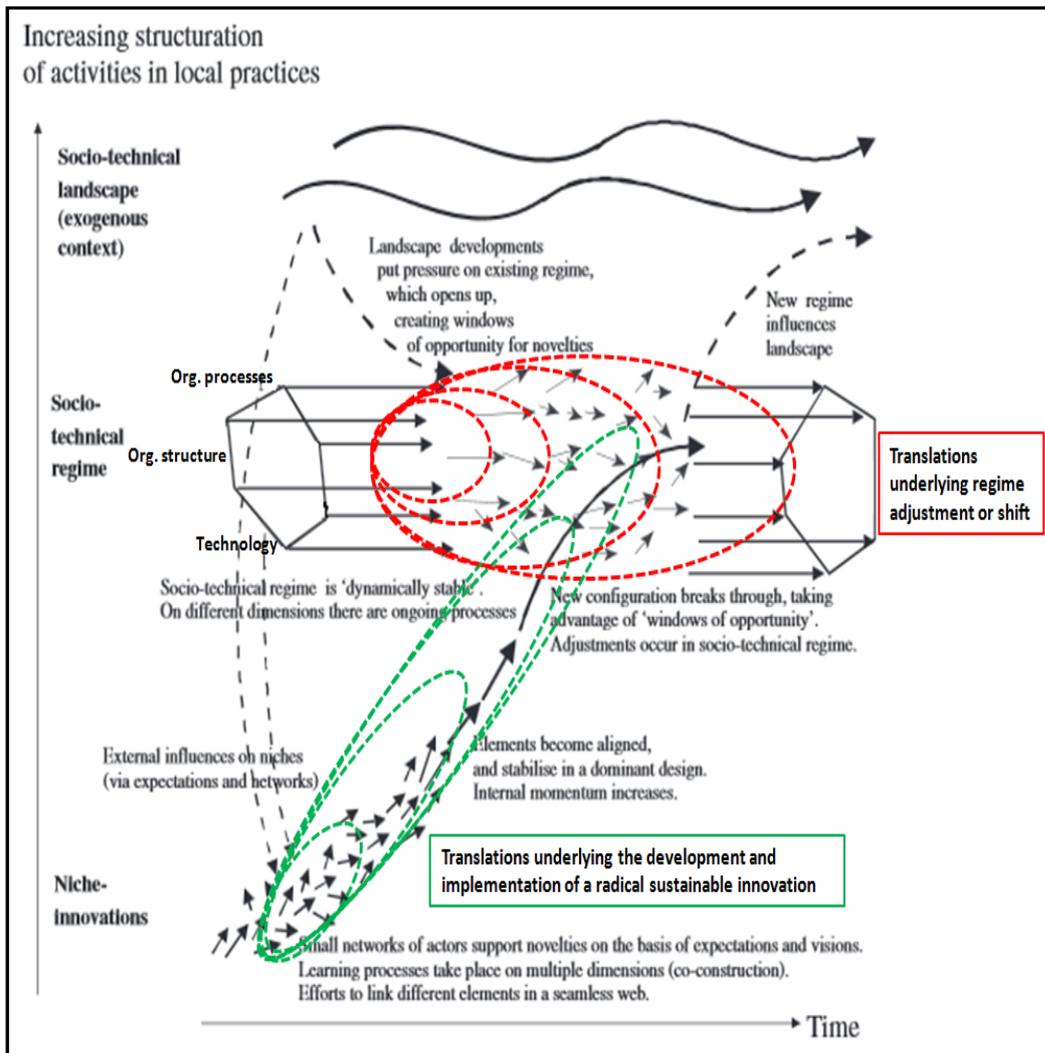


Figure 1: Preliminary conceptual model of strategic change MLP-ANT (adapted from Geels, 2012:4)

From a MLP perspective, a first way to look at the model is to observe the long-term patterns appearing at the three levels.

At the micro-level, niches can be represented by R&D centres or subsidized pilot projects for example where radical innovations are developed by actors in order for the firm to face environmental sustainability considerations. The little arrows at this level go in different directions because a dominant design has not yet stabilized.

The meso regime level is composed of the technology and surrounding elements that are under the firm's control, such as the organizational structure and processes. The organizational structure comprises the activities directed towards the achievement of organizational aims - i.e. the corporate mission, goals and objectives, the strategy, the organizational culture, decision-making practices, the role and responsibilities as well as internal policies, codes and procedures (Duncan, 1972). The organizational processes encompass leadership, supervision, competition, organizational learning, communication and socialization. Those elements are

reproduced and modified by various actors in the firm, at operational, managerial and strategic levels. Socio-technical configurations and relationships are stabilized in socio-technical regimes via rules and established practices. Structure, processes and technology go through on-going incremental adjustments, represented by the long straight arrows. Each of those dimensions is linked and co-evolves with the others in the regime but each element also has its internal dynamics represented by shorter diverging arrows.

The macro landscape level represents the wider context that is beyond the firm's control, such as the political and legal environment, the economic environment, the technological environment or the socio-cultural environment. They are represented by fat long arrows in the model and evolve slowly. They may put pressure on the regime.

Long-term patterns at those three levels are thus "seen as an effect of social interactions within semi-coherent rules structures that are recursively reproduced and incrementally adjusted by interpretive actors" (Geels, 2012: 505).

Another way to look at the model is to analyse the linkages between developments at multiple levels.

Changes at the landscape level may influence the niche level. Radical energy-efficiency-oriented innovations might become possible thanks to some external technological improvements or thanks to some state subsidies. The landscape can also put some pressure on the regime. Indeed, complying with regulatory pressures such as the ISO 50001 norm asks the organization to use energy more efficiently through the development of an energy management system. This might create some tensions in the regime. In turn, these tensions may create some windows of opportunity for radical innovations to break out of the niche level. However, this might be challenging because regulations and infrastructures are aligned to the existing technology (Geels, 2012). Changes and adaptations of some dimensions of the regime trigger changes in another element over time and account for the reconfiguration of regimes. Then, new regimes can influence the landscape. Radical energy efficiency innovations may influence competitors to also adopt an environmental sustainability strategy and stay in the competitive race.

The idea that connections between social and technological elements provide stability is particularly emphasized in ANT (Latour, 1991). From an ANT perspective, we aim at understanding actors' dynamics and interactions at each level but also in between levels. In particular, Geels (2010) asserts that further research should investigate the interactions between stable networks such as existing socio-technical systems and emerging networks such as the niche-innovations. Brass et al. (2004) highlight the importance of investigating cross-level network phenomena too. Therefore, further investigation should be done on the concept of agency and the role

played by power and politics (Smith et al., 2010). The same authors define agency in the transformation of socio-technical regimes as “the ability to intervene and alter the balance of selection pressures or adaptive capacity” (Smith et al., 2005: 1503). This requires political, economic and institutional power, which is a product of social and technical relations.

On the model, we show how translations take place at each level via the four interrelated steps of ‘problematization’, ‘interestment’, ‘enrolment’ and ‘mobilization’ that develop around environmental sustainability issues (cf. imbricated circles in Figure1). Those translations establish a link between heterogeneous elements and lead to the creation of new actor-networks (at niche level) or the re-configuration of existing actor-networks (at regime level) as the firm evolves through different stages of change related to the need to deal with new environmental requirements. The internal and external environmental pressures mentioned earlier create a controversy among actors at the regime level, requesting a re-appraisal of the way environmental sustainability initiatives should be integrated in the technology. As explained by Brass et al. (2004: 807), “(...) events exogenous to networks can either reinforce or loosen structure (...) in intraorganizational (...) networks”. Technology is contextualized in the social domain (Paredis, 2011: 22). A particular design and meaning stabilizes through a process of interaction between groups having different needs and values. Through time, niche-actors create networks that gain in knowledge and legitimacy and become bigger. Hence they also become more powerful and their spokesmen can play a role in enrolling and further mobilizing actors at the regime level. Hence, the four steps of translation help us understand how socio-technical regimes move from stable to unstable to stable configurations again through time.

7 Discussion

Interesting insights can be drawn from the interlinkages of the MLP model and ANT as they provide us with complementary visions of the way to approach a strategic organizational change such as the socio-technical transitions to environmental sustainability. Socio-technical change is described by Geels (2002: 1259) as a process of “shifting assemblies of associations and substitutions”. Change in one element of the network can therefore trigger change in other elements of the same network or a different one. Our preliminary conceptual model allows looking at those changes both from a micro and a large scale perspective and hence, remembering that environmental sustainability is a complex, multidimensional and interconnected subject. Even if our model focuses on the organization, Brass et al. (2004: 808) show that these interrelations go beyond the borders of the organization:

Understanding network change requires understanding cross-level pressures. Networks themselves are embedded in larger contexts (...), and to understand how the networks change, analysts need to understand the larger contexts. Individuals work within departments or work units, work units are parts of larger organizations, and organizations are parts of industries. Changes taking place at the industry level have repercussions at the organizational, work-unit, and individual levels, and vice versa.

However, this model remains fairly complex and further studies would allow for in-depth analyses of the various dimensions, dynamics and patterns at stake. In particular, an empirical study would help refine and validate the model.

8 Conclusion

In this paper, we have developed a preliminary conceptual model that can be used to show both the micro-level dynamics and the macro and meso level patterns involved in socio-technical transitions to environmental sustainability at an organizational level. We have mobilized the three levels of the multi-level perspective model and the four steps of translation of the actor-network theory and shown how they complement each other and allow for a contextualist analysis of the strategic organizational change generated by the introduction of such environmentally-oriented requirements inside the organization. Future research could address the empirical applications of this model in a technological organization, in particular through looking at the drivers and constraints to the diffusion and acceleration of green innovations both at individual and organizational level, as well as the destabilization of existing regimes.

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Energiewende – Utilities’ New Business Models for Distributed Renewable Energy Generation

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Abstract

European utilities have been faced with major changes over the last two decades. The highly regulated, monopolistic market is now mostly liberalized and distributed renewable energy generation (DREG) has become widespread. Electricity from renewables even has priority in the grid and is supported by feed-in-tariffs in order to realize the “Energiewende”. This situation challenges the classic utilities’ business model (UBM) of power generation in centralized, large-scale power plants and additional business models (BM) for DREG seem vital. We framed morphological fields for developing new BMs for small-scale DREG. Using this, the results of our qualitative real-world BM research, and the literature base, we present five new utilities’ BMs for mass and individual customers. These BMs are focused on optimized energy solutions for the customers and suitability regarding market potential and utilities’ capabilities.

Keywords

Business Model, distributed renewable energy generation, renewable energy technologies, Energiewende

1 Introduction

Today, “Energiewende”²³ is the synonym for the process of successful conversion to renewable energy and the phase-out of fossil and nuclear energy. However, it is not only a European phenomenon; some 120 countries around the world have policies that support renewable energy and most of them are developing countries (REN21 2013). Nevertheless, opinions are divided and the term has become an emotive word,

²³ The term “Energiewende” goes back to the 1980’s and a publication of the German Öko-Institut (Krause et al. 1980) which drew scenarios for growth and prosperity without oil and uranium.

not only in public discussion, but even more so in the electricity sector. The European utilities have been facing major changes in their markets and environment throughout the last two decades. The formerly very regulated and monopolistic market situation was completely changed by the EU-directive on energy market liberalization. Further major drivers of change in the energy sector were the EU's "20-20-20 Goals" and the "EU Roadmap 2050" that started paving the way for a broad diffusion of renewable energy in the EU ("Energiewende"). These directives led firstly to the unbundling of the production and electricity distribution business from grid ownership and grid operation and secondly to the rise of DREG systems. During the last few years, the situation of the utilities has become increasingly complicated. Electricity from distributed, renewable energy plants (wind power, photovoltaics, etc.) has priority in the grid and is also supported by feed-in-tariffs. The big power plants have to be operated under partial load for long periods and therefore do not reach their full efficiency and earnings. Consequently, the classic utility business model (UBM) of producing electricity in large-scale, centralized plants and selling it over long distances to the customer is seriously challenged.

In this paper we address the questions of how utilities can survive the "Energiewende" and even benefit from the diffusion of renewable energy, which roles utilities can play in a combined centralized-distributed electricity generation, and which BMs could be suitable for small-scale DREG.

Therefore, we introduce the major challenges for the utilities and their BM: (1) the development targets for renewable energies, (2) the cost pressure and aging of conventional power plants, and (3) the change of customer interests and their bargaining position in Chapter 2. Afterwards, we present our qualitative research approach of developing BMs via morphological fields (Chap. 3), give a short overview of the literature on BMs and business model innovation in the electricity sector and illustrate the results of the real-world BM research (Chap. 4). In Chapter 5 we present the outcome of our analysis: Firstly, a generic approach for developing BMs based on distributed, renewable energy technologies (business model morphology) and secondly, five BMs for the utilities in the field of small-scale DREG. Finally, we discuss the results and address limitations (Chap. 6)

2 Challenges for European Utilities

2.1 Development Targets for Renewable Energies

In December 2008, the EU Parliament agreed on a package with measures on climate protection and renewable energy promotion, called "20-20-20-Goals" (Directive 2009/28/EC). One of these goals is to increase the amount of renewable energy by

20 % (of the primary energy), which is to be attained by 2020. Another driver of change in the field of renewable energy usage is the “EU Roadmap 2050” confirmed on March 8, 2011. It discusses the feasibility and challenges of an 80 % greenhouse gas (GHG) reduction objective (based on 1990’s level) and presents practical scenarios and solutions. The authors estimate an increase of electricity consumption in Europe (including Norway and Switzerland) of about 40 % (based on 2010), reaching 4,900 TWh per year. The share of renewable energy in the energy mixes should be between 40 % and 100 % (ECF 2010).

The political vision of the future of renewable energy has led to a broader usage of renewable energies in the electricity sector and this amount of renewable energy promises to increase even further. This results in an ongoing change to the utilities’ business environment. Electricity from renewable sources (distributed renewable energy plants of micro- and small-scale, as well as large-scale wind-power and PV-parks) has priority in the grid. But the volatility of their generation (wind and solar volatility) results in two problems: (1) balancing the demand with the generation and (2) operating the conventional power plants in part load. To address the first problem, the role of generation forecasts for renewables becomes increasingly important; a new capability for grid and power plant operation, and electricity trading is needed (Graebner & Kleine 2013). The second problem is closely connected: When the renewable power plants start producing, the conventional power plants have to reduce their output. For the utilities this results in more part load phases, more starting and shut-down cycles, more wear and tear and at the same time less efficiency and revenue per year. These two problems are becoming more serious the more renewable energy is produced.

2.2 Cost Pressure and Aging of Conventional Power Plants

If the large, conventional power plants have to be operated under partial load or shut down for longer periods, they do not reach their full efficiency and their specific electricity production costs (€/kWh) rise. At the same time, the day-ahead trading prices for electricity at the power exchanges (e.g. EPEX - European Power Exchange in Leipzig) decrease, because of the high amount of nearly zero-cost renewable electricity²⁴ (Kemfert 2013; Graebner & Kleine 2013). This puts pressure on the fossil power plants, and many modern and efficient combined-cycle gas turbine plants (CCGT) are switched off, because the conversion of gas into electricity is too expensive. However, this is not only a current problem, but also one that will reach into the future. The energy efficient and lower GHG-emitting power plants have overly high production costs (without even taking carbon capture and storage technology into

²⁴ Trading prices orient themselves traditionally to variable cost per kWh (e.g. fuel costs)

account). For this reason, only amortized, old, “dirty”, difficult adjustable and less efficient coal power plants or amortized hydropower plants are able to compete. This in turn raises other specific problems: the aging power plants (e.g. Germany, UK, France) and the phasing out of nuclear power plants (e.g. Germany) (Kemfert 2013). Hence, the utilities lose their amortized production capacities and are not able to operate their newer CCGT plants economically. Thus, their BM of centralized electricity production in big plants is seriously challenged.

2.3 Change of Customer Interests and Their Bargaining Position

The biggest goal of the liberalization of the electricity market was the stimulation of competition. However, initially, this was not achieved, because in some states a regulatory authority was missing or had a weak position (e.g. Germany, France), therefore the monopolies changed mainly into oligopolies (Kemfert 2013, p.44f). Thus, the consumer did not see any price competition or price advantages, and their interest in changing the electricity supplier was low. However, with the upcoming renewable energies the situation changed. More players entered the electricity sector; we now have owners and operators of renewable power plants of different sizes (from a few kW up to MW) and we have both electricity traders and of course the traditional utilities as key players. This deconstruction phenomenon is leading to more fragmented competition (Schoettel & Lehmann-Ortega 2011). The former end consumer is today often a producer himself (“prosumer”), who actively participates in the energy marketplace. Consequently, the bargaining position of the utilities is weakened. The prosumer’s main motivations for an investment in an own home power plant are (1) the desire for independence, (2) environmental awareness, (3) technology affinity, (4) energy affinity and (5) the image of the utility (Fischer 2003, p. 323; Leenheer et al. 2011). But this is not only true for owners of private houses; townspeople living in flats also use the possibilities of economic citizen’s participation models to become shareholders of e.g. a local solar park. However, not only the end consumer is going his own way, but also the smaller business consumer in commerce, trade and small industry now has a more emancipative bargaining position. Consequently, this situation requires adapted approaches in end consumer marketing of utilities, creative and sensible offers (e.g. energy services) and new value proposition in order to stay in business.

3 Methodology

This paper is the outcome of a joint project with partners from academia and a large Austrian utility, which is engaged in the business areas of electricity, gas and district heating. The company has a yearly revenue of about 1.4 billion Euros, making it

medium size in international comparison (Richter 2011). They have already gained some experience in DREG, but they want to establish a broader, more systematic approach in this field. Thus, we are interested in possibilities for integrating small-scale DREG units (< 250 kW) into the value creation and proposition of utilities.

Our intention is firstly to present a generic tool for the development of BM for small-scale DREG and secondly to present a number of BM for mass customers and for individual customers. Therefore, we investigated the BM situation of utilities worldwide, which are using renewable energy technologies at micro- or small-scale level (< 250 kWel). We focused on wind power, photovoltaics, hydropower, and combined heat and power generation plants (internal combustion engine, gas turbine, Stirling engine, fuel cell and biomass gasification). In order to explore real-world BMs in this field, we applied the business model canvas (Osterwalder & Pigneur 2010) as a framework. The selection has been carried out according to practical criteria, namely clear visualization, possibility to recombine the BM elements and good transferability into the utility partner's daily business. We followed the theoretical sampling approach (Strauss & Corbin 1998) and analysed different textual content belonging to the companies (homepages, product info folders, offers, blogs, etc.). Then, we combined the outcome with the results of the literature research on business model innovation (BMI) in the renewable energy sector to develop a specific morphological field scheme (Zwicky & Wilson 1967). Morphological fields have already been used to structure and analyse BMs in other sectors (Lay et al. 2009). Our morphological fields were fed with criteria derived from the widespread qualitative real-world BM analysis (n = 11). For validation we applied a recursive improvement and refining process based on two intensive workshops with the sales representatives of our project partner (also responsible for the firm's BM development). All these insights were integrated into the morphology, which gives a comprehensive overview of specific BM characteristics and their expressions for the application with distributed renewable energy BMs for utilities.

4 Business Models in the Electricity Sector

4.1 Theoretical Framework

Business Models' Origins, Definitions, and Conceptualizations

The first reference to the term business model dates back to the 1950's (Bellman et al. 1957). Especially since the expansion of internet businesses it became widely used in media, business and science, but it is still unclear what BMs are and what for they should be used (Günzel & Krause 2013; zu Knyphausen-Aufseß & Meinhardt 2002). Even the rising number of scientific and non-scientific publications did not change

much about this lack of clarity (Zott et al. 2010; Ghaziani & Ventresca 2005). Another problem is that different scholars writing about BMs do not mean the same thing (Linder & Cantrell 2000; Osterwalder et al. 2005). Because of the disagreement about BM definitions, many different conceptualizations exist. Overviews of them are presented by various authors (Rauter et al. 2012; Bieger & Reinhold 2011; Wirtz 2011). Here, we only want to give a short impression of the range of conceptualizations over the last ten years (see Table 1). In our study we followed the definition of Osterwalder & Pigneur (2010, p.14) (“[...] a *business model describes the rationale of how an organization creates, delivers, and captures value.*”) and their “Business Model Canvas” to describe and analyse the basic elements of BMs (Table).

Table 1: Business Model Concepts (adapted from Rauter et al. 2012)

Author	Definition	Elements of the Business Model
Osterwalder & Pigneur (2010)	„A business model describes the rationale of how an organization creates, delivers, and captures value.”	<ul style="list-style-type: none"> • Customer Segments • Value Propositions - Bundle of Products and Services that create Value for a specific Customer Segment • Channels - How a Company communicates with and reaches its Customer Segments to deliver a Value Proposition • Customer Relationships - Types of Relationships a Company establishes with specific Customer Segments • Revenue Streams - The Cash a Company generates from each Customer Segment (Costs must be subtracted from Revenues to create Earnings) • Key Resources - Describe the most important Assets required to make a Business Model work • Key Activities - Describe the most important Things a Company must do to make its Business Model work • Key Partnerships - Describes the Network of Suppliers and Partners that make the Business Model work • Cost Structure - Describes all costs incurred to operate a Business Model

Continued from Table 1

Hamel (2000)	Business concepts and business models are composed of the same building blocks - a business model is nothing more than a business concept converted into practice.	<ul style="list-style-type: none"> • Interface to the Customer <ul style="list-style-type: none"> - Execution and Support - Information and Insight - Relational Dynamics - Price Structure • Core Strategy <ul style="list-style-type: none"> - Business Mission - Product/Market Scope - Basis of Differentiation • Strategic Resources <ul style="list-style-type: none"> - Core Competences - Strategic Assets - Core Processes • Value Creation Network <ul style="list-style-type: none"> - Suppliers - Partners - Alliances
Bieger & Reinhold (2011)	A business model describes the basic logic of how an organization creates value. Thereby, the business model determines, (1) what an organization offers, that is of value for customers, (2) how values are created in an organizational system, (3) how created values are communicated and transferred to the customers, (4) how the created values in form of revenues are “captured” by the company, (5) how the values are distributed inside the organization and to shareholders, and (6) how the basic logic of the creation of value will be further developed to ensure the sustainability of the business model in the future.	<ul style="list-style-type: none"> • Value Proposition <ul style="list-style-type: none"> - Type of Value Proposition - Tangible and intangible Products, Services or a Combination • Value Creation <ul style="list-style-type: none"> - Fulfillment of Value Proposition for the Customer • Value Communication and Transfer <ul style="list-style-type: none"> - Type of Exchange with the Customers - Transfer of Services • Value Capture <ul style="list-style-type: none"> - The Way how Revenues of the created Value flow back • Value Dissemination <ul style="list-style-type: none"> - The Way Values or Earnings are distributed inside the Company and to Capital Providers as well as other Stakeholders • Value Development <ul style="list-style-type: none"> - Dynamic Aspects of the Business Model

Business Model Innovation

The uncertainty about BM definitions continues in the field of business model innovation (BMI). BMI can be seen as a process (Liedtka & Meyer 2009; Osterwalder & Pigneur 2010) or as a result of a BM-change. The object of innovation is also defined differently; some see BMI as an innovation of one (Sinfield et al. 2012), two or more BM-elements (Lindgardt et al. 2009); others argue that BMI stands for the innovation of the complete BM (Steenkamp & van der Walt 2004). For this paper we interpret BMI as the process of improvement and change of at least one element of the BM.

4.2 Background of the Electricity Sector

Utilities find themselves in a special field of tension, because the electricity sector is of high strategic importance for a state and its economy. Thus, the aspects involved in integrating technological innovations and innovative BMs are more complex than in other sectors. The utilities are forced to supply all customers with safe, sustainable, reasonably priced energy in 24/7 operation to fulfill the legal requirements. Therefore, they created a stable system with security of supply as a main goal. Now, the utilities are additionally faced with the emergence of new, disruptive technologies, challenging their BMs. Consequently, delivering value from distributed, renewable energy technologies would often require a real paradigm shift. For utilities with long experience of operating under monopolistic conditions, this can be especially challenging (Nimmons & Taylor 2008). Although some renewables (e.g. central large-scale photovoltaics) are relatively compatible with the traditional BM, others, like distributed, small-scale biomass combined heat and power generation units (CHP), require real BMI. This paradigm shift is not trivial for “large and complex organizations with long and successful history of doing a different kind of business” (Nimmons & Taylor 2008, p.9). But in contrast to the argumentation of many scholars (Frantzis et al. 2008; Nimmons & Taylor 2008; Schoettel & Lehmann-Ortega 2011), some practitioners do not expect the distributed renewables to threaten their current BMs (Richter 2011). This could be caused by cognitive barriers, which restrict new ideas that do not correspond to the current BM (Chesbrough & Rosenbloom 2002; O’Reilly III & Tushman 2004; Richter 2011). So the following question arises: What are the boundary conditions and possibilities for creating BMs for distributed renewable energy generation?

4.3 Status Quo in Business Model Literature and Real-world Business Models

Utilities’ BM in Literature

Until now, DREG-units have generally been owned and operated by private or small business investors. The utilities’ role is limited to providing the connection to the grid for transmitting the electricity surplus that is not used locally. The utility limits itself to a passive role that simply fulfills the legal requirements. With a growing diffusion of DREG-units, they lose market shares and revenue. But not only that: Busnelli et al. (2012) see a very high reduction potential of the domestic energy demand from the grid, because of different technological innovations (the energy saving nature of buildings and electric devices, energy management, distributed generation). In the most dramatic scenario, the grid demand will decrease to 13% of what it was in 2010 by the year 2020. Thus, engagement in DREG seems vital. Consequently, a growing

interest in BMI (Rauter et al. 2012) and in particular BMI in combination with renewable energy technologies can be seen. Some of these publications focus on BMs for specific technologies like photovoltaics (Nimmons & Taylor 2008; Graham et al. 2008; Schoettel & Lehmann-Ortega 2011; Allan & Trivedi 2011; Busnelli et al. 2012) and others describe the differences between the classic UBM and new, customer-oriented BMs and possible combinations (Watson 2004; Sauter & Watson 2007; Richter 2012). In the following paragraphs we highlight a few papers, which are of particular relevance to small-scale energy units.

Sauter & Watson (2007) combine the spectrum of consumer's roles with the utility's roles in installation and operation of small-scale distributed generation. This results in three alternative deployment models ("Plug and Play", "Company Control" and "Community Microgrid"). The "Plug and Play" scenario is based on the willingness of the consumer to invest and operate a micro-scale unit to become partly independent of the utility. The "Company Control" scenario assumes that the utility operates a fleet of micro-generators in order to substitute a large, central power plant (virtual power plant). The consumer provides the site, but has only a passive role. Within the third model "Community Grid", consumers and institutions of a smaller geographical region build a microgrid of small-scale generation units and operate them. They have control over their units and are responsible for balancing production and demand in the grid. These deployment models span a field of possibilities, where the utilities may find their roles as partner for distributed energy supply of the future.

Richter (2012) provides "two generic business models for renewables energies" based on the actual research results. The first is the "utility-side business model" based on the operation of large-scale units (PV, wind power, biomass plants > 1 MW), which is quite similar to the classic BM and the existing core competences (project management, administration of power plants). The second one is the "customer-side business model", which enables the customer to become a producer as well. It is suitable for micro- and small-scale units that are located on the property of the consumer. These circumstances result in a variety of uncommon value creation possibilities for the utilities. They are in the unusual situation of redefining their roles and value proposition, which can range from "simple consulting services to a full-services package including financing, ownership and operation of the asset" (Richter 2012, p.2486).

Busnelli et al. (2012, p.50f) suggest an engagement of utilities in the distributed energy market, because of a high substitution potential of energy savings and distributed energy generation. They present four BMs for utilities: Distributor (leverages customer relationship to distribute energy efficient products and services), After-sales specialist (provides different maintenance services), Lead generator (provides leads to other companies which provide energy efficient product or services

for a fee) and Aggregator (single point of contact for the customer, which provides full range of products and services). The authors sketch the BM more than they outline them in detail, but they provide a feeling of possible alternatives to the classic UBM.

So, the basic possibilities and most important boundary conditions for BMs in distributed energy supply have already been sketched but details for operation and examples in practice are rare. What we can see clearly is that some of the possible activities in the distributed energy business are closely linked to diffusion of infrastructural systems and technological improvements (e.g. smart meters, smart grids, information systems, storage systems) as well as third party partners providing services that are not related to utilities' consisting core competences (e.g. financing, installation, maintenance).

Overview of Real-world BM

The second main source for the development of our BM morphology is research on established real-world BM. We identified 11 different firms from the electricity and gas sector that operate BM for renewable energy generation mostly on small-scale level (Table 2). The analysed companies are operating all over the world; most of them are located in Europe, but even firms from the USA and Japan were taken into consideration. Table 2 gives an overview of these real-world BMs and their four basic characteristics: the customer interface, the value proposition, the infrastructure management and the financial aspects (cf. business model canvas). The BMs are spanning a wide field of possibilities, which we tried to include in our morphology for BM development.

Table 2: Real-world Business Models in Distributed Renewable Energy Generation

Company	BM	Country	Technology	Customer Interface	Value Proposition	Infrastructure Management	Financial Aspects
MEA-Solar	"PV zum Null-Tarif"	AUT	PV	One-family and multiple dwelling, hotel industry, agriculture	Facility belongs to the MEA-Solar during 13 years; after which it is transferred to the customer without cost (financing through feed-in tariff)	Know-how (market and technology), manpower (consulting, operation, service and sales), facility and financing	PV system financed through the feed-in tariff.
Sungevity	"Solar-Lease"	USA	PV	One-family dwelling	Sungevity plans, installs, finances (through leasing) and services PV facility.	Know-how (market and technology), manpower (consulting, operation, service and sales), facility and financing	End customer pays contracting fee and reduces his energy costs
Linz AG	"Sonne Rein"	AUT	PV	Mass customers	Planning, construction and operation of big PV-parks, which are financed through a participation model	Know-how (technology), project management, operation, service	Financing through participation model (private persons invest and get a yearly interest rate)
British gas	"Solar PV"	GBR	PV	One-family dwelling	Planning, installation and servicing of a PV facility. Focus on up/cross-selling to reach synergies with other business lines	Know-how (market and technology), manpower (consulting, operation, service and sales), facilities	Facility provision and maintenance
EnVersum	"MiniVersum"	GER	CHP	Multiple dwelling, hotel industry, trade and small industry	Heat and power is provided thanks to a combustion engine. Facility belongs to EnVersum, that delivers the primary energy carrier as well as heat (no obligation from end customer to buy the produced electricity)	Know-how (operation, market, technology) and power, heat, service/insurance, planning and installation, ownership/contracting, operation	Partial facility provision + monthly contracting fee (primary energy carrier and servicing included); Heat and power invoiced separately.
Wels Strom AG	"Minikraftwerk"	AUT	CHP	Hotel industry, agriculture, trade and small industry, municipalities	Turnkey projects (consulting, planning, installation, operation and servicing/maintenance; even incl. financing partner)	Know-how (operation, market, technology), consulting, planning, installation service/insurance	Consulting, operation, servicing/maintenance, facility provision
Tokyo Gas	"Ene-Farm"	JPN	CHP	One-family dwelling, flat	Compact fuel cell+thermal storage unit run by natural gas that produces heat and power. Tokyo gas sells and installs the facility and delivers primary energy carrier and heat (electricity can be fed-in or consumed in-place)	Technology and market know-how. Technology partner.	Facility provision, primary energy carrier and heat delivery
Grazer Energie Agentur	"Integriertes Energie-Contracting"	AUT	All	Multiple dwelling, hotel industry, trade and small industry, municipalities	Facility contracting financed through the savings resulting from improvements in the supply-side (use of renewable energies) as well as in the consumption side (optimization of the buildings,...)	Know-how (operation, market, technology), primary energy carrier, power, heat, service/insurance, consulting, planning and installation, contracting, operation	Contracting fee covering investment, operating costs, and consumption-related costs (primary energy carrier,...)
Alpen Adria Energie	"Abnahme modell"	AUT	All (PV, wind)	Owners of small-size generating facilities (single dwellings, agriculture, hotel industry,...) based on renewable energy	AAE purchases "green-electricity" from existing facilities (Abnahme), feeds it into the network and resells it. Furthermore AAE covers in-place the demand the own facility is not able to satisfy	Know-how energy management	Base fee and output-related fee
San Diego Gas and Electricity	"Sustainable Communities"	USA	All (PV, Fuel cell, wind)	Multiple dwelling, hotel industry, trade and small industry, municipalities	SDG&E installs, operates and services a heat and power generating facility in a private-owned building (whose owner rents the space and benefits of having a "green image") but on its side of the counter. The heat is consumed in-place and the electricity is fed-in into the network.	Planning, project management, operation, service/maintenance (possibly through a contractor). Energy management and financing.	Feed-in, output-related fee
Yello Strom	"Spazähler"	GER	-	Single dwelling, flat	Yello Strom offers variable tariffs for customers that use the "smart counter" (which enables to track and control electricity consumption) and are supplied by the company.	Energy management, sales and marketing	Customer retention, output-related fee

5 Findings

The results were twofold: Firstly, we developed a generic tool for BM development based on morphological fields, to define BMs in the field of small-scale DREG. Secondly, we applied this tool to develop five specific BMs for a medium sized utility in Austria.

5.1 Business Model Morphology for Small-Scale Distributed Renewable Energy Generation

We used the morphology as an approach to structure and present the constitutional elements of BMs and their variants. Approaches based on morphological fields have already been used for BMs in other industries (Lay et al. 2009; Kley 2011). We followed Osterwalder's & Pigneur's (2010) conceptualization of BM and developed the expressions for the characteristics by analyzing the existing generic BM concepts and real-world BMs. The results were recursively discussed in workshops with the project partners to create the final morphology (see Figure 1). Osterwalder's & Pigneur's (2010) conceptualizations were bundled to four characteristics (see Figure 2), easier understandable and applicable for the daily business of our utility partner. We want to explain the choice of the most important characteristics and their expressions in detail.

Customer segments: For the micro- and small-scale distributed energy generation, we distinguish between mass customers (B2C) and individual customers (B2B) and point out different possibilities for each group (Figure 1). As we are discussing distributed energies not only in the context of electricity supply but also in the context of heat supply (e.g. micro combined heat and power units - CHP) new business possibilities are arising which combine these two. Thus, they are of special interest for combined heat and power generation as well as dual- or poly-technological energy generation systems (combination of e.g. PV, biogas combustion CHP and electrical storage). The municipalities play a special role in this context. They typically have a pool of different buildings (heat and energy demand), and they also operate different kind of public facilities (water and wastewater treatment plants, dumps, local heat networks etc.) that could be integrated with energy recovery or waste-to-power systems into an overall distributed energy concept. Especially, if they want to follow the trend of regional energy autarchy, they would need integration partners to set up a sustainable local energy system. This could be provided by a utility.

Characteristic	Subcharacteristic	Expression								
Customer Interface	Customer segments	Mass Customers			Individual Customers					
		One-family dwelling	Flat	Agriculture	Trade and small Industry	Multiple dwelling	medium-sized Property	Hotel industry	Municipality	Local heat network
	Distribution channels	Own					Partner			
		Sales force		Online		Events		Partner stores	Online	
Relationships	Customer acquisition			Customer retention			Upselling			
	Personal assistance	Key Account	Automated	Personal assistance	Key Account	Automated	Personal assistance	Key Account	Automated	
Value Proposition	Products and services	low complexity			medium complexity			high complexity		
		Power	Heat	Service / Maintenance	Insurance	Consulting	Provision of facilities	Planning and Installation	Ownership/ Contracting	Operation
Infrastructure Management	Key activities	Energy management	Primary energy carrier management	Risk pooling		Consulting	Facility sales	Project management	Facility administration	Facility operation
	Key resources	Know-how			Manpower				Facility	Financing and Funding
		Operation	Market	Technology	Consulting	Operations	Services	Sales		
Key partners	IT companies	Agents / consultants	Financier	Facility manufacturers	Installers	Operators	Service partners			
Financial Aspects	Revenue model	Product-related			Product- and service-related			Service-related		
		Feed-in	Base rate	Output-related fee	Facility sale	Facility contracting	Performance contracting	Consulting	Operation	Service/Maintenance/ Insurance
	Cost structure	IT costs	Infrastructure costs	Primary energy carrier	Total facility costs	Shared facility costs	Consulting	Operation	Service/ Maintenance/ Insurance	Sales and Marketing

Figure 1: Business Model Morphology for Small-scale Distributed Renewable Energy Generation

Value proposition: We present these in an order of rising complexity (Figure 1). The supply of power and heat, as well as providing service & maintenance and insurances for plants can be seen as extensions of the actual BM with low complexity. The required economies of scale for service & maintenance could make additional customer acquisition necessary. But also a partnership with a service company could be possible. At the level of medium complexity we classify technical consulting, provision of facilities, planning and installation (turnkey projects). Provision of facilities stands for a model, where the customer can make a choice from a number of preselected standard plants, sold and installed by a number of local partners for an attractive price. The responsibility of installation lies in the customers' hands. We assign Ownership / Contracting and Operation to a level of high complexity due to the fact that it encompasses the complete responsibility for planning, financing, installing and operating over the whole life time.

Key activities: Here, we point out the activities that differ greatly from the current ones (Figure 1). The most important competences are related to the operation of large numbers of distributed energy devices (facility operation and energy management): We understand demand dependent controlling of the plants, capacity forecast, virtual power plant (VP) operation and the optimized fitting of energy supply to the individual demand (planning of energy systems) as well as the primary energy carrier

management (biomass, biogas logistics) as significant activities for successful BM operation.

Key partners: The utilities have to build up new competences or need to choose the right partners for offering DREG-BMs. Which capabilities should be developed in house and which should be provided by a partner depends on the individual competence base of the utility and the addressed BMs. We provide an overview of the relevant partners (Figure 1).

5.2 Business Models for Small-scale, Distributed, Renewable Energy Generation

In our study we worked out several BM suggestions and now present these, which could be generally applied in the electricity sector. During the project we took a closer look at different renewable technologies and evaluated their technological and economic potential as well as analysing different customers and generated customer profiles. The customer profiles and the technology evaluation act as “filters” for developing BMs based on the input of the BM morphology, the already existing real-world BMs and BM-literature (Figure 2). Consequently, five BMs are presented in Figure 3. For the BM development we took specific technologies (PV, wind power, CHP, etc.) and technology combinations into consideration. We suggest two BMs for mass customers and three BMs for individual customers. These shall be explained in more detail.

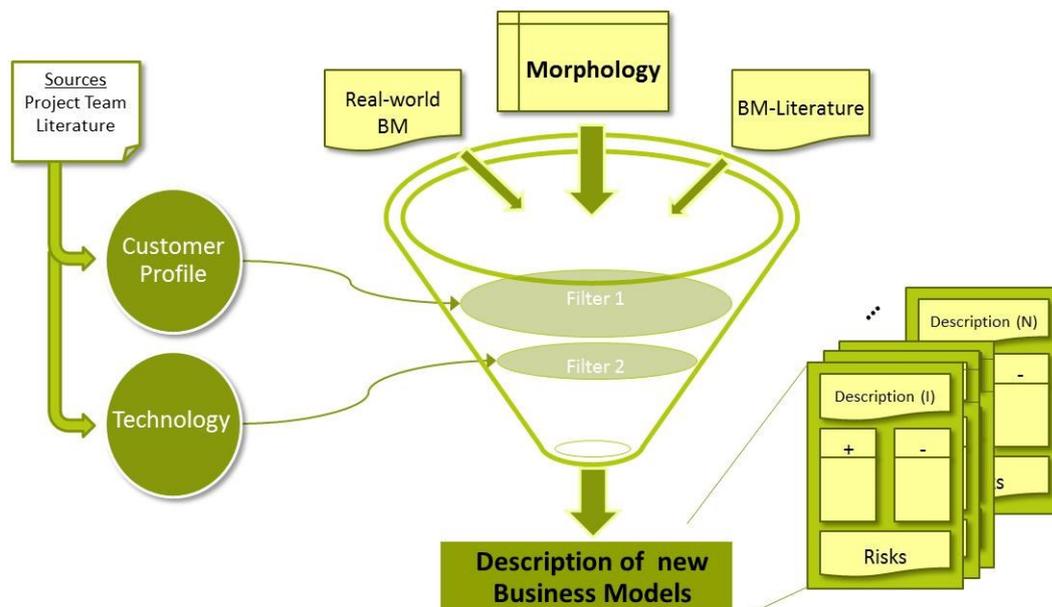


Figure 2: The Project’s Business Model Development Approach

BM 1 Combined Heat and Power Plant Contracting: This BM is based on the financing of a biomass/biogas fueled CHP plant by a contracting model. The customer pays for the obtained heat and power from the CHP plant operated by himself on his site. The costs for installation, fuel, service and maintenance are included in the price. Thus, the utility gets a long contractual binding with the customer and also reaches economies of scale in primary energy carrier management (purchase and logistics). With regard to the plant operation we distinguish between a customer operation at the first level and an automated VP operation variant at higher complexity level. In addition to the technical capabilities, new capabilities in financing and primary energy carrier management would be needed.

BM 2 Fuel Cell Contracting: This model focuses on customer segments with a higher technological or ecological awareness and the willingness to use a high-tech-device for their heat and power supply. It is also based on a contracting model but the utility provides a full service, including operation, because of the system's technological complexity. For the VP operation the system should integrate a large thermal storage for buffering the produced heat to allow for an electricity optimized output. For this BM a multi-technology system could be possible (FC + PV + electrolyzer (H₂ as buffer material)).

BM 3 Complete Service Package: This model includes all services from energetic analysis and adequate planning of the energy system, to project management and installation up to operation, monitoring and maintenance. Additionally, consulting activities in the legal, financial and economical field could be offered. However, the package's composition needs to be arranged with the customer individually. The potential customers are companies operating medium-sized properties, multiple dwellings, trade and small-industry as well as municipalities.

BM 4 Heat Intensive: We developed BM 4 for individual customers with a high heat demand and who also produce biomass waste and waste heat (e.g. small or medium timber processing industry, horticulture, commercial laundries). The BM has two basic variants: Firstly, a variant where the utility acts as planner, installer, electricity and additional primary energy carrier supply partner and secondly, a complete service variant (based on plant contracting) with an electricity and heat supply contract (additional contracts for taking the purchase of waste heat or biogas into account). The aim is to set up a distributed multi-technology energy supply system optimized for energy efficiency including storage and energetic waste (heat) usage.

BM 5 Power Intensive: This BM is a concept for electricity intensive businesses in the field of trade and small-industry as well as commerce. We are thinking of firms operating machine tools, production and handling equipment, but also firms that need process heat mainly powered by electricity (e.g. metal-working industry) as well as

bakeries, or department stores and supermarkets (cooling and lighting). For these businesses the energetic consulting and planning is the basis for a solution with two variants as in BM 4. The usage of waste heat should be addressed in the planning phase. The main advantage for the customer is the optimization of the firm’s energy system and the reduction of electricity purchase through self-production.

Business Model / Technology	Mass Customers		Individual Customers		
	BM 1	BM 2	BM 3	BM 4	BM 5
	Combined Heat and Power Plant Contracting	Fuel Cell Contracting	Complete Service Package	Heat Intensive	Power Intensive
Combined Heat and Power Plant	✓		✓	✓	✓
Fuel cell		✓	✓		
Small Wind Turbine			✓		
Small Hydro Power			✓		
Photovoltaics			✓	✓	✓
Thermal Storage		✓	✓	✓	✓
Electric Storage		✓	✓		

Figure 3: Small-Scale Distributed Renewable Energy Generation Business Models and their Technology Fit

6 Discussion

Despite the challenges, there are significant opportunities for utilities to capture value from innovations in the distributed energy systems. With these five BMs the utilities could extend their classic BM and grow closer to the customer, activate their role as energy partners and consequently support customer loyalty. We are of the opinion that the mass customer market involves greater complexity and more cost drivers (e.g. maintenance of hundreds of single plants) which makes it harder to reach margins. However, energy intensive firms in trade, small-industry or commerce and municipalities seem to be interesting customers, for this broader range of services. We favored those BMs with the highest overall energy efficiency and sustainable potential. For this reason, we do not present solutions where the utility acts more as a bridging partner for other vendors to bring their product and services to the customer. Some of our BMs will require the leverage of existing capabilities and resources into new areas (e.g. small project management, individual consulting); others will necessitate exploring new capabilities to successfully enter unfamiliar businesses (e.g. VP operation, installation and maintenance resources).

We see the presented morphology and the BMs as a concrete answer to the challenges of the classic UBM. It will be necessary to find new ways of staying in business. Thus, we suggested alternative approaches to providing customer's benefit with services around the optimization of their individual energy system and DREG-plants. However, success will not only depend on the right capabilities and partnerships presented in this paper, but also on the ability "to approach the challenge in a systematic fashion, informed by an understanding of the full range of available options" as Busnelli et al. (2012, p.50) have already noticed.

Finally, three important limitations need to be considered. First, the search for real-world BMs was rather straightforward and not very systematic. We started a broad search on the Internet based on blogs, company homepages, and media articles. But in combination with the profound literature research we are convinced that we suggested a very comprehensive overview of expressions of BM characteristics to use this morphology for the starting phase of BMI. Second, we focused on the BM development phase of the project in the Austrian energy market, where there are some peculiarities in comparison to other European countries. Austria's amount of renewables is already very high (about 65 %) because of the traditional use of large-scale hydropower. There has also never been any use made of nuclear power. The electricity sector consists of only one big transmission grid owner and the large utilities in Austria are of medium size in comparison to other European countries and do not operate single power plants of many Gigawatts. Additionally, the mind-set of the electricity sector is not as opposed to renewables as is the case elsewhere. Third, we were not able to economically proof our suggested BMs in the project. The situations are very customer and project specific as well as utility specific. Thus, the BMs have to be calculated individually and may not be economically feasible in some contexts.

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Corporate Social Responsibility in the German Poultry Sector: Analysing Public Preferences with Adaptive Conjoint Analysis

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Abstract

Empirical research has highlighted a growing gap between public perceptions of livestock farming and practical agriculture. In this regard, media have played an important role in affecting public preferences regarding livestock farming and the focus of societal debates. Companies strive to meet the expectations of society in order to safeguard their future “license to operate”. One way to describe companies taking action to meet the expectations of the wider society is the concept of corporate social responsibility (CSR). For this study, we refer to Carroll’s pyramid model of CSR, which considers firms’ economic, legal, ethical and philanthropic responsibilities. An adaptive conjoint analysis is carried out to explore societal preferences with regard to CSR activities of firms producing chicken meat in Germany. The results show that respondents mostly prefer activities that specifically relate to the product and its production process (i.e. livestock farming). Aspects of CSR management that more generally address business operations are less preferred with regard to economic, legal and ethical responsibility. With respect to the philanthropic aspects of CSR, the respondents favour strong obligations to employees as a sign of a firm’s commitment to the local population. The empirical results have interesting implications for companies in the livestock business and, more generally, for companies which are the focus of public controversy.

Keywords

Adaptive Conjoint Analysis, Agribusiness, Consumer Preferences, CSR, Livestock Production

1 Introduction

In Germany the consumption of poultry has been rising continuously since 2001. In 2011 per capita consumption was at 11.2 kg per year; it is expected to rise to 16 kg per year by 2030 (Federal Statistical Office, 2008; Spiller et al., 2010; BVDF, 2013). The consequence of this growing demand is increasing production; the production volume for poultry was 1.4 million tons in 2010. Today, with a share of 58 %, chicken meat accounts for the largest proportion of German poultry production; this paper focuses on the chicken sector (Federal Statistical Office, 2011; Veauthier and Windhorst, 2011).

The German market for chicken is characterized by oligopolistic structures and dominated by vertically integrated enterprises. PHW-Gruppe Lohmann & Co. AG, Sprehe Feinkost GmbH & Co. KG, Gebrueder Stolle GmbH and Rothkoetter Unternehmensgruppe hold a market share of 75 % of the total revenue (CR₄: 4.2 € bn) (afz, 2012; Niemann, 2012). Improvements in breeding, chicken husbandry and management have increased efficiency in chicken production, leading to lower production costs compared to those involved in the production of beef or pork. The industry demonstrates a high potential for future competitiveness as well as the ability to meet future demand from the German market (Veauthier and Windhorst, 2011).

However, livestock farming has become a focal point for public debate. Growing urbanization is accompanied by an increasing alienation of society from the realities of agricultural production (Albersmeier and Spiller, 2008; Böhm et al., 2009). The high complexity of modern agricultural value chains has caused information asymmetries with regard to the wider public. For a long time, the meat industry has failed to communicate these developments. This situation has been exacerbated by a number of food scandals, thus creating uncertainty for consumers and a loss of confidence in producers and processors (Hierholzer 2010; Spiller et al., 2010; Berk, 2012).

Consumers' psychological perceptions might also explain the gap between public expectations concerning livestock production and actual practices within companies (Albersmeier and Spiller, 2008). Consumer's attitudes are defined by an affective (= emotional), cognitive (= rational) and conative (= behavioural intention) component. These three levels of feeling, thinking and acting frame a consistent construct of attitude (Kroeber-Riel and Weinberg, 2003; Drenger, 2006). In the case of chicken meat this construct relates thinking and feeling to the production process and acting to the intention to buy. There is a negative perception on the part of consumers regarding modern chicken production, but so far neither an additional willingness to pay for meat from alternative sources nor a decline in consumption is apparent in the market. Thus, in this case, thinking and feeling do not conform with behavioral intention and constitute a cognitive dissonance within attitude, whereby the

inconsistent behaviour of consumers can be explained (von Alvensleben, 2003; Kroeber-Riel and Weinberg, 2003; Blaha, 2004; Lemke et al., 2006). Consumers endeavour to balance the discrepancy. Different strategies, such as ignoring or blocking information, are used. For example, it has been scientifically proven that modern livestock farming has a positive influence on animals' health. Yet, production systems from centuries past, which do not meet current standards or hygiene requirements, are desired (Festinger, 1957; Blaha, 2004). In this regard, the media have played a significant role in affecting public preferences and influencing preeminent topics in societal debates. Complex topics are accessible for the general public through reporting. Through highlighting essential information and breaking down complex context, these issues could become generally understood, providing a basis for future reporting (Entman, 1993; Semetko and Valkenburg, 2000).

Nonetheless, there is a risk of growing resistance from society to chicken producing companies. For example, protests against building new chicken barns or initiatives promoting animal welfare are accompanied by political debates and could in turn influence companies to take responsibility for their actions (Berk, 2012; Niemann, 2012). One way to describe companies taking action to meet the expectations of the wider society is the concept of CSR. For this study, the understanding of CSR refers to Carroll's (1991) pyramid model, which recognizes four classes of responsibility: economic, legal, ethical and philanthropic (cf. Section 2) (Carroll, 1991; Heyder and Theuvsen, 2012). CSR is rather new for companies in German agribusiness, but it may offer potential as a positive influence on companies' reputations (Heyder and Theuvsen, 2009a).

Thus, the central question of this paper is to evaluate which CSR activities are most preferred by society to meet their demands concerning companies' commitments to taking responsibility. It is our goal to determine, on the basis of Carroll's (1991) pyramid, which CSR activities related to the four responsibility classes are most favoured. Likewise, the question arises whether there are thematic key aspects (i.e., issues discussed in the media or shareholder concerns) which can be used to categorize CSR activities.

The article is structured as follows: A brief overview of the theoretical framework for the analysis is presented in Section 2, as followed by the study design and statistical evaluation in Section 3. In Sections 4 and 5, the sample description and the results of the survey are set out. The study concludes with a discussion in Section 6 and an outline of management implications, study limitations and the need for further research in this field in Section 7.

2 Theoretical Framework

The concept of CSR has been a scientific issue since the 1950s, when the concept of CSR was first defined and described (i.e. Bowen, 1953; Davis, 1960; Carroll, 1999). But even today, a common definition of or, rather, consensus on CSR has not been found (Dahlsrud, 2008). As stated above, in this article the definition of CSR follows Carroll's (1991) pyramid.

The spotlight of public attention has only recently come to shine on agribusiness-related aspects of CSR; hence, research is scarce so far (Heyder and Theuvsen, 2012). Studies of CSR have focused more on other sectors than on agribusiness (e.g. Brown and Dacin, 1997; Berens et al., 2005). Scientific analyses with respect to food tend to be applied to CSR from a consumer perspective (i.e. Hartmann, 2011; Rommelspacher, 2012; Hartmann et al., 2013). Studies with a managerial focus on CSR have found that it offers potential for companies in the agribusiness sector as it can have a positive influence on their reputation (i.e. Maloni and Brown, 2006; Heyder and Theuvsen, 2009a). This applies particularly to the chicken-producing sector, whereby some companies already take social responsibility or have implemented a CSR strategy, for example PHW-Gruppe Lohmann & Co. AG and Rothkötter Unternehmensgruppe emphasize issues like environment and transparency in production process or for their employees.

Companies are striving to meet the expectations of society, as influenced by the mass media, in order to maintain trust and consumer confidence, justify their corporate actions and assure acceptance by the wider society – in other words, companies seek to safeguard their future “license to operate” (Röttger and Schmitt, 2009). The assumption of responsibility by a company seeking to build or boost trust can be seen as an exchange process between the company and society. Figure 1 represents this process, which will be explained in the following.

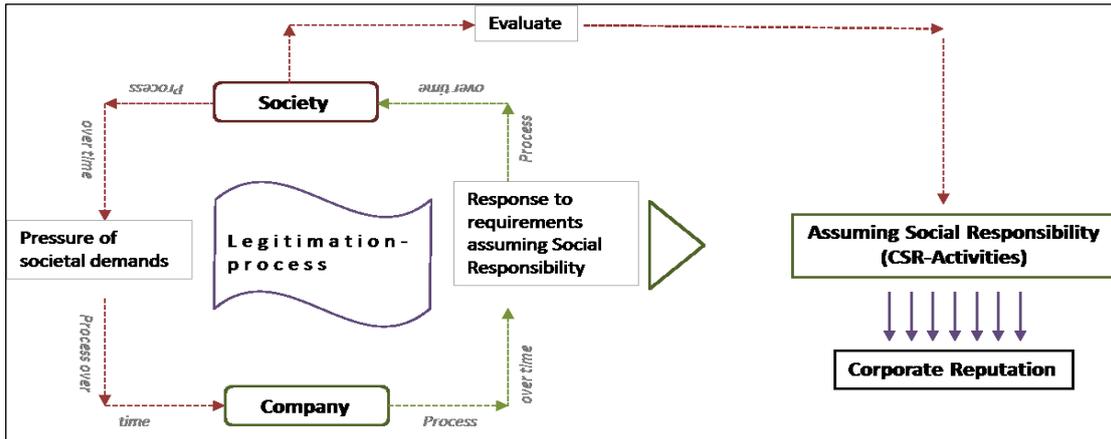


Figure 1: Legitimation process between society and companies resulting in companies taking social responsibility; Source: Authors' illustration based on Carroll, 1991; Suchman, 1995; de Quevedo-Puente et al., 2007.

Society's expectations and demands and companies' attempts to address these concerns are leading to a legitimation process of the businesses' actions. Issues and demands as well as norms and values are changing over time so that this exchange process never leads to consensus. As a result, all a company's actions executed to take social responsibility are evaluated by society. The result again influences the company's reputation (Carroll, 1991; de Quevedo-Puente et al., 2007; Heyder and Theuvsen, 2012).

The following focuses on designing concrete measures for taking responsibility for society based on Carroll's (1991) pyramid model of CSR as shown in Figure 2.

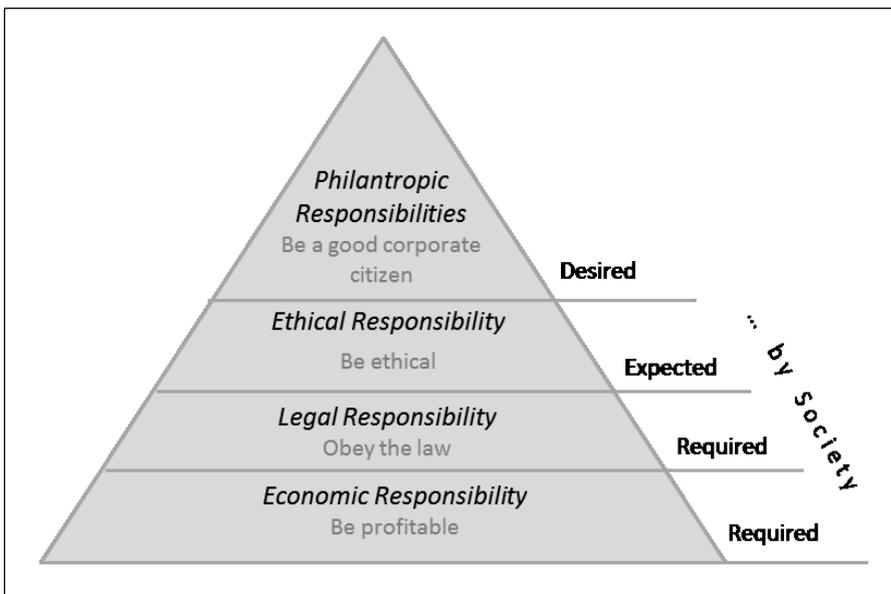


Figure 2: Carroll's CSR pyramid; Source: Authors' illustration based on Carroll, 1991

A company is said to take social responsibility when the four classes of economic, legal, ethical and philanthropic responsibility are met (Carroll, 1991; Heyder and Theuvsen, 2012). Thus, social responsibility is based on economic and legal responsibility. Long-term profit is required by society, as is acting within the law. Ethical responsibility concerns norms and values within society. It is expected by society that a company complies with these requirements and that it is sanctioned by society if it does not do so. The philanthropic responsibility class is at the top of the pyramid; companies that use their resources to support the local community are seen as “good corporate citizens”. These commitments are desired (rather than required) by society, and a company is not sanctioned in the event that it defaults (Carroll, 1991).

3 Methodology

3.1 Study Design and Sample Characteristics

In order to answer the research question, we applied an adaptive conjoint analysis (ACA) to evaluate preferences. The general premise of ACA methodology is that a subject contains a number of attributes and attribute levels. For each CSR activity, a part-worth utility is calculated, from which the respondent’s preference can be derived. A composition combining a CSR activity with the highest part-worth utility for each responsibility class provides the highest total utility (Baier and Bruschi, 2009). It is the aim of this study to evaluate which CSR activities are preferred and which are less favoured. Thus, it is not our goal to identify the combination of activities – one from each responsibility class – with the highest utility. The four responsibility classes from Carroll’s (1991) pyramid comprise the attribute used to describe CSR. Through an extensive literature analysis, we explore 24 CSR activities which can be used to delineate each responsibility class²⁵.

Participants in the survey were recruited with the help of a private panel provider based on pre-defined quota criteria to verify a representative sample of the German population. The study was carried out in February 2013. In an online panel, 250 selected respondents answered the questionnaire, 126 males and 124 females. Of the respondents, 39% have a Certificate of Secondary Education and 32% a General Certificate of Secondary Education, while 29% finished school with an advanced technical college or university entrance qualification. Five age groups are defined: 21% of the respondents are between 18 and 29, 18% are between 30 and 39, 24% are between 40 and 49, 21% are between 50 and 59, and 16% are 60 or older. These demographic details as well as the geographic distribution of the participants

²⁵ All CSR activities are presented in the appendix.

throughout Germany assure a representative sample based on data from the Federal Statistical Office (2012).

The study was held online and included three sections: 1) demographic questions concerning age, income, living arrangements and origin, 2) an ACA section comprising four steps to capture respondents' preferences and 3) specific questions about CSR knowledge and the respondent's attitude toward and relation to agriculture or food production. The questionnaire contains mostly closed questions. The design of the ACA is explained below.

3.2 Analysis

The online survey was designed with the software ACA 8.2 from Sawtooth Software. The ACA includes four steps. In the first phase respondents evaluate all CSR activities for each responsibility class. On a 7-point Likert scale, ranging from "important" to "totally not important", respondents rate their preferences for each attribute. In the second step, the importance of each attribute (namely the responsibility classes) is captured. This step also takes into account the evaluations of the attribute levels in the first step. The best and the worst are presented and rated on a 7-point Likert scale from "the first activity is extremely important" to "the first activity is totally unimportant". The third step – the paired comparison – is 14 pages long. Each page contains two columns, one on the left and one on the right composed by the computer based on respondents' answers from step one and two. In the first seven pages, two CSR activities are provided, and in the last seven pages, there are three. The computer estimates compilations between respondents should be indifferent. In the last step, interviewees receive three packages, each containing one CSR activity from each responsibility class. The first compilation represents a combination of activities the respondent prefers least, the second represents what they favour the most based on an evaluation of steps one to three, and the third contains CSR activities with utilities that lie in the range between the two. The interviewees state to what extent each combination fulfils their expectations by assigning a percentage. This verifies the consistency of their answers (Reiners, 1996; Harth, 2006; Dietz, 2007; Sawtooth Software, 2007).

Before analysing the sample results, the preference data from the ACA need to be estimated with the Hierarchical Bayesian method in SSI Web 8.2. Afterwards, they are merged with the survey results and analysed using IBM SPSS Statistics 21 (Sawtooth Software, 2006; Baumgartner and Steiner, 2009). The part-worth utilities for the CSR activities are estimated for each individual. To be comparable, the part-worth utilities need to be normed using the zero-centered-diffs method. The utilities are centered on zero and ranged in this study from -44.62 to 39.77. These part-worth utilities are significant based on metric scaling as long as one of the utilities for a specific CSR

activity is twice the number of another. The value in this case is twice the number. Thus, the utilities indicate how much the CSR activities are preferred. Therefore, a negative value does not mean respondents would refuse this CSR activity but that the others would be preferred (Harth, 2006).

The statistical analysis was carried out using IBM SPSS Statistics 21. To characterize the sample, the descriptive statistics as frequency distribution, means (μ) and standard deviation (\pm) are used (Backhaus et al., 2008).

4 Results

In this section, the answers of all 250 respondents are analysed and tested for their consistency. First, preferences for the CSR activities within the four responsibility classes are described, followed by a comparison of all level attributes, namely the CSR-activities.

Figure 3 depicts the median utility²⁶ values for the CSR activities of the economic responsibility class.

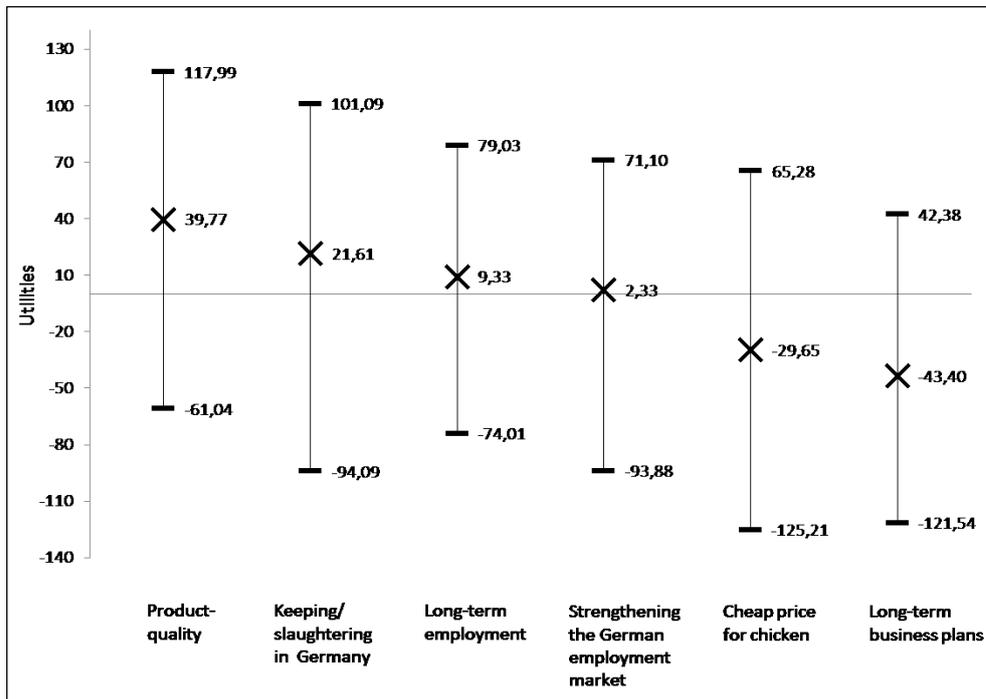


Figure 3: Median of the CSR activity utilities with maximum and minimum range within the economic responsibility class

²⁶ Utilities for all CSR activities are presented in the appendix.

The commitment of an agribusiness company producing chicken meat concerning “product quality” ($\mu = 39.77 \mid \pm = 28.51$) and “keeping and slaughtering of the chickens in Germany” ($\mu = 21.6 \mid \pm = 32.66$) is most preferred within the economic responsibility class. Less preferred are activities such as “cheap prices for chicken meat through the use of modern manufacturing” ($\mu = -29.65 \mid \pm = 34.65$) and “long-term business plans for a strong market position and to increase profit” ($\mu = -43.4 \mid \pm = 26.9$).

Within the legal responsibility class, company activities concerning “avoid prohibited substances in chicken meat as dioxin or antibiotics” ($\mu = 17.36 \mid \pm = 21.95$) are most preferred by the respondents.

In Figure 4 the median utility values for the CSR activities of the legal responsibility class are shown.

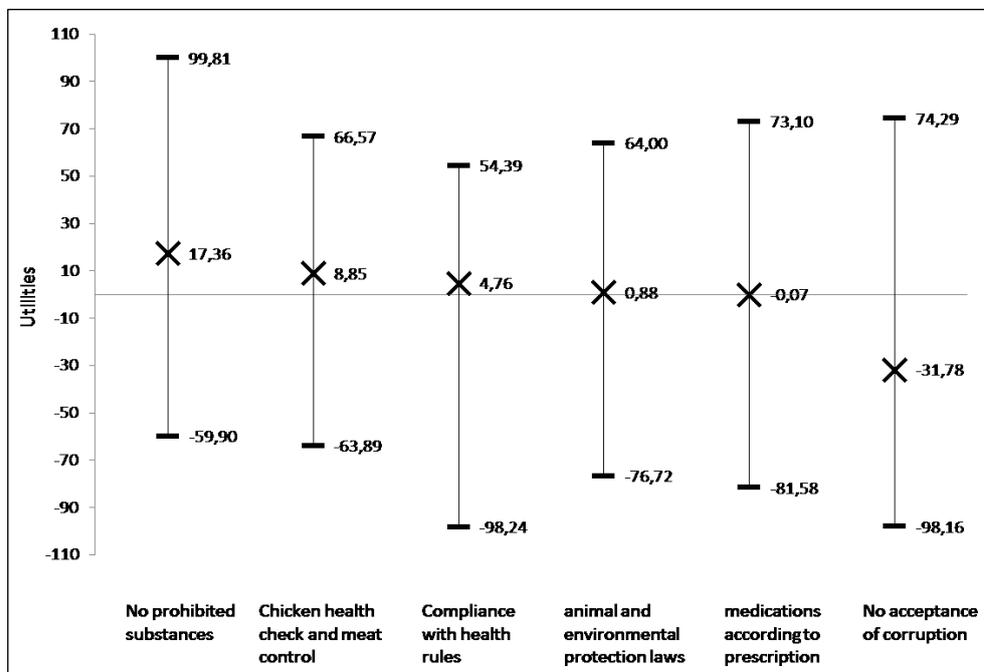


Figure 4: Mean of the CSR activity utilities with maximum and minimum range within the legal responsibility class

In the second position, “the chicken health check and meat control by a veterinarian” ($\mu = 8.85 \mid \pm = 21.8$) is assigned half as much value as the first CSR activity, “no prohibited substances”. The least preferred activity within the legal responsibility class in comparison to the other commitments is “prevention of corruption” ($\mu = -31.78 \mid \pm = 32.48$).

The median utility values of the third responsibility class, ethical responsibility, are highlighted in Figure 5.

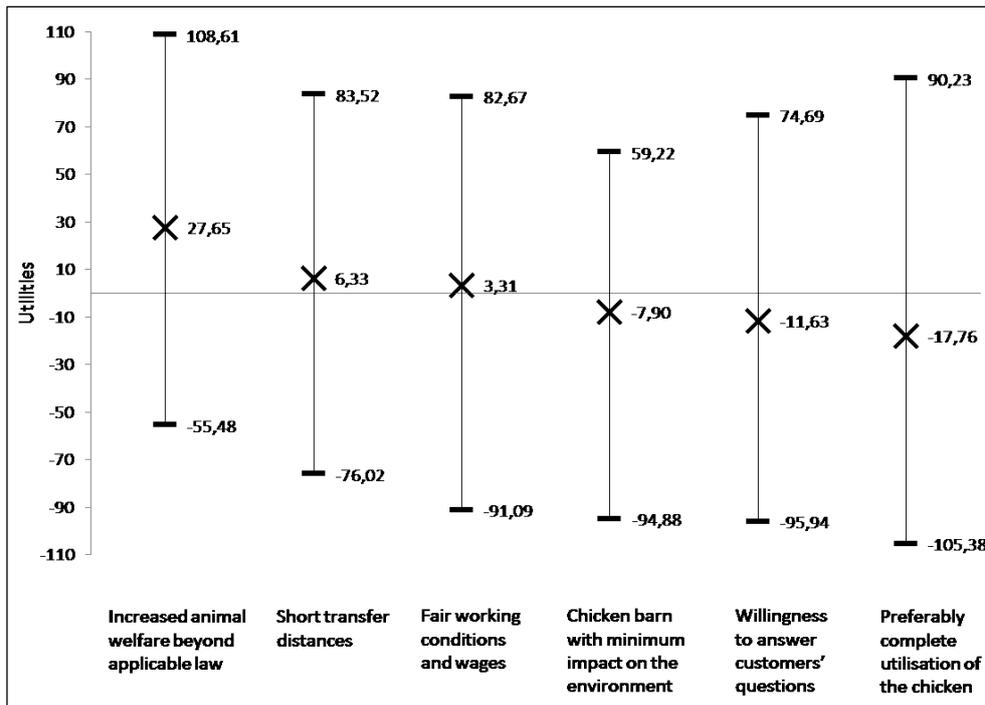


Figure 5: Mean of the CSR activity utilities with maximum and minimum range within the ethical responsibility class

This figure clearly shows that a commitment to “increasing animal welfare beyond applicable law” ($\mu = 27.65 \mid \pm = 28.35$) has by far the highest value for the respondents on the ethical level. Obligations concerning the production process, in this case “the preferably complete utilization of the chicken” ($\mu = -17.76 \mid \pm = 37.29$), are less favoured.

Respondents assign “support of employees in returning to work after illness or pregnancy” ($\mu = 27.92 \mid \pm = 24.8$) nearly the same value as to “assistance of employees in education and trainings” ($\mu = 24.18 \mid \pm = 21.88$).

An overview of the median utilities of the CSR-activities within the responsibility class concerning philanthropic aspects is shown in Figure 6.

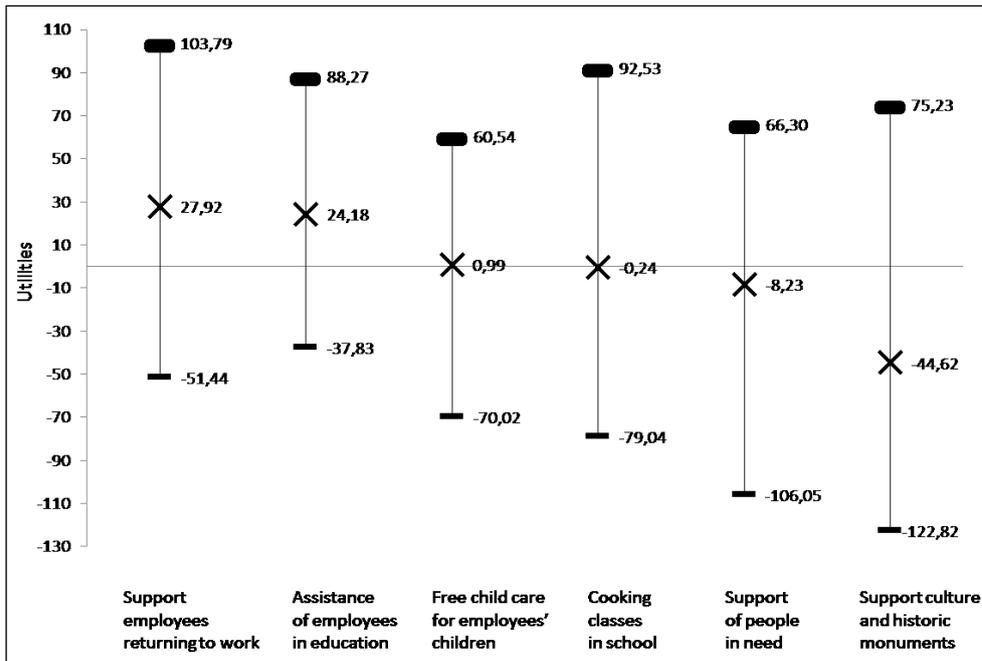


Figure 6: Median of the CSR-activity utilities with maximum and minimum range within the philanthropic responsibility

“Support of culture and historic monuments” ($\mu = -44.62 \mid \pm = 30.44$) is viewed less favourably than other CSR activities in the philanthropic responsibility class.

The values of the utilities within the responsibility classes are shown above. In the next step, we compare all 24 CSR activities. As explained in Section 3.2 the utilities are normed using zero-centered-diffs method, so it is possible to compare all attribute levels without reference to the responsibility classes (cf. BLW, 2007).

Figure 7 and 8 show the CSR activities for all the attributes. The two groups with the most (Figure 7) and least (Figure 8) preferred activities are defined.

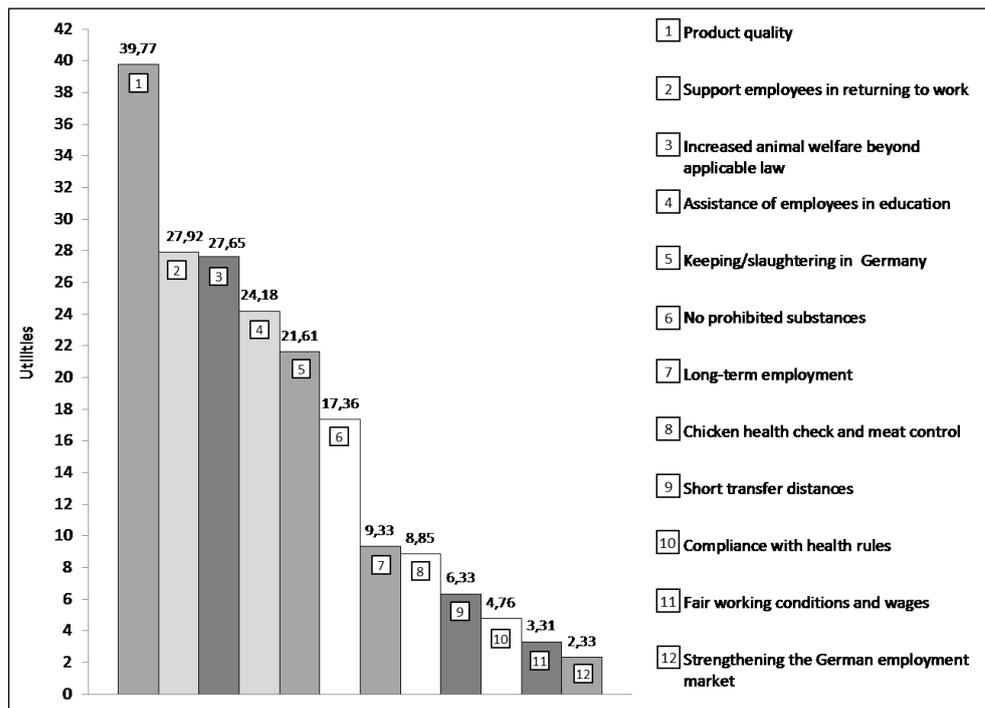


Figure 7: Most preferred CSR activities

The activities in the economic responsibility class (cf. CSR-activity 1, 5, 7, 12) fall into the top category, followed by three activities from the legal (cf. CSR activity 6, 8, 10) and from the ethical (cf. CSR activity 3, 9, 11) responsibility class. From the philanthropic responsibility class, two activities also fall into the category of the most preferred CSR activities (cf. CSR activity 2, 4). For instance, respondents value the commitment that “chicken meat has the quality consumers appreciate” as the most important of all CSR activities. “Support employees in returning to work after illness or pregnancy” and “increase in animal welfare beyond applicable law” are, by only a small margin, in second and third place.

Figure 8 shows that the group of less preferred CSR activities.

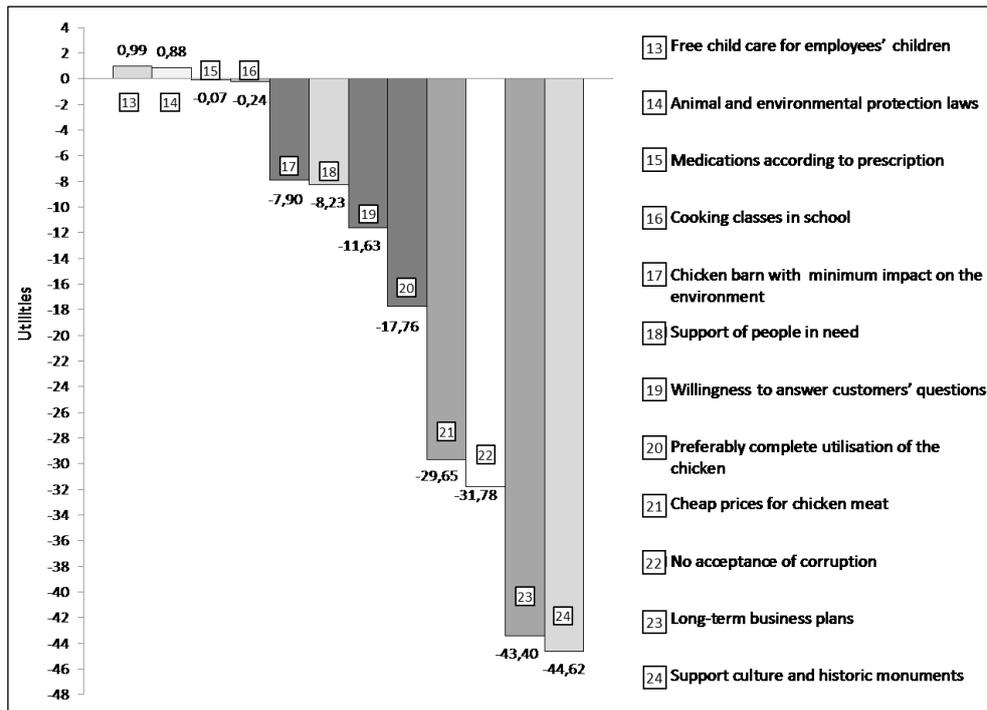


Figure 8: Less preferred CSR activities

As shown in Figure 8 the group of less preferred activities contains mostly activities from the philanthropic (cf. CSR activity 13, 16, 18, 24) responsibility class. CSR activities from the economic responsibility class are represented least (cf. CSR activity 21, 23). The two least preferred activities in this survey are commitments to “long-term business plans to gain a strong market position and maximize profit” and “support of culture and historic monuments”.

5 Discussion

The benefit of CSR for companies in agribusiness is meeting the requirements of the public in a proactive way (cf. Heyder and Theuvsen, 2009b). Ultimately, this led us to ask the questions which CSR activities undertaken by chicken meat producers are most preferred by society and whether core areas result from respondents focusing on issues that are subject to public controversy.

In this study, we found that commitment to product quality and to keeping and slaughtering of chickens in Germany were most preferred by our respondents. Activities regarding economic performance and competitiveness are less preferred (cf. Maignan, 2001), as seen in Figure 8. On this point, it is clear that the interviewees answered mostly from the consumer perspective, whereas aspects of corporate planning might be of greater interest to shareholders.

The relevance and influence of the media on the societal debate becomes apparent within the legal responsibility class (cf. Kayser et al., 2011). Traces of antibiotics or dioxin in feeding stuffs or products and resistance to antibiotics are essential key words in the media (cf. Die Zeit, 2012; Focus, 2012). In the legal responsibility class, the respondents considered the fact that prohibited substances like dioxin or antibiotics are not contained in chicken meat most important. Issues which do not directly affect the interviewees or might be perceived as less relevant in German agribusiness, such as avoidance of corruption, are less preferred, as seen in the economic responsibility class.

In the ethical responsibility class, commitment to humane treatment of live animals and good working conditions were most important. As seen here, preference for CSR activities also depended on factors such as the respondent's sector and role in the supply chain or on degree of public controversy surrounding a given issue, as discussed above (cf. Herpen et al., 2003; Albersmeier and Spiller, 2008).

In the philanthropic responsibility class, respondents preferred support of employees and the local community most. Supporting employees in returning to work after illness or pregnancy and in education and trainings were particularly favoured. Support of culture and of historic monuments was preferred less than other activities in this class. Respondents may consider the commitment of chicken companies more relevant to other issues, such as respondents' own concerns, or they may not connect cultural obligations of this sort with companies in this sector (cf. Schoenheit et al., 2007). But cultural engagement is also a part of a company's societal context (Carroll, 1991).

6 Conclusions and Limitations

In this study, preferences in German society for different CSR activities were evaluated. As Schoenheit et al. (2007) also found, it was shown in this survey that the general population is less interested in a company's comprehensive commitment to society. In the case of taking responsibility, people prefer individual commitments that are important to them. CSR activities that do not affect respondents directly (e.g. long-term business plans to gain strong market position and maximize long-term profit than short-term profits) are preferred less. Three action spaces were derived from these findings and evaluated as shown in table 1.

Table 1: Possible action spaces and related CSR activities for German chicken companies

Concerning public controversy	Concerning personal interest	
	Concerning consumption	Concerning working conditions
No prohibited substances, such as dioxin or antibiotics, in the chicken meat	Chicken meat has the quality I appreciate	Long-term rather than short-term employment
Compliance with health rules	Keeping animals and slaughtering poultry takes place in Germany	Availability of apprenticeships and jobs to strength the German employment market
Adherence to animal and environmental protection laws	Chicken health check and meat control by a veterinarian	Support of employees returning to work after illness or pregnancy
Chickens receive medications according to prescription		Free child care for employees' children during work hours
Increased animal welfare beyond applicable law		Fair working conditions and wages for all employees
Short transfer distances from the farm to the slaughterhouse		Assistance for employees in education and training
Cooking classes in schools to provide responsible exposure to food		

Some activities overlap. They relate either to issues concerning working conditions or to public controversies. Where this is the case, they are attributed to the issues to which they mainly relate. The most preferred CSR activities fall into two categories: "society debates" and "personal interest". "Personal interest" is divided into the issues "consumption" and "working conditions".

CSR is not an activity that automatically increases a company's reputation. Nevertheless, apart from profitability and compliance with the norms and values of society, the general public's subjective perception of and emotional stance toward a company are important. The identification of the three action spaces and the CSR activities provides a focus for companies looking to improve their public image. Of course, a CSR commitment needs to be a good match for a company's culture if it is to be authentic, so companies might develop further or more individualized CSR activities on the basis of the evaluated commitments in this study (Sen and Bhattacharya, 2001; Eisenegger and Imhof, 2009; Thießen, 2011). Especially for the large chicken companies in Germany, which regularly find themselves the target of public criticism, CSR offers opportunities for reacting proactively to society's demands. It is, of course, easier for large companies to react to this impetus and to implement CSR activities (Harberberg and Rieple, 2008; Heyder and Theuvsen, 2012).

In conclusion, a CSR commitment is individual to each company; therefore, specific support from government could be useful. Thus, the decision to take responsibility for society needs to be voluntary for each company. Regulation standards or labels could minimize the potential that might arise from voluntary constructive exchange processes with stakeholders. In this regard, guidelines or consultations might be advisable.

Limitations of this study result from the methodology used. It was necessary to restrict the number of CSR activities used in the preference evaluation. These activities were selected by criteria, but a residual risk remains that some CSR activities of personal interest to the respondents were not contained in the choice set. In light of the evidences given in Section 2 that continuous exchange processes and the development of norms and values cannot finally lead consensus on an issue among members of the public, the repeatability of the study may be hampered. In addition, the focus of the study and therefore managerial implications are limited, as it evaluates public preferences only for CSR activities among chicken producing companies in Germany.

Large standard deviations with a range between 21.61 and 34.82 revealed a broad variation in respondents' answers, which cannot be explained through differences in answers within age groups (Backhaus et al., 2008). Therefore, the large distributions led to an assumption of diversity of opinion and of influence from public controversy without consensus (cf. de Quevedo-Puente et al., 2007). For further research, it might be interesting to prove the assumption that respondents' answers are more homogenous with ex-ante segmented groups. In the same way, a more focused view of the preferences of individual stakeholders in chicken companies is advisable. Finally, the evaluation of public preferences for different CSR activities leads to questions relating to the social acceptability of different CSR commitments.

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8 Appendix

Responsibility class and corresponding CSR-activity	Median part worth utility
Economic Responsibility	
Chicken meat has the quality I appreciate	39,77
Keeping animals and slaughtering poultry takes place in Germany	21,61
Long-term rather than short-term employment	9,33
Availability of apprenticeships and jobs to strength the German employment market	2,33
Cheap prices for chicken meat through the use of modern manufacturing	-29,65
Long-term business plans for a strong market position and to increase profit	-43,40
Legal responsibility	
No prohibited substances, such as dioxin or antibiotics, in the chicken meat	17,36
Chicken health check and meat control by a veterinarian	8,85
Compliance with health rules	4,76
Adherence to animal and environmental protection laws	0,88
Chickens receive medications according to prescription	-0,07
No acceptance of corruption	-31,78
Ethical responsibility	
Increased animal welfare beyond applicable law	27,65
Short transfer distances from the farm to the slaughterhouse	6,33
Fair working conditions and wages for all employees	3,31
Chicken barn with a minimum impact on the environment	-7,90
Willingness to answer customers' questions and to make full disclosures about all parts of the production process	-11,63
Preferably complete utilization of the chicken	-17,76
Philanthropic Responsibility	
Support of employees returning to work after illness or pregnancy	27,92
Assistance for employees in education and training	24,18
Free child care for employees' children during working hours	0,99
Cooking classes in schools to provide responsible exposure to food	-0,24
Support of people in need in the local community	-8,23
Support culture and historic monuments	-44,62

Figure 9: Median part worth utility for each CSR-activity

Social performance of the electric utilities industry in the world: an exploration through a composite indicator

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Abstract

The electric utilities industry plays a key role in social and economic development. Nonetheless, most studies on the social dimension of the industry are based on economic theory, treating it from an economic point of view. This study aimed to contribute to a better understanding of the social dimension of the electric utilities industry from a corporate social responsibility point of view through the construction of a composite indicator. Results revealed differences in the social performance of the companies in the industry depending on their geographical zone of operation.

Keywords

Electric utilities, Social development, Composite indicator, Corporate Social Responsibility

1 Introduction

It is almost impossible to imagine daily life in the developed and developing world without electricity. It is used everywhere: light and heat in homes, machinery in industries, public and private transport...Consequently, the electric utilities industry has taken on a crucial role. According to the International Energy Agency (IEA, 2011 and 2010), electricity production worldwide has tripled in the last forty years, and consumption has doubled in the last thirty years.

The impact of the electric utilities industry on the social dimension has been studied in works such as Markandya et al. (2011) and Pearce (2003), among others. These works analyse the social dimension in the industry through what Pena (2009) calls the "economic approach", identifying economic wealth with welfare. Few works have analysed the electric utilities industry and the social dimension from a Corporate Social Responsibility (CSR) point of view, in which not only economic issues prevail, but also quality, equity and ultimately welfare issues (Sacconi, 2011; Rodríguez, 2003).

In this context, the use of composite variables is especially interesting, because they allow different indicators to be aggregated in a single measure, summarizing multidimensional, complex and hard to analyse constructs like CSR, or more specifically, the social dimension of the electric utilities industry.

The aim of this work was to obtain a general picture of the social performance of companies engaged in the production, transmission, distribution and commercialization of electricity and to gain insight on the relationship between this performance and the geographical zone where companies operate. For this purpose, a composite indicator was constructed based on the benefit-of-the-doubt approach (Cherchye et al., 2007). One factor analysis of variance (ANOVA) was applied to the composite indicator to characterize social performance in relation to the geographical zone where the companies operate.

The article is structured as follows. In order to establish the study hypothesis, section 2 discusses the main aspects of the social dimension in the electric utilities industry and how they have been measured. The methodology and data are described in section 3, while the main results are set out in section 4. Section 5 includes the conclusions of the study and suggests future lines of research.

2 Literature review

2.1 The social dimension in the electric utilities sector

Although many social issues are related to the electric utilities industry, they have been relegated to the background, as the industry pays more attention to environmental and economic issues (Schlör et al., 2012; Carrera and Mack, 2010). One of the most extensive works on the social dimension of the electric utilities industry from a CSR perspective is that by Wilde-Ramsing (2009), who strives to outline the social dimension issues related to the industry, especially those related to labour issues.

Numerous studies have found that electricity consumption is closely related to the degree of economic and social development of a country (Shuddhasattwa and Salim, 2011; Odhiambo, 2009). In this context, the social performance of the electric utilities industry is especially relevant, because electricity infrastructures are essential to improving the living conditions of the community. In fact, the term “energy poverty”, which refers to the relationship between access to energy and poverty, has been studied extensively (OECD and IEA, 2010; Takada and Charles, 2007). These studies found a negative relationship between the accessibility and affordability of electricity and poverty. Legros et al. (2009) highlighted that access to electricity in developing countries is indispensable for economic and social development.

Electricity is so important for social and economic development that Tully (2006) stated that the right to electricity should be included in the Universal Declaration of Human Rights. As developing countries need electricity for their socio-economic development, Human Rights in the electric utilities sector are particularly important in these countries, and power companies are the first to deal with the frequent violations of Human Rights occurring in those jurisdictions (Valor, 2007).

The electric utilities industry has traditionally been considered strategic for a country’s development due to its high costs and technological dependence (Gratwick and Eberhard, 2008; Doms and Dunne, 1995). As a result, the geographical zone of operations of the companies has been limited to national borders. Although the liberalization of the sector has led to the internationalization of the powerful companies in the industry (Gratwick and Eberhard, 2008; Masters, 2004), many companies limit their operations to highly localized geographical areas.

Consequently, electric utilities companies play a major role in the social and economic development of the area in which they operate, especially in developing and emerging countries. Thus, companies operating in developing and emerging economies will have a high social performance. The following hypothesis is established:

Hypothesis: The social performance of the electric utilities industry companies will be higher in developing and emerging geographical zones than in developed geographical zones.

To test this hypothesis, a composite indicator for measuring company's social performance is constructed. Then, the variance of the scores of the indicator through different geographical zones is analysed.

2.2 Measures of social performance in the electric utilities sector

Few publications have attempted to measure CSR or the social dimension in the electric utilities industry, not because less attention is paid to social and environmental issues, but because the term sustainability is commonly used instead of CSR. Therefore, in the literature review sustainability and CSR are considered equivalent terms. This is perfectly understandable and feasible since they both have a common basis (Montiel, 2008; Dentchev, 2007), which is to ensure a company's viability not only in economic terms but also in environmental and social terms.

Roca and Searcy (2012) highlighted the great diversity of indicators used to report CSR issues in the electric utilities sector. Among the efforts made to assess companies' social performance are works aimed at standardizing the measurement of CSR in the electricity sector, which consists mainly of a collection of a set of indicators considered representative of the outcomes of the electric utilities industry on the economic, social and environmental dimension (see Table 1) and studies which use various CSR indicators selected according to pre-established goals (see Table 2). In both cases, indicators are considered a useful tool for communicating information on the results of the industry, as well as a tool which promotes institutional dialogue (Vera et al., 2005).

The works listed in Table 1 and 2 show that the measurement of the social dimension in the electric utilities industry is clearly limited. Most studies have used a macroeconomic approach in which data are analysed and evaluated by countries, not by companies. More attention is paid to socio-economic issues, such as jobs created in the industry or electricity consumption per capita, while purely social issues, such as Human Rights, the impact of electricity infrastructure on the community or workplace issues are often not addressed.

Table 1: Set of CSR indicators for the electric utilities industry

Set of indicators	Studies	Issues covered	Number of indicators				
			EC	SOC	MA	OTR	Total
Helio International Sustainable Energy Watch (SEW) indicators (Helio International, 2000)	Taviv et al. (2009), Spalding-Fecher (2003)	<ul style="list-style-type: none"> - Atmospheric emissions - Electricity accessibility and affordability - Renewable energies - Energy intensity- Relationship with institutions 	2	2	2	2	8 ^a
Energy indicators for sustainable development (EISD) (IAEA et al., 2005).	Streimikiene et al. (2007), Schaeffer et al. (2005), Pérez et al. (2005), Medina-Ross et al. (2005), Streimikiene (2005), Aslanyan et al. (2005), Todoc et al. (2005)	<ul style="list-style-type: none"> - Public health - Electricity accessibility and affordability - Energy intensity- Energy dependence - Sources of energy diversification - Renewable energies - Impacts on earth, air and water 	16	4	10	0	30 ^b
Global Reporting Initiative Sustainability Reporting Guidelines (GRI, 2011) and Electric Utilities Sector Supplement (GRI, 2009)	Haro de Rosario et al. (2011), Vázquez Miranda (2007), Valor (2007), Moneva (2001), Sustainability reports of electric utilities companies	<ul style="list-style-type: none"> - Energy capacity - Energy efficiency - Renewable energies - Atmospheric emissions - Biodiversity - Working conditions - Working conditions in supply chain - Stakeholders - Relationship with institutions - Electricity accessibility and affordability 	12	17	1	0	30 ^c
Sustainability indicators for the assessment of nuclear power (Stamford y Azapagic, 2011)		<ul style="list-style-type: none"> - Energy capacity - Energy efficiency - Energy dependence - Operating cost - Energy investments - Impacts on earth, air and water - Working conditions - Human Rights 	6	19	11	7	43

a. Two indicators have been recently added referring to institutional relations

b. EISD is the result of a simplification process for the set of indicators "Indicators for sustainable energy development (ISED)" (Vera et al., 2005)

c. The supplement contains additional specifications of standard GRI indicators for the electric utilities industry

Table 2: Studies on CSR and social performance in the electric utilities industry

Study	Goal	Results	Issues covered	Number of indicators				
				EC	SOC	MA	OTR	Total
Afgan et al. (2000)	Analysis of energy sustainability in a hypothetical context defined by the authors	The analysis of energy sustainability is complex but possible and is strongly influenced by the absence of reliable data.	<ul style="list-style-type: none"> - Energy resources - Energy efficiency - Atmospheric emissions - Water contamination - Capital investments - Employment - Community 	3	3	4	3	13
Evans (2009)	Analysis of the sustainability of renewable energy	Some types of renewable energy are more sustainable than others; wind power is the most sustainable.	<ul style="list-style-type: none"> - Electricity accessibility and affordability - Energy efficiency - Impacts on earth, air and water - Social impact 	3	1	3	0	7
Karger and Hennings (2009)	Analysis of the sustainability of decentralized electricity generation in Germany	The decentralization of power generation has positive and negative effects depending on existing sustainability problems.	<ul style="list-style-type: none"> - Atmospheric emissions - Energy resources - Public health - Continuity of energy supply - Energy efficiency - Social issues 	1	1	1	2	5a
La Rovere et al. (2010)	Analysis of the sustainability of different electricity generation technologies in Brazil	Renewable energies are shown as the most efficient for electricity generation	<ul style="list-style-type: none"> - Impacts on earth, air and water - Employment - Energy investments - Energy capacity 	3	3	5	4	15
Gallego Carrera and Mack (2010)	Social impact assessment of different energy technologies in EU countries. It takes into account stakeholders considerations	Technologies with higher social risks should have greater stakeholder involvement in decision-making.	<ul style="list-style-type: none"> - Continuity of energy supply - Political stability - Legitimacy - Life quality - Social risks 	3	9	0	2	14
Onat and Bayar (2010)	Analysis of the sustainability of renewable energy	Some types of renewable energy are more sustainable than others; wind power is the most sustainable.	<ul style="list-style-type: none"> - Electricity accessibility and affordability - Energy efficiency - Impacts on earth, air and water - Social impact 	3	1	3	0	7
Navarro Alvarado et al.	Analysis of the sustainability of the electric industry in Mexico	Electric utilities operating in the north of Mexico are more	<ul style="list-style-type: none"> - Energy capacity - Energy intensiveness 	3	2	3	0	8

(2011)		sustainable than those operating in the rest of the country.	- Renewable energies - Atmospheric emissions					
Schlör et al. (2012)	Analysis of the sustainability of the electric industry in Germany	Results of the evaluation of the sustainability of the electric utilities industry depend on how it is calculated, as well as the defined goals.	- Energy resources - Energy intensiveness - Renewable energies - Air quality - Employment	6	1	8	0	15

a. Supplementary indicators are used in the study but not shown due to their unclear definition.

3 Sample and methodology

3.1 Sample of companies

The sample of companies was obtained from Datastream database and was composed of all companies that were listed in the electric utilities industry during the period 2009-2011. The electric utilities industry was defined according to Thomson Reuters Business Classification, which is the classification methodology used by DataStream, as companies producing or distributing electricity (including both nuclear and non-nuclear facilities) and utility companies with significantly diversified activities in the electric utilities (including unregulated independent power producers and distributors).

A total of 89, 107 and 99 companies were found for 2009, 2010 and 2011, respectively. This variability is due to the various mergers and acquisitions that took place in the industry during this time period. The 80 companies that coincided in the three years were chosen as the final sample. The distribution of the companies according to the geographical zone of their headquarters is shown in Table 3.

Table 3: Geographical zone of the sample of companies

GEOGRAPHICAL ZONE	NUMBER OF COMPANIES	ABBREVIATION
Europe	19	EUROP
United States, Canada, Australia and New Zealand	31	USCAO
Japan	10	JAPAN
Latin America	6	LATAM
Russia	4	RUSSIA
Asia (except Japan)	10	ASEXJ
TOTAL COMPANIES	80	

A geographical zone analysis was carried out, given the small number of companies available for some countries. According to the economical classification by Banco Bilbao Vizcaya Argentaria (BBVA, 2012), the majority of the companies from Latin America and Asia (except Japan) could be termed as Emerging and Growth-Leading Economies (EAGLEs), although there are also some countries classified as nests or candidates for EAGLE. There were no companies from Africa in the sample, as no African companies were found in the database.

3.2 Indicators in the database

Indicators were obtained from Asset4, a non-financial information database containing data from more than 4,000 companies around the world. We found a total of 50 indicators related to social outcomes, of which 32 were dichotomous and 18 were continuous. After evaluating their relation to the literature reviewed, 23 dichotomous and 13 continuous indicators were selected. Two continuous indicators had to be discarded because almost all of the values (almost 90%) were missing data.

The 23 dichotomous indicators were transformed into continuous indicators by grouping them into seven different indicators according to their definition. The value of the dichotomous indicators was reversed when necessary in order to obtain a continuous indicator in which a higher score indicates better performance. These seven new indicators take values on a scale of 1-7. Dichotomous indicators were added using categorical scoring (Nicolletti et al., 2000), a method which combines different categorical indicators and assigns them arbitrary weights. With the addition of these newly created continuous indicators to the previous eleven, the total of indicators used in the study was eighteen.

The eighteen indicators, which were considered representative of the groups identifying the social issues, were classified into five groups (Table 4). These groups were employment (three indicators), salary (four indicators), working conditions (four indicators), equality and training (three indicators) and various social issues (four indicators). Classifying indicators in different groups is recommended in the analysis of the social dimension due to the large number of issues they deal with. The group of various social issues is relatively heterogeneous and includes relevant social issues not covered by the other groups. However, none of these social issues has sufficient information to constitute a separate group.

Table 4: Indicators used in the study

INDICATOR	ABBREVIATION
Employment	
1. Employment growth over the last year	EM1
2*. Number of full- and part-time employees	EM2
3. Percentage of employee turnover	EM3
Salary	
4**. Salary benefits issues	SA1
5*. Average salaries and benefits in US dollars per employee	SA2
6. Total salaries and benefits divided by net sales or revenue	SA3
7. CEO's total salary (or other highest salary) divided by average wage (Highest Salary in US dollars/Average Salaries and Benefits in US dollars)	SA4
Working conditions	
8**. Working environment issues	WC1
9**. Working benefits issues	WC2
10. Total number of injuries and fatalities including no-lost-time injuries relative to one million hours worked	WC3
11. Percentage of employees represented by independent trade union organizations or covered by collective bargaining agreements	WC4
Equality and training	
12**. Equality and training issues	ET1
13. Percentage of women managers	ET2
14. Average hours of training per employee per year	ET3
Various social issues	
15**. Human Rights and supplier management issues	VS1
16**. Product responsibility issues	VS2
17**. Community issues	VS3
18. Total amount of all donations divided by net sales or revenue	VS4

*) Indicators logarithmically transformed prior to standardization

***) Indicators obtained from the aggregation of dichotomous indicators

Since some indicators had missing data, missing observations were imputed in order to solve that problem (OECD and JRC, 2008). The mechanism and the patter of missing data were assessed. Multiple imputation was performed using the fully conditional specification method, which is suitable for non-monotone missing data patterns (Van Buuren et al., 2006). The imputation model applied was predictive mean matching, which ensures that imputed values are plausible and is more appropriate than regression methods when the normality assumption is not fulfilled (Horton and Lipsitz, 2001). The number of imputations was calculated using the relative efficiency statistic (Rubin, 1987). The convergence of the iterations of the imputation was analysed graphically, and no irregularities were found in iteration patterns

3.3 Final sample

Two final samples are available for each year, one where missing data were substituted by the value zero and one where missing data were imputed using multiple imputation. Table 5 shows the descriptive statistics of the indicators, which correspond to the values of the indicators once they were imputed and standardized. The initial percentage of missing values is also shown.

Table 5: Missing data and descriptive statistics

DESCRIPTIVE STATISTICS															
	MISSING DATA			2009				2010				2011			
	2009	2010	2011	Mean	S.D.	Asym.	Kurto.	Mean	S.D.	Asym.	Kurto.	Mean	S.D.	Asym.	Kurto.
EM1	11.25%	7.50%	10%	0.526	0.137	0.133	5.141	0.436	0.112	1.480	11.884	0.162	0.147	4.385	21.674
EM2	5%	5%	5%	0.711	0.172	-1.266	3.006	0.709	0.166	-1.324	3.416	0.713	0.165	-1.347	3.625
EM3	67.50%	65%	55%	0.586	0.215	-0.634	0.969	0.657	0.281	-0.970	0.188	0.727	0.237	-1.622	2.561
SA1	0%	0%	0%	0.613	0.402	-0.345	-1.513	0.642	0.385	-0.456	-1.356	0.646	0.384	-0.488	-1.311
SA2	45%	45%	46.25%	0.559	0.273	-0.463	-0.764	0.449	0.246	-0.134	-0.620	0.618	0.183	-0.870	1.766
SA3	41.25%	43.75%	43.75%	0.431	0.269	0.540	-0.638	0.361	0.222	0.834	0.548	0.424	0.274	0.496	-0.532
SA4	65%	60%	70%	0.690	0.288	-1.252	0.664	0.747	0.267	-1.402	1.195	0.769	0.258	-1.695	2.770
WC1	0%	0%	0%	0.938	0.244	-3.684	11.870	0.913	0.284	-2.976	7.030	0.925	0.226	-3.137	9.324
WC2	0%	0%	0%	0.263	0.308	0.638	-1.062	0.338	0.302	0.288	-1.097	0.363	0.310	0.403	-0.764
WC3	60%	58.75%	60%	0.700	0.263	-0.953	0.381	0.642	0.311	-0.766	-0.583	0.577	0.325	-0.387	-1.163
WC4	51.25%	46.25%	48.75%	0.570	0.240	0.115	-0.043	0.564	0.240	0.012	0.038	0.563	0.263	0.088	-0.536
ET1	0%	0%	0%	0.394	0.305	0.315	-0.941	0.438	0.307	0.116	-1.025	0.491	0.322	0.071	-1.149
ET2	70%	65%	62.50%	0.452	0.236	0.425	0.527	0.460	0.216	0.165	0.698	0.506	0.257	0.058	-0.339
ET3	70%	68.75%	66.25%	0.496	0.274	0.137	-0.666	0.465	0.271	0.368	-0.680	0.455	0.218	0.189	1.076
VS1	0%	0%	0%	0.167	0.270	1.605	1.832	0.242	0.305	0.988	-0.109	0.258	0.309	0.859	-0.410
VS2	0%	0%	0%	0.242	0.260	0.692	-0.466	0.250	0.263	0.638	-0.586	0.258	0.260	0.584	-0.582
VS3	0%	0%	0%	0.794	0.294	-1.256	0.450	0.828	0.260	-1.569	2.044	0.834	0.251	-1.723	2.807
VS4	42.50%	38.75%	42.50%	0.142	0.165	3.454	16.170	0.102	0.160	4.155	20.962	0.272	0.248	1.521	2.085

3.4 Methodology

Composite indicators have been applied in diverse fields: health (Smith, 2002), sustainability (Gómez-Limón and Risk, 2009), business (Martinez et al., 2004), development (Kanti Ray, 2008), Human Rights (Bilbao-Ubillos, 2013) and education (Benito and Romera, 2011), among others.

A composite indicator to measure social performance in the electric utilities industry was constructed according to the reference manual of the Organization for Economic Co-operation and Development (OECD) and the Joint Research Centre (JRC) of the European Commission (OECD and JRC, 2008), and specifically using the benefit-of-the-doubt approach (Cherchye et al. 2007; OECD and JRC, 2008).

Cherchye et al. (2007) explain that the idea of the benefit-of-the-doubt approach (BODA) is that, if a company has good performance for an indicator, it believes that this indicator is important. That is, companies do not pay the same attention to the various indicators that can be used to evaluate them but focus on those in which they excel. Thus, BODA reveals a company's preferences, assigning high weights to the indicators in which the company excels and low weights to the indicators in which the company has lower performance (Schwartz et al., 2009).

In BODA, the composite indicator of a company is not expressed as the weighted sum of the indicators composing the composite indicator, but as a relationship (ratio) between this sum and the sum of a predetermined benchmark. Therefore, the obtained composite indicator is relative with values between zero (lowest possible performance) and one (the benchmark, or the company is its own benchmark). Prior to the construction of the composite indicator following BODA, indicators were standardized through the min-max method.

The value of a composite indicator is obtained through the aggregation of the scores of the indicators once they have been weighted. Concerning the weighting, the composite indicator was calculated using different approaches to assign weight to the indicators composing the composite indicator. This was done because the interpretation of the indicators depends on institutional factors such as the development of institutions, nature of the economy and relationships with other countries (Onat and Bayar, 2010; Matten and Moon, 2008; Vera et al., 2005). The flexibility of the BOD approach allows such circumstances to be considered indirectly, assuming that each company will focus on the issues demanded by its environment.

This study uses three different approaches to calculate the weight of the indicators: equal weight, BODA with total flexibility and BODA with restrictions on the proportion of the categories.

The equal weight approach (EW hereafter) assigns the same weight to each indicator. In order to apply the same philosophy as BODA and assure comparability, the indicator is calculated for each company and then divided by a benchmark, which in this case is the company which gets the best score using EW. BODA with total flexibility (FLEX hereafter) determines which indicators a company stresses and which indicators are relegated to the background.

Finally, BODA with restrictions on the proportion of the categories (REST hereafter) determines a company's performance addressing indicators which the company stresses without neglecting the rest, which are considered through additional restrictions. With these additional restrictions, one per group of indicators, the weight of the group ranges between 0.15 and 0.25. This range results from the equal weighting of all groups (0.2 per group, or what is the same) with a given leeway of 25% ($\pm 25\%$, that is, ± 0.05).

Restrictions are imposed on groups of indicators rather than on individual indicators, because it becomes more difficult to find a solution as the number of restrictions in the optimization problem solved in BODA increases. Thus, five restrictions related to groups of indicators are better than eighteen. While fixing this range is clearly arbitrary, Cherchye et al. (2007) recommends a more flexible method of BODA based on restrictions pertaining to category shares through restrictions determined by the investigator.

Afgan et al. (2000) emphasize that one of the main problems in the electric utilities industry is the absence and unreliability of data. Thus, strategies are needed to deal with missing data. One strategy is to simply replace missing values with zero. This strategy assumes that the absence of data is a signal of poor performance and penalizes lack of transparency. The other strategy is multiple imputation, a method designed to restore lost variability in the data set as a whole (Graham, 2012). In a study on sustainability in the industry, La Rovere et al. (2010) also rely on the estimation of missing data to solve this problem.

With regard to indicator aggregation, several methods are available once weightings have been assigned (Mondejar and Vargas, 2008; OECD and JRC, 2008). BODA requires linear aggregation; i.e., the weighted sum of the scores of the indicators composing the composite indicator (Cherchye et al., 2007). This is because all indicators are expressed in the same unit of measurement, offsetting possible ambiguities related to the different scales of measurement of the indicators through the min-max standardization process (Nardo et al., 2005).

Once the composite indicator was constructed, one-way ANOVA (Gamst et al., 2008) was performed to determine whether there were differences between the electric utilities industry companies in the different geographical zones.

4 Results

4.1 General scores

Table 6 shows the average score of the composite indicator. In the zero substitution strategy, the lower scores obtained using EW clearly reveal a lack of transparency in social performance in the electric utilities industry. Scores increase when BODA is applied, which is understandable since it assigns a greater weight to the indicators that the company performs better. Except in the case of EW, the average score of the composite indicator of social performance can be considered medium or high.

Table 6: Average score of the composite indicator

	ZERO SUBSTITUTION			MULTIPLE IMPUTATION		
	EW	FLEX	REST	EW	FLEX	REST
2009	0.517	0.900	0.757	0.704	0.899	0.846
2010	0.542	0.893	0.756	0.733	0.922	0.860
2011	0.538	0.879	0.761	0.732	0.890	0.830

Table 7 summarizes, by decile, the score of each of the three approaches used for each of the two strategies adopted.

Table 7: Average score of the composite indicators by decile

Approach	Decile	AVERAGE SCORE BY STRATEGY (Zero substitution/Multiple imputation)		
		2009	2010	2011
EW	First	0.908/0.924	0.912/0.952	0.935/0.957
	Middle	0.691/0.797	0.718/0.835	0.717/0.829
	Last	0.176/0.523	0.199/0.511	0.179/0.504
FLEX	First	1(15)*/0.998	1(16)*/1	1(14)*/1
	Middle	0.969/0.946	0.969/0.972	0.967/0.948
	Last	0.759/0.795	0.734/0.814	0.692/0.765
REST	First	0.996/0.992	0.976/0.974	0.996/0.990
	Middle	0.898/0.915	0.902/0.926	0.899/0.910
	Last	0.401/0.966	0.380/0.726	0.407/0.631

*) In brackets, number of companies that obtained the score indicated. This number exceeds the size of a decile, which includes eight companies

Comparison of the three approaches shows that EW had the lowest scores. This is because EW assigns an equal weight to all indicators that compose the composite indicator, unlike FLEX and REST which assign a greater weight to the indicators which a company excels in, increasing the company's score.

The highest scores were obtained in each of the years in the sample using FLEX. According to Cherchye et al. (2007), one of the problems of BODA is that it is not surprising that companies get the highest score, or that one or more of the indicators composing the composite indicator get a weight of zero. Furthermore, the chances of the composite indicator obtaining a high score increases with the number of indicators used to construct the composite indicator, as a larger number of indicators can have a high score. Therefore, the FLEX approach is highly sensitive to high indicator values.

As FLEX gives a greater weight to indicators for which the company has better performance, this approach identifies the indicators that companies prioritize better than it assesses companies' social performance.

REST obtained an intermediate score compared to the other two approaches. This approach allows companies to have higher weights for the indicators which they excel in without neglecting that all indicators should contribute to some degree to the assessment of social performance.

Indicator results were affected by the strategies adopted to handle missing data, especially in the last decile, as opaque companies usually had lower social performance. Differences between the first and the middle deciles were not so obvious.

4.2 Scores by geographical zone

Graphs 1 and 2 show the geographical zone of the companies listed in the first and last decile of the composite indicator, respectively. Graph 1 shows that European companies are at the forefront of the composite indicator score, as most companies in the first decile operate in Europe. European companies are followed by companies in Latin American. The geographical zone consisting of the United States, Canada, Australia and New Zealand is also represented, but to a much lesser extent.

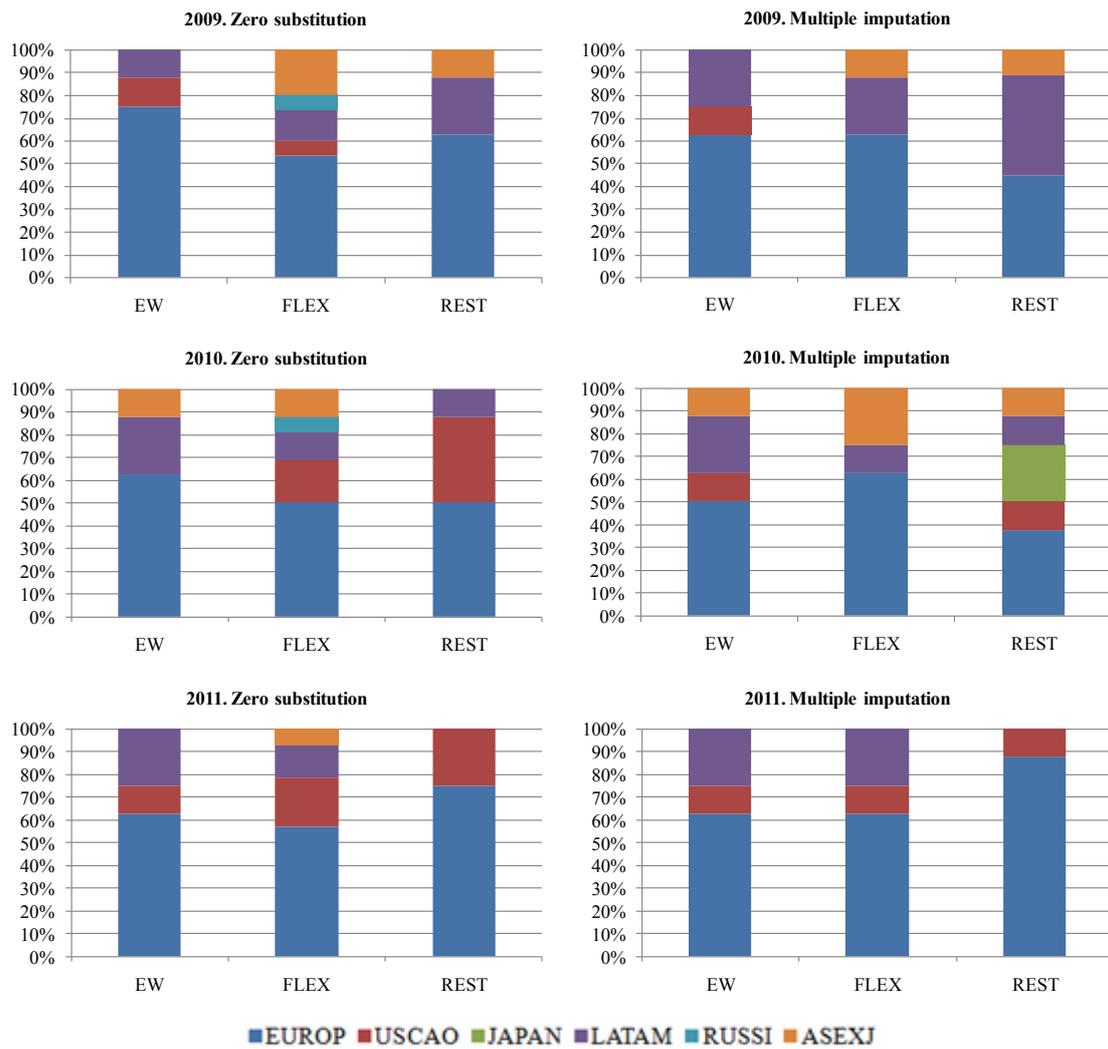


Figure 1: Geographical zone of the companies in the first decile

Figure 2 shows that companies in the United States, Canada, Australia, New Zealand and Japan had the lowest scores for the composite indicator, regardless of year, approach or strategy. Companies in Asia (excluding Japan) were also occasionally represented.

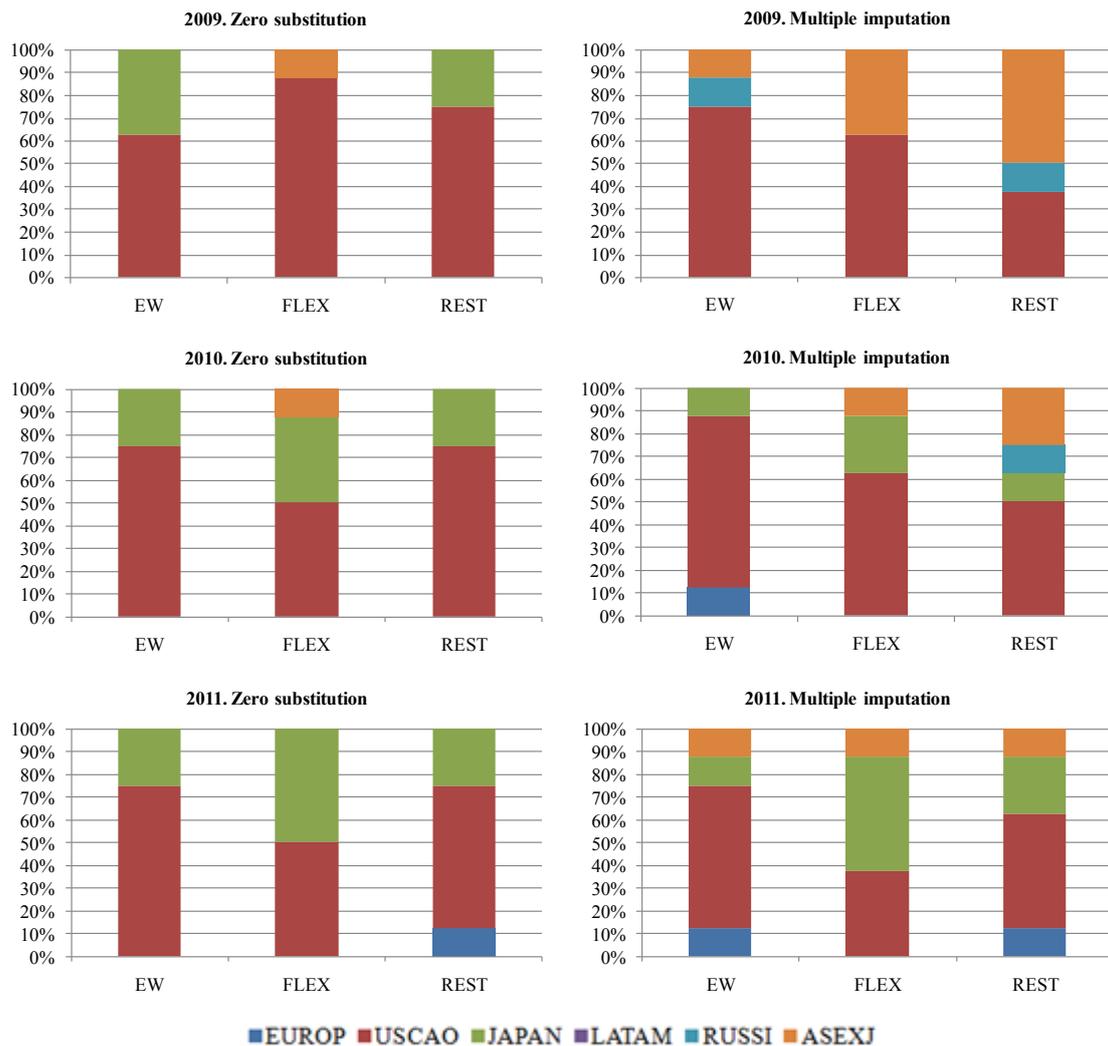


Figure 2: Geographical zone of the companies in the last decile

Thus, as shown in Figure 1 and 2, it seems clear that European and Latin American companies had the best performance in the social dimension, while companies in the United States, Canada, Australia, New Zealand and Japan had a poorer score. To confirm that the differences detected in the score were not by chance, a one-way ANOVA was performed for each year, approach and strategy with the factor defined by the geographical zone of the company and the score of the composite indicator as the dependent variable.

According to the hypothesis established in this study, the null hypothesis of the one way ANOVA establishes that a company's score for the composite indicator does not depend on its geographical zone of operation. ANOVA assumptions were checked. The composite indicator distribution was normal for most of the different versions of the indicator, being anova robust to slight deviations from normality (Gamst et al., 2008). Some Levene's homogeneity of variance tests resulted significant ($p < 0.05$), but since Welch tests and Brown-Forsythe tests were significant ($p = 0.000$), the

robustness of the Anova is evidenced. The problem of the different group sizes is minimized due to the homogeneity of variance of most ANOVAs and the post hoc tests.

Results (Table 8) show significant interaction between the score of the composite indicator of a company and the geographical zones in which it operates. F (5, 74) adopted values between 3.564 and 12.228 ($p = 0.000$), depending on the year, approach and strategy; the null hypothesis was rejected.

Thus, there are differences in the social performance of electric utilities companies depending on the geographical zone in which they operate. In order to further explore these results, we performed post-hoc tests. Since the number of companies in each of the geographical zones defined is different, appropriate post-hoc tests for unequal group sizes had to be applied. These tests were Bonferroni t, Gabriel, Scheffé and Sidak t (Gamst et al., 2008). All tests were significant ($p = 0.000$), clearly distinguishing three groups of zones: zones with a high score (Europe and Latin America), zones with a medium score (Russia and Asia (excluding Japan)) and zones with a low score (United States, Canada, Australia, New Zealand and Japan).

Table 8: Results of ANOVAs

ZERO SUBSTITUTION														
Year	Approach	F	EUROP		ESCAO		JAPAN		LATAM		RUSSI		ASEXJ	
			Mean	S.D.										
2009	EW	12.228**	0.707	0.178	0.420	0.183	0.351	0.125	0.751	0.151	0.398	0.087	0.534	0.123
	FLEX	8.217**	0.965	0.036	0.863	0.078	0.838	0.042	0.959	0.071	0.939	0.079	0.902	0.087
	REST	8.882**	0.890	0.090	0.648	0.178	0.708	0.152	0.926	0.073	0.693	0.159	0.816	0.140
2010	EW	12.062**	0.712	0.171	0.443	0.188	0.367	0.101	0.804	0.130	0.432	0.079	0.587	0.162
	FLEX	8.100**	0.958	0.049	0.860	0.088	0.811	0.070	0.976	0.046	0.901	0.069	0.899	0.085
	REST	5.776**	0.879	0.095	0.682	0.216	0.684	0.154	0.913	0.070	0.605	0.092	0.791	0.112
2011	EW	10.367**	0.703	0.184	0.443	0.206	0.344	0.089	0.801	0.151	0.530	0.046	0.559	0.149
	FLEX	7.598**	0.945	0.062	0.849	0.116	0.767	0.062	0.972	0.045	0.911	0.076	0.894	0.071
	REST	4.895**	0.877	0.134	0.686	0.199	0.672	0.141	0.900	0.033	0.791	0.076	0.765	0.144

MULTIPLE IMPUTATION														
Year	Approach	F	EUROP		ESCAO		JAPAN		LATAM		RUSSI		ASEXJ	
			Mean	S.D.										
2009	EW	6.119**	0.788	0.119	0.663	0.107	0.674	0.086	0.825	0.089	0.626	0.073	0.662	0.087
	FLEX	6.226**	0.943	0.051	0.872	0.048	0.891	0.036	0.955	0.055	0.876	0.052	0.884	0.070
	REST	6.884**	0.890	0.077	0.822	0.070	0.857	0.050	0.951	0.059	0.742	0.051	0.803	0.103
2010	EW	6.310**	0.805	0.128	0.680	0.120	0.672	0.071	0.894	0.055	0.694	0.029	0.738	0.109
	FLEX	6.180**	0.963	0.044	0.894	0.058	0.891	0.045	0.973	0.031	0.937	0.040	0.929	0.063
	REST	6.116**	0.909	0.060	0.839	0.070	0.874	0.074	0.927	0.019	0.770	0.069	0.817	0.084
2011	EW	5.670**	0.802	0.128	0.687	0.113	0.646	0.052	0.863	0.115	0.746	0.043	0.742	0.104
	FLEX	6.992**	0.938	0.052	0.865	0.064	0.829	0.044	0.952	0.056	0.906	0.074	0.893	0.068
	REST	3.564**	0.885	0.108	0.810	0.101	0.760	0.063	0.912	0.054	0.809	0.112	0.818	0.089

** $p < 0.01$

4.3 Composite indicator weights

In BODA, the weights of the indicators highlight which issues companies excel in. Thus, a company that obtains similar weights for all indicators has a similar performance in all of them. Likewise, if a company excels more in some indicators than in others, it is a sign that it has strengths and weaknesses.

Figure 3 shows the average weights of the defined groups of indicators for each of the years, approaches and strategies studied. The weights of the groups of indicators varied little from year to year, indicating that companies' priorities in the social dimension did not change during the studied time period.

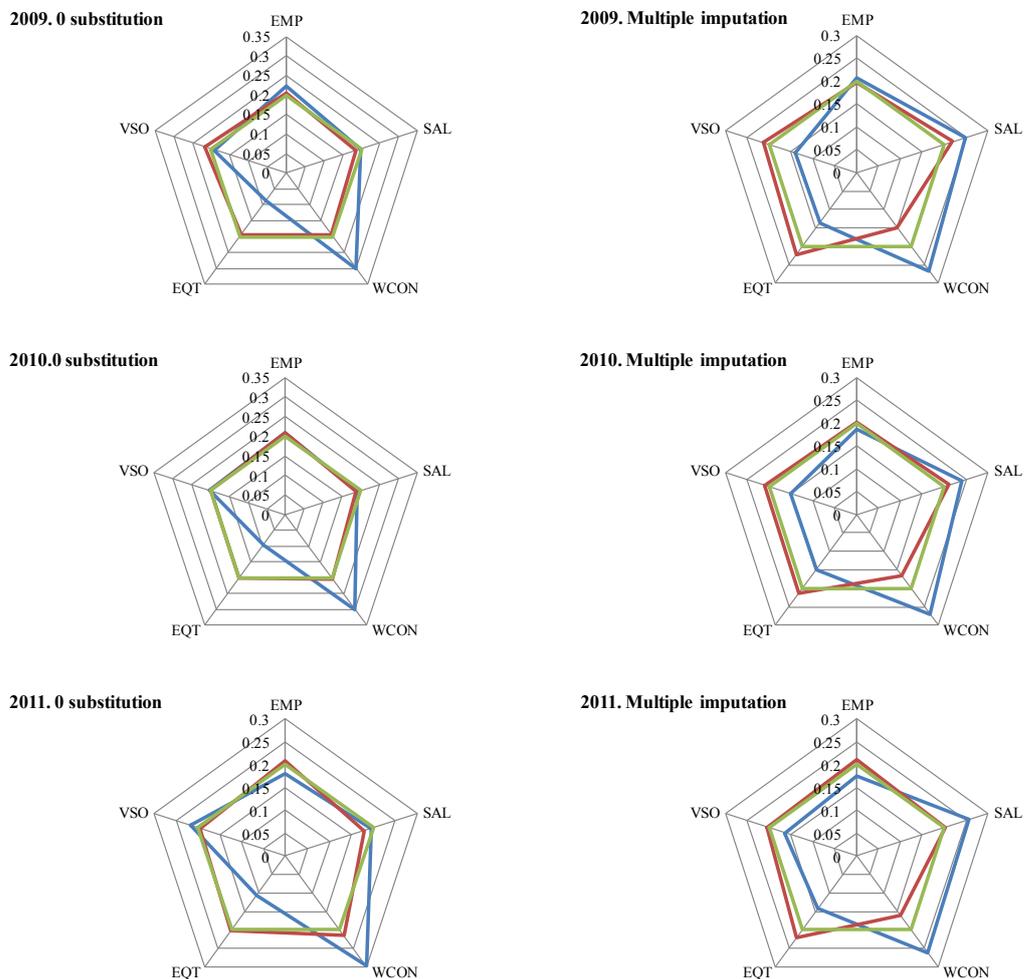


Figure 3: Average weighting of indicator groups

Similar weights were obtained using EW and REST, as expected given the weight restrictions imposed. The biggest difference in the weights of the groups of indicators was obtained using the FLEX version.

With regard to the two strategies for dealing with missing data, there are substantial differences in the FLEX approach. When the strategy of replacing missing values by zero was used, working conditions had the highest average weight, while equality and training had the lowest. When the strategy of missing value imputation was used, salary and working conditions were the most prominent, while various social issues and equality and training were the worst off. In any case, electric utilities companies clearly consider working conditions to be the most important social issue, followed by salary issues, while they consider various social issues and equal opportunities and training to be the least important.

As for the composite indicator, a one-way ANOVA was performed to test the null hypothesis that the average weight of each of the indicator groups does not vary according to the geographical zone where the companies operate. The results of this analysis showed no variation. As $F(5, 74)$ had values lower than 2 ($p > 0.010$), depending on the year regardless of the approach or strategy used, the null hypothesis was accepted. The average weight of the indicators group does not depend on the geographical zone where the companies operate.

The analysis of the scores of the composite indicator revealed significant differences between geographical zones. However, the analysis of the average weight of the indicator groups found no significant differences between geographical zones. Therefore, the differences between geographical zones can be explained in terms of performance (scores), but not in terms of priorities (weights) when addressing the social dimension. Some companies do better than others, but the importance given to the different issues of the social dimension is similar.

5 Conclusions

The electric utilities industry clearly has a major impact on the most diverse social issues. An interesting option to analyse the hypothesis established in this study was through the construction of a synthetic index for the social dimension in the electricity sector. There are few precedents of similar works, and even fewer works focus exclusively on the social dimension. Many issues are encompassed in the social dimension, and there is no global comparison of social performance in the electric utilities industry.

Constructing a suitable composite index depends on the quality of the component indicators and their units of measurement (OECD and JRC, 2008). To achieve this, we reviewed different frameworks and studies for the selection of indicators. BODA was chosen for the construction of the index, since it is invariant to the scale of indicators. The composite indicator was constructed using different approaches with different

implications in the score of social performance: equal weight, BODA flexible and BODA with restrictions.

Given the amount of missing data in the sample, two different strategies for the treatment of missing data were applied: substitution of missing data by zero and multiple imputation. Results were quite similar in terms of the geographical zone of the companies regardless of the approach and strategy applied to construct the indicator, indicating the consistency of results.

This study established the hypothesis that companies operating in developing and emerging have greater social performance than the ones operating in developed geographical zones. As results were mixed, this hypothesis could not be corroborated. Although there were differences in social performance between geographical zones, not all companies operating in developing and emerging geographical zones have greater social performance than the ones operating in developed geographical zones.

In some geographical zones such as Latin America, results showed that companies are concerned about social issues, which can be explained by the inability of governments to tackle social and environmental issues (Casanova, 2009). In other geographical zones such as Asia, the incredible economic growth in recent years has not been accompanied by a greater concern for social issues, as stressed by Gonzalez (2004) and Welford (2005).

It also seems that the demise of the welfare state in Europe has resulted in companies giving more thought to the social issues affecting them (Maignan, Ferrell, and Hult, 1999). This explains why these issues are not as important in the United States and Canada, where the welfare state has not been as important as in Europe. Fernández and Macías (2012) also found differences in the social and environmental performance in Europe and the United States for the telecommunication industry. The case of Japan is paradigmatic. While some studies have placed Japan at the forefront of CSR (Welford, 2005), others have found that the country is reluctant but accepting (Fukukawa and Teramoto, 2009). The results of this study are consistent with this latter position.

Our results also indicate that companies' priorities in the social dimension do not differ across geographical zones. The issues addressed by most companies in the electric utilities industry are those related to socio-economic aspects and regulation like working conditions. However, voluntary issues such as those related to various social issues and equality are addressed to a lesser extent.

In conclusion, this study shows that electric utilities industry companies from different geographical zones do not have the same level of dedication to social issues. Both high and low social performances were observed in both emerging and

developed countries. Therefore, the main conclusions of this study are that social performance is not necessarily linked to economic growth and that economic growth is not always accompanied by an improvement in companies' social performance.

The study of the social dimension in the electric utilities industry still presents many challenges. The consideration of stakeholders' expectations when developing measures for CSR, including social performance in the electric utilities industry, has often been claimed (Searcy, 2012). Also, while this study covers basic issues on Human Rights, indicators related to displaced people or impacts on the indigenous community need to be studied. Similarly, it would be interesting to conduct a study covering a longer period of time and applying other methodologies for constructing the composite indicator.

Finally, while BODA indirectly accounts for institutional issues affecting the electric utilities industry, the relationship between the structures of government, laws and policies in each of the geographical zones studied and their relationship to social performance should be studied in greater detail.

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Sustainable and Responsible Investment - Making the number of options grow?

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Abstract

Sustainable and Responsible Investment (SRI) combines investors' financial objectives with their concerns about social, environmental, ethical or corporate governance issues. Theoretically, SRI makes the number of options grow for individuals as well as for society. In practice, SRI is still a market niche that is largely ignored by retail investors. By applying a behavioural economics approach we identify potential entry barriers to SRI. Applying Heinz von Foerster's Ethical Imperative leads to the following conclusion: To deprive people of the chance to opt for – or against – Responsible Investment would be irresponsible.

Keywords

Sustainable and Responsible Investment, Corporate Social Responsibility, Sustainable Development, Behavioural Economics.

1 Introduction

Act always so as to increase the number of choices.

(Heinz von Foerster, 1911-2002)

The Ethical Imperative, postulated by the Austrian American physicist, philosopher and pioneer of cybernetics, Heinz von Foerster, highlights the interdependence of liberty and responsibility: The more options, the more freedom of choice we have, the better is the chance to take the responsibility for our actions. The privilege of choice goes hand in hand with the privilege of taking responsibility. Consequently, making the number of options grow for individuals and the society conforms to the noble act of sharing these privileges with others (von Foerster and Pörksen 1998).

On the other hand, the proverbial *agony of choice* is often perceived as a burden rather than a privilege. Choice overload (Toffler 1970; Iyengar and Kamenica 2010) is a

well-known phenomenon in social and economic sciences: Confronted with too many alternatives, people have trouble making optimal choices, and as a result can be indecisive, unhappy, and even refrain from making the choice at all (Tversky and Shafir 1992). Obviously, abundance of choice and responsibility may also have adverse effects.

These two poles shall set the stage for a discussion of responsibility in the field of financial decisions. The basic idea of this paper is to analyze the market for Sustainable and Responsible Investment (SRI) from a behavioural economics perspective. More specifically, leaving the narrow homo economicus paradigm helps understand the rather low participation of retail investors. Statman's (2005, 2007, 2008a, 2008b, 2011) pioneering research on SRI behaviour is extended in two dimensions: First, I explicitly examine the barriers which keep investors from engaging in SRI; second, I discuss the possibility of making the number of options grow without suffering from adverse side-effects.

The paper is structured as follows: Section 2 reviews concepts, facts and figures on SRI which may prove relevant for the subsequent argumentation. Section 3 takes a closer look at the investor and outlines the benefits of analyzing SRI issues within a behavioural economics paradigm. Section 4 identifies barriers to SRI engagement. The concluding section 5 completes the circle by offering an answer to the question posed in the subtitle.

2 Sustainable and Responsible Investment

The purpose of this section is to provide relevant background information and thereby draw a big picture of the matter of interest. Section 2.1 briefly reviews some definitions and their interrelations. Section 2.2 outlines the status quo of the SRI market with facts and figures and illustrates a remarkable paradox.

2.1 Key concepts

Sustainable and Responsible Investment (SRI)

According to EUROSIF (2012a: 7) there is no consensus on a unified definition of SRI, neither is there a consensus on the nomenclature to be employed. However in a broad sense, all investments which are meant to be ethical, social, green, responsible, sustainable, societal, impact or clean basically can be brought down to a common denominator:

[SRI is] any type of investment that combines investors' financial objectives with their concerns about environmental, social and governance (ESG) issues.

(EUROSIF 2012a: 8)

For the sake of clarity I use this definition of SRI throughout the text, while being fully aware of the market's heterogeneity. A more detailed classification of SRI strategies is suggested by EUROSIF (2012a).

Corporate Social Responsibility (CSR)

The European Commission (2011: 6) defines CSR as *"[...] the responsibility of enterprises for their impacts on society."* This requires a *"[...] process to integrate social, environmental, ethical, human rights and consumer concerns into their business operations and core strategy in close collaboration with their stakeholders."*

Sustainable Development

Sustainable Development has been defined in many ways, but the most frequently quoted definition is from the Brundtland Report (1987) as *"[...] development that meets the needs of the present without compromising the ability of future generations to meet their own needs."*

When we embed the three mentioned concepts in a bigger picture, it becomes obvious that they are basically heading for the same direction of impact: SRI can be seen as the investors' contribution to Sustainable Development, while CSR qualifies as the contribution from business side. SRI signals investors' willingness to reward sustainable and responsible business conduct. In turn, CSR *"[...] offers a set of values on which to build a more cohesive society and on which to base the transition to a sustainable economic system"* (European Commission 2011: 3).

2.2 The SRI market

Based on summary data from the most recent SRI Study (EUROSIF 2012a: 25ff.) and from the most recent annual report of the European Fund and Asset Management Association (EFAMA 2013) we can roughly outline the dimensions of Responsible Investment across Europe:

Market: Assets worth € 6.763 billion, or approximately 48% of total assets under management are invested in SRI in Europe.

Investor types: Institutional investors account for 94% of all assets allocated to SRI, 6% of SRI are retail investments. Note that from total assets under management in Europe, retail investors account for 25% (EFAMA 2013: 3).

Asset allocation: 51% of SRI is invested in bonds, 33% equities, 16% other.

While the proportion of 48% from total assets under management sounds impressive, one highly important caveat is in order: This figure is based on the broad definition of SRI, which is also used in the present paper. An example: In this case shunning nuclear weapon investments already qualifies as SRI. Once we take stricter definitions as a basis, the proportions drop dramatically. For instance, the survey of FNG (2013: 12) finds the following proportions of SRI from total assets under management: 1,3% in Germany, 3,6% in Austria, and 3,6% in Switzerland. Note that both sources are credible. The dramatic difference is just a product of different definitions of SRI.

Some conclusions may be drawn from the recent development of the SRI market: First, the market is heterogeneous and lacks transparency. This makes comparisons problematic. Second, counted by superficial criteria almost 50% of all assets are “responsible”. However, if a higher level of commitment is required, SRI is still a rather small market niche. Third, retail investors are underrepresented.

The attempt to draw a coherent picture of SRI out of the above mentioned facts and arguments leads to the following paradox: Theoretically, SRI helps to make the number of options grow for society, and public authorities are willing to foster it. Practically, the SRI market is still a fragmented, heterogeneous niche largely ignored especially by retail investors. For a better understanding of this paradox a closer look at the investors’ decision making process seems in place. The following section makes the case for the complex, yet realistic behavioural economics perspective.

3 Paradigms: From homo economicus to homo sapiens

Neoclassical economics, based on utility maximization, the concept of homo economicus and rational choice, has long been the dominating research paradigm. However, within the last few decades economic research has experienced the reunification process of psychology and economics. The improved realism of the assumptions underlying the behavioural economics paradigm should lead to better predictions and better policy prescriptions. (Camerer 1999; Thaler 2000). The paradigm shift from homo economicus toward homo sapiens opens new perspectives for SRI. As a foundation for the subsequent argumentation I briefly discuss the relevance of behavioural economics for SRI by distinguishing two characteristics of homo sapiens investors.

What do investors really want?

Investors want more than just maximize their own expected payoff. There is a substantial amount of experimental research which has documented the presence of

social utilities like reciprocity, fairness, vengeance and altruism (Camerer 1999). With regard to SRI we can apply Statman's (2005, 2008a, 2011) distinction of three kinds of benefits: Utilitarian benefits (what can I buy for it?), emotional benefits (how does it make me feel?), and expressive benefits (what does it tell about me?). In a nutshell: Money is not everything. We still want to make money, but we also want to apply our personal values, and we want the approval of our peer group. For many investors SRI may deliver benefits in each of these three categories.

How do investors really decide?

The homo economicus always acts according to her preferences. She never makes mistakes, she decides without emotions, she is never overcharged, and she always precisely maximizes her expected utility. Behavioural economists have emphasized that this description of decision behaviour neglects several relevant aspects (Kahneman and Tversky 1979). The homo sapiens, representing what most people would call a "normal" human being, can be myopic and impulsive, giving undue weight to the short term. She procrastinates and sometimes suffers as a result. She can be unrealistically optimistic and for that reason make unfortunate and even dangerous choices (Thaler and Sunstein 2008). *"In identifiable contexts and for identifiable reasons people make choices that are not in their interest, even when the stakes are high."*(Sunstein 2013a: 1826).

With regard to SRI this means, that even if investors are well informed and convinced of its benefits, they still may act differently. The "decision" of many investors not to engage in SRI may be a deliberate one, but alternatively it may be just a result of a bias or lack of attention. Within the homo sapiens paradigm we can detect potential barriers to SRI which are not captured within the homo economicus paradigm.

Two general conclusions may be drawn: First, explanatory research needs to go beyond the homo economicus paradigm to capture the complexity and multi-dimensionality of SRI. Second, policy makers should keep in mind that they deal with people who frequently make mistakes. Equipped with these behavioural insights we can move on to the central question: Which barriers keep investors from engaging in SRI?

4 Barriers: The long and winding road to SRI

Assume an average retail investor who regularly pays her due liabilities and satisfies her immediate consumption needs. Assume further that she is able to save a certain part of her salary every month. The money is automatically transferred to her savings account, where it has been smoothly accumulating for several years. This situation is

what we may call the “default setting”, as this is what happens when the investor decides not to take any action at all with regard to her financial planning. Considering the substantial consequences of financial services decisions for household well-being (Barr et al. 2008) people disturbingly often “decide not to decide”: *“Most people spend more time picking a new TV device than they do choosing their retirement investment strategy”* (Pompian 2012: 8).

As an alternative, suppose she could also allocate (part of) her savings to SRI products, corresponding to her individual risk-return profile, and in line with her personal value propositions. While the latter option appears much more sophisticated in terms of satisfaction of wants, relatively few retail investors actually go for it. This calls for a systematic discussion of potential barriers which may keep investors from engaging in the SRI market. The barriers are ordered chronologically, just as they might arise during the process of SRI investment (Hinterleitner and Pilaj 2011).

Lack of information on SRI

The first barrier is simple ignorance of the fact that there are strategies to adjust the investment style to one’s personal values. Berberich et al. (2011) find for German-speaking countries, that almost 20% of investors do not know anything about SRI. This is alarming, but not surprising: Bankers and financial advisors usually do not offer SRI products, unless they are explicitly asked for it. Within the standard framework of a financial planning and consulting dialogue, the client must be thoroughly informed about the risks of investment. However, responsibility of investment is a topic very unlikely to be discussed.

Status quo bias

Assume that the investor knows about SRI and that she does not entirely reject the very idea of it. Still she is likely to stick with what she has always perceived as being the “normal” way of saving. Investors tend to avoid change, as long as there is no impetus which makes them leave the initial setting. This insight of behavioural economics is called status quo bias and goes back to Samuelson and Zeckhauser (1988) and Kahneman et al. (1991). Note that asset managers consider the financial crisis an impetus which might be strong enough to boost the demand for SRI products (Berberich et al. 2011).

Potential disadvantages with regard to return

Assume that the investors’ personal value propositions are strong enough to overcome the status quo bias. Then she will want to compare SRI products and conventional alternatives in terms of performance. There is a persistent rumour that the additional benefit of “good conscience” comes along with a discount in return. Empirical studies on this question can roughly be divided into three categories: Those which claim

inferior returns for SRI, those which do not find any significant difference, and those which claim superior returns for SRI. The contradictory results are due to different observation periods, different investment vehicles and different definitions of SRI. The rationales behind the three hypotheses are discussed in Statman (2007). For an overall result we have to rely on the verdict of meta-studies: According to Pictet (2008), Mercer (2009) and Deutsche Bank (2012) a vast majority of individual studies show that there is at least no performance disadvantage for SRI. With regard to transaction costs SRI products are not inferior, either. (Berberich et al. 2011).

Potential disadvantages with regard to risk

From Modern Portfolio Theory (MPT) and the Capital Asset Pricing Model (CAPM) we know that investment valuation is not only about return, but also about risk. As a rather small subset of the total asset universe, the SRI universe is inferior concerning the risk diversification opportunities. In contrast, Hoepner (2010) argues that there is no diversification disadvantage because the elements of the SRI subset per se exhibit lower-than-average risk. Furthermore, it is a frequent practice of institutional investors to combine SRI and conventional investments to obtain the required level of diversification (Schindler and Schmidt 2010). Retail investors can mirror this strategy on a small scale.

Difficulties with product search and choice

Assume that the investor doesn't believe in disadvantages from a purely financial point of view and that she is willing to take concrete steps. The challenge is to find investment vehicles which adequately represent her personal value propositions. According to EUROSIF (2012b) HNWI's (high net worth individuals, i.e. clients with liquid assets worth more than one million \$) consider the SRI product range to be too small. In addition to the lack of suitable products, studies have also detected lack of competent advice (Statman 2008b; Hinterleitner and Pilaj 2011; EUROSIF 2013b). SRI may indeed require some personal research skills as well as a higher degree of financial literacy. Hinterleitner and Pilaj (2011) find a positive correlation between educational level and affinity to SRI. All in all there seems to be plenty of room for improvement in design and servicing of SRI products.

Poor transparency of responsibility criteria

Assume that the investor has found an SRI product which seems to be in line with her financial expectations as well as with her personal values. Still, she may have doubts about the true responsibility of her investment. If a mutual fund is labeled responsible, asset managers must regularly obtain and analyze CSR data of each company in the portfolio. On the other hand they won't disclose full information to their clients. Decision-relevant information should flow from companies via asset managers to retail investors. It may well be that part of it gets lost. There are incentives in favour of

selective information policy, for companies as well as for asset managers. As long as legislature has not agreed on clear and binding standards, there is plenty of room for creative (mis)interpretation. For some companies and products responsibility is more of a superficial marketing issue than it is an integral issue of corporate governance. The well-known problem that “all that glitters is not green” is called greenwashing. According to EUROSIF (2012b) it is one of the major barriers to SRI for HNWIs. Being situated at the end of an intransparency chain, responsible retail investors will set great store by the trustworthiness of financial intermediaries.

Image problems

Men are disturbed, not by things, but by the principles and notions which they form concerning things.

(Epictetus, 50 – 138)

A lot of empirical evidence shows that within the framework of the neoclassical theory of finance, SRI is not inferior to conventional investment: Neither in terms of return, nor in terms of risk. However, within the framework of behavioural finance it becomes obvious that the mere rumour of a disadvantage can be enough to keep investors away from SRI. Many investors do not perceive SRI as a serious investment opportunity. Some tend to associate SRI with donations. Others perceive it as exotic market niche and prefer to stick with what is supposed to be the approved mainstream, i.e. what most people do.

Procrastination

“Often people do not act in advisable ways, not because they do not want to [or do not know better], but because the best path is obscure or difficult to navigate” (Sunstein 2013b: 3). In certain situations investors’ behaviours seem to be inconsistent with their original intentions. As there is no advantage in these patterns and people tend to regret their behaviour afterwards, we may speak of “errors” (Sunstein 2013a). This insight can be applied to the decision making process of pro or contra SRI: Some investors may actually have the intention to engage in SRI, but they don’t put their preferences into action. The psychological mechanism behind this behaviour is called procrastination – the dubious art of postponing tasks to “tomorrow”, if they are important but not (yet) urgent. Procrastination is based on our distorted perception of small short-term costs and substantial long-term benefits (Akerlof 1991: 1). The same mechanism makes it difficult for us to stop smoking or keep a healthy diet. Note that – unlike most of the other barriers to SRI - this one cannot be overcome with providing information. If policy makers want to ignite action they have to go beyond information campaigns.

5 Conclusion: Making the number of options grow?

Recapitulating the previous argumentation in an investment game analogy, the SRI market can be seen as a challenging playing field. Investors are players with complex multi-dimensional preferences. Their decision behaviour reflects bounded rationality. Thus, their willingness to adopt SRI strategies may be encouraged or discouraged by a plethora of motives. Against this background we can finally address the question posed in the subtitle. I claim that SRI makes the number of options grow in a threefold way: To society, to public authorities and to individuals. The crucial prerequisite is a modern approach to human decision making: Going beyond the simple, restrictive homo economicus paradigm, towards the complex, realistic homo sapiens paradigm.

Making the number of options grow for society

Fostering SRI contributes to make the number of options grow for society in the sense that it paves the way for the transition to a sustainable economic system. First, it establishes a culture of responsibility and awareness among investors. Second, it leverages CSR activities, as companies ultimately depend on their investors' money. Direct legislation on CSR is hard to execute. Therefore, to involve investors and to promote market reward for responsible business conduct is a central element of the European Commission's strategy towards Sustainable Development.

Making the number of options grow for public authorities

Public authorities which try to establish adequate conditions for Sustainable Development have good reason to foster SRI. However, investment according to specific criteria of sustainability and responsibility is still rather the exception than the rule. Standard tools of intervention may have been ineffective because they are implicitly based on homo economicus assumptions. As an alternative, public authorities may consider taking a behavioural economics view and thus relaxing the assumptions of rational decision making. This step towards a more complex, yet more realistic framework opens new perspectives: First, on the barriers which may keep investors from engaging in SRI; second, on the policies which may be employed to foster SRI.

Making the number of options grow for individuals

In the field of investment, the problem for individuals is not a lack of options. On the contrary, their real problem is the abundance of options, which often leads to choice overload, procrastination and suboptimal choices. This argument does not, however, justify a restriction of options. Instead it calls for more responsibility in investment decisions. For many investors SRI may well be the option which is most consistent with their intentions: While SRI eventually meets their non-financial objectives, a vast

majority of empirical studies do not report any financial disadvantages. Ultimately, von Foerster's aphorism (1998: 36) can also be applied to investment behaviour: *To deprive people of the chance to opt for – or against – Responsible Investment would be irresponsible.*

A concluding remark: There is no contradiction in making the number of options grow for all three aforementioned stakeholders simultaneously. In order to make the number of options grow for society, it is not always necessary to limit the number of options for individuals. Smart choice architecture is a light alternative to heavy paternalistic interventions such as bans or taxes. It can help investors better perceive favourable options and put their investment behaviour in line with their personal value propositions. Behaviourally informed regulation can attenuate barriers to SRI without compromising investors' freedom of choice.

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Sustainable water consumption: the role of consumer behaviour in (re)shaping water utility industry business models

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Abstract

A combination of population growth, climate change, urbanisation and economic development all pose potential threats towards water resource sustainability. This research aims to determine the potential barriers to reducing household water consumption in the UK. In order to overcome the barriers of water-intensive lifestyles, there is a need to gain a better understanding of the types of factors that may lead to long term reduced consumption. The research analyses the effects of consumer behaviour on 'climate-change driven' modifications to water utility companies' business models. In particular, the research examines the important role of gaining consumer trust and the potential impact that values and emotional responses to predicted future scenarios may play in shaping behavioural intentions towards reducing water use.

Keywords

Water, climate change, sustainable consumption, consumer behaviour

1 Introduction

"Water...is a basic human need and a fundamental human right", states a United Nations Development Report (UNDP, 2006). However, nearly 10% of the world's population do not have access to safe drinking water (WHO, 2011), and 1.1 billion people live over a kilometre away from a water supply (UNDP, 2006). Generally water poverty is associated with developing countries; in the UK, over 99% of the population are connected directly to the public water mains, so supply is not necessarily seen as

being at threat. However, there are concerns over the future availability of this resource.

1.1 Threats to the UK water supply

In 1989, the water industry in England and Wales was privatised and now over 20 companies supply water to 54 million consumers (Ofwat, 2013a). These water companies cover specific regions and unlike other utilities, such as gas and electricity, households are unable to switch suppliers. Consequently, to ensure all consumers receive a high quality service at a fair price, the companies are regulated by the Water Services Regulation Authority (Ofwat) which limits the prices that can be charged (Ofwat, 2013a).

Over the last 20 years the water companies have made substantial progress in improving the infrastructure of the UK water industry (HM Government, 2012). However, future supplies may be at risk. Some areas such as the South East of England have already experienced interruptions in their supply (Defra, 2008) and the challenges are likely to increase in the future. On average, temperatures across the UK are predicted to increase between 2 and 4°C by 2080 (UKCIP, 2009). These temperature rises alone could lead to increases in demand. However, further increasing the pressure, it is predicted that in the same period average rainfall could reduce by up to 15% (UKCIP, 2009). Although this is alarming, it is the seasonal variation which is likely to directly affect water supply (Defra, 2012). Predictions suggest that winter precipitation levels may increase by 10 to 30%, and some areas may experience up to 40% less rainfall during the summer (UKCIP, 2009). Many parts of the UK may also experience more frequent spells of extreme weather: severe flooding, droughts or freezing conditions could cause considerable disruptions to the water supply (UK Met Office, 2013).

In addition, the industry faces increasing demand from consumers. There are two main reasons for the projected increases: the first is the predicted growth in population; the second relates to consumers' increasingly water-intensive lifestyles, with increasing numbers of water-intensive household appliances.

1.2 Strategies for dealing with water supply risks

In anticipation of the risks, governments in the UK have begun to implement strategies to ensure the sustainability of water supply in the future. Actions will include improvements to infrastructure, reservoir development and improvements in environmental aspects in terms of water quality (Defra, 2008; Welsh Government, 2011).

However, although the governments in England and Wales have developed a range of methods to ensure a sustainable water supply is maintained, it is believed that household consumers lie at the heart of the success. Economic analysis has proposed that reducing individuals' water consumption by 28% from 160 to 115 litres per day could be significantly more cost effective than implementing expensive technologies in order to increase supply levels (Committee on Climate Change, 2011).

It is important to recognise that UK water companies have already begun to implement methods to try to reduce household water consumption. These include: reducing leaks in the water distribution networks; providing households with information on simple ways to reduce water consumption; providing advice on water-saving equipment and sometimes providing free water-saving gadgets. Although companies emphasise the volumes of water households could save by adopting behavioural changes and installing water-saving gadgets, they also emphasise the potential financial benefits. However, any cost savings are only relevant to customers who pay for their water through metering rather than fixed rates, which is currently less than a third of UK households (Defra, 2008). In addition, changing consumer behaviour to reduce household water consumption is much more complex than simply providing financial incentives to consumers, as is explored in the following sections.

2 Research Aims

Literature suggests that human behaviour is extremely complex. Drawing from economic and psychological theory, a number of pro-environmental behaviour models have been developed to examine the factors that drive behaviours such as recycling and energy saving. However, limited research has specifically addressed water consumption. In addition, existing studies have focused on areas where water supply is already severely under threat (Jorgensen *et al.*, 2009), rather than examining areas where future risks have been predicted.

This research aims to investigate consumer responses to a variety of future climate change impacts in the UK, under different greenhouse gas emission scenarios: namely low (B1), medium (A1B) and high (A1F1), three of the scenarios which have been prepared for the Intergovernmental Panel on Climate Change (IPCC, 2000). The research aims to gain an understanding of the consumer responses to these different scenarios and to suggest how future water utility business models might need to be (re)shaped under climate change impact.

The objectives of this study were: to review existing models of pro-environmental behaviours, highlighting any limitations with respect to behaviours related to household water consumption; and, to ascertain the views of household water

consumers, exploring determinants of current and future behaviours towards water use under different projected water supply scenarios.

3 Literature: Models of pro-environmental behaviour

In order to identify the factors that may determine whether consumers change their behaviour to consume in a more sustainable manner, it is important to review existing models of pro-environmental behaviours. Early models of pro-environmental behaviour proposed in the 1970s explained that environmental awareness which resulted from environmental knowledge led to pro-environmental behaviour (Kollmuss and Agyeman, 2002). However, these models have subsequently been criticised for their simplicity. Owens (2000) specifically criticised some of the UK's pro-environmental campaigns claiming they were too simplistic in assuming that people will change their behaviour simply because their knowledge is increased, explaining that political, social, personal and institutional factors can form barriers to the adoption of pro-environmental behaviour. This section will consider some of the later models that have been proposed in academic literature, identifying the additional factors that determine pro-environmental behaviour adoption. Although many of these have been applied to consumers making more environmentally friendly choices when making purchases, many are also relevant to reducing consumption.

Behaviour models are specifically concerned with private-sphere environmentalism, focusing on individuals rather than the public domain (Stern, 2000). Although the impact of individual behaviour can be considered to be very small, it is important to note that when a large number of people independently adopt the same pro-environmental behaviours the impact can be significant (Stern, 2000). Consequently the role of these models is to identify the general factors that determine whether people will adopt certain behaviours, enabling policies and practices to be implemented in order to achieve large private-sphere participation.

Models of pro-environmental consumer behaviour have generally been formed from psychological and economic theories. Clark *et al.* (2003) explain that economists propose behaviour to be driven primarily by external motives such as costs, income and other socio-economic factors. On the other hand, psychologists tend to focus on internal motives such as values, beliefs and attitudes.

In their review of literature concerning pro-environmental behaviours, Steg and Vlek (2009) identified three lines of research in terms of the motivations to adopt behaviours. The first was concerned with consumers' evaluations of the perceived costs and benefits, the second considered moral and normative concerns, and the third examined the role of affect. The first of these lines of research closely relates to

the well-known theory of reasoned action (Fishbein and Ajzen, 1975) and consequently to rational choices, as outlined in Section 3.1. The second line of research, related to moral and normative concerns, has led to a number of pro-social models of pro-environmental behaviour as discussed in Section 3.2. The literature review identified a small number of studies that have examined the role of affect, particularly in relation to the purchase of cars. Due to their limited relevance to this research, these are not discussed here. However Steg and Vlek (2009) consider that affective motives deserve further research in future.

3.1 Rational choice models

This theory proposes that consumers act according to their rational choice by evaluating the potential outcomes of their behaviours and adopting the behaviour they perceive will provide them with the greatest benefit (Simon, 1955). Concerned with motivations of self-interest and personal gain, the theory of rational choice stems from neo-classical economics (Bamberg and Möser, 2007). Jackson (2005) explains that this theory guides most government policies aimed at changing consumers' behaviour.

Based on social-psychological theory, the theory of planned behaviour is one of the most well-known models of consumer behaviour adopting the concept of rational choice (Ajzen, 1991). It builds upon the earlier theory of reasoned action proposed by Fishbein and Ajzen (1975), and has been adopted specifically to examine pro-environmental behaviours (Kollmuss and Agyeman, 2002). The theory of reasoned action broadly explained that personal beliefs and attitudes influence a person's behaviour by determining their behavioural intentions (Fishbein, 1967; Fishbein and Ajzen, 1975). In the context of pro-environmentalism it is explained that the theory of planned behaviour suggests that behavioural intentions are determined by the consumer calculating the sum of the perceived negative and positive consequences pro-environmental behaviour adoption (Bamberg and Möser, 2007). These behavioural intentions were proposed to be the best predictor of the actual behaviour a person adopts (Fishbein and Ajzen, 1975). Developing the model further, Ajzen (1991) recognised that along with attitudes, beliefs and intentions, behaviour is determined by the person's perceived control over the adoption of the given behaviour.

Although the theories have formed fairly solid foundations in the understanding of behaviour adoption, they assume people behave rationally by making choices based on systematic evaluation of information. Kollmuss and Agyeman (2002) consequently explain that they ignore any "unconscious motives or overpowering desires". This is one of the key limitations of rational choice theory and it has been noted that although supplying consumers with information to make more informed choices may encourage them to adopt pro-environmental behaviours, cognitive deliberation is not the only

determinant (Kollmuss and Agyeman, 2002; Jackson, 2005; Bamberg and Möser, 2007). For example, it has been emphasised that habits or routines can unconsciously drive a person's behaviour (Hargreaves *et al.*, 2010).

3.2 Pro-social models of pro-environmental behaviour

The theory of planned behaviour has specifically been criticised for focusing on consumers' motives of self-interest, rather than on some of the social motives that drive behaviours (Bamberg and Möser, 2007). In contrast, pro-social models of behaviour recognise the influence that society has on behaviours adopted by the individual (Osterhus, 1997). The most common pro-social model adopted when examining pro-environmental behaviours is Schwartz's (1977) norm-activation model (Guagnano *et al.*, 1995; Stern, 2000; Clark *et al.*, 2003). This adopts the basic assumption that people adopt environmentally significant behaviour due to moral, social and personal norms (Bamberg and Möser, 2007). Linking social and personal norms, Schwartz (1977) explained that "social norms are the source of personal norms". In other words, an individual's personal norms are 'activated' as a result of their perceptions of what is socially normal and acceptable (Turaga *et al.*, 2010). The model therefore assumes that a person is aware of the consequences of their actions on others, and that they feel they have a personal responsibility to adopt the pro-environmental behaviour (Turaga *et al.*, 2010).

Building on the norm-activation model, Stern *et al.* (1999) proposed the value-belief-norms theory to further explain the determinants of the adoption of pro-environmental behaviours. This model suggested that norm-based behaviours are driven by three factors. The first was that of personal values, encompassing individuals' self-interest, their selflessness towards other people and their selflessness towards other species and the environment as whole. The second considers a person's belief that the behaviour is necessary to reduce the risk of some kind of threat to the environment and/or society. Finally, the third element is the belief that as an individual they can adopt the behaviour and their efforts will make a difference.

3.3 Categories of pro-environmental consumer behaviour

Many different factors have been identified that can directly or indirectly determine whether consumers adopt pro-environmental behaviour. However, given that there are different types of pro-environmental behaviour it has been proposed that the factors controlling whether consumers adopt specific pro-environmental behaviours will vary (Stern, 2000; Gatersleben *et al.*, 2002).

Very broadly, pro-environmental behaviour has been classified as being high-cost or low-cost (Diekman and Preisendörfer, 2003). Within these classifications 'costs' not only consider financial factors, but also the convenience of adopting the behaviour, as well as the perceived social costs and the level of overall impact the behaviour change has on consumers' daily lives (Gatersleben *et al.*, 2002). In their low-cost/high-cost model of pro-environmental behaviour, Diekman and Preisendörfer (2003) explained that the effect of environmental concern (attitude) reduces when the cost of pro-environmental behaviour is perceived to be high. Consequently, the adoption of low-cost pro-environmental behaviours is proposed to be greatly affected by an individual's level of environmental concern.

With these differing impacts of attitude effect, research has identified the need for different strategies for low-cost and high-cost pro-environmental behaviours. It has been suggested that those behaviours perceived to be of high-cost and concerned with long term choices should adopt financial motivation strategies to change behaviours (Gatersleben *et al.*, 2002). On the other hand, strategies addressing low-cost pro-environmental behaviours should focus on changing consumers' personal norms and attitudes (Gatersleben *et al.*, 2002).

4 Method

In order to test which of the theories described in the previous section is the most appropriate in the context of sustainable water consumption, and to investigate and discuss some of the individual determinants in more depth, research was conducted to illicit the views of household water consumers.

The research was exploratory in nature due to the time limitation of the project which took place January-May 2013. The project was interdisciplinary, involving academics from Swansea University working in Engineering and Business. The study was designed to investigate consumer responses to a variety of future climate change impacts in the UK, under different greenhouse gas emission scenarios; namely low (B1), medium (A1B) and high (A1F1). Maps illustrating the effects of the range of scenarios were produced by Engineers who specialise in computer modelling of climate change impacts. These maps were used to stimulate discussion in a series of focus groups. The focus groups were conducted by Business academics whose interest is in consumer behaviour and environmental attitudes.

Five focus groups were conducted at Swansea University (in Wales) during the period March-May 2013. Each consisted of between four and eight participants. A range of ages (23-75) and occupations were represented. Participants consisted of postgraduate students, university staff and individuals external to the university.

Members of university staff who took part were drawn from a range of occupations within the university: both academics and non-academics were represented.

The groups were moderated by one of the project researchers. The moderator aimed to ensure that a similar structure was followed for each session, progressing from a discussion of general pro-environmental behaviours to those focused water-related behaviours which might be required in response to future climate change impacts. The structure was:

- General. Understanding and interpretation of 'pro-environmental behaviours'
- Water. Current attitudes and behaviours towards water consumption
- Household. Knowledge of water consumption in the household
- Future. Reactions to climate change projection scenarios

The sessions lasted between forty five minutes and one hour; each was recorded and transcribed before being analysed using NVivo to determine common themes.

5 Results and Discussion

5.1 Information, knowledge and awareness

Individuals who took part in the focus groups had been told that the research project was investigating pro-environmental behaviour, but the invitations to attend had not included any mention of water or water consumption. The sessions began with an ice-breaker exercise which was designed to determine whether participants recognised that water saving behaviour might be regarded as a pro-environmental behaviour. Discussion generally confirmed that it was not; the current perception was that water was an endless resource:

"We've got so much water in Wales, so it's ridiculous, why do we have to cut back?" (P5 Group 1).

Moreover, in 2012 the whole of the UK experienced its wettest summer since records began, and most groups commented on this:

"Have you looked at the weather? It's a resource which seems to be plentiful." (P4 Group 1).

As part of the ice-breaker exercise participants discussed how much water they used, and where it was used in their households. The focus group participants found it hard to identify the breakdown of water consumption in their households:

“We just don’t know how much water we use or where we use it.”
(P1 Group 2).

A breakdown of how water is used in a typical household suggests that kitchen activities account for around 42% of daily water consumption in England and Wales. A further 56% of water is used in bathrooms, with 61% of that being used to flush toilets, and the remaining 39% accounted for through bathing and showering. Only 2% of household water is used externally, but it is recognised that that this figure is likely to fluctuate throughout the year, with higher percentages being used outside in the summer months (Ofwat, 2007). This information is obviously not widely appreciated, as one participant commented:

“There is no information about how much is consumed, where it is consumed and how much is wasted. If we are more aware of these figures then perhaps we’d behave differently.” (P4 Group 2).

Although criticised for its simplicity, rational choice theory implies that in order for consumers to cognitively evaluate the outcomes of behaviours they require information. Government policies to promote pro-environmental behaviour have often adopted a strategy whereby information is disseminated in order to raise public awareness of the issue. These models have been criticised for being too narrow and not considering the multi-dimensional factors concerned with pro-environmental behaviour adoption (Owens, 2000). However, information, knowledge and/or awareness are often incorporated as constructs within larger pro-environmental behaviour models (Hines *et al.* 1986; Oesterhus, 1997; Kollmuss and Agyeman, 2002; Vermeir and Verbeke, 2006; Abrahamse and Steg, 2009; Pierce *et al.*, 2010). In the focus groups the participants indicated a low level of knowledge about the consumption of water in their households, and this factor would need to be taken into account in any model of household water-saving behaviour.

5.2 Attitudes and values

Stemming from Ajzen’s (1991) psychological theory of planned behaviour, attitudes have been proposed to be a key determinant of the adoption of pro-environmental behaviour (Hines *et al.* 1986; Stern, 2000; Kollmuss and Agyeman, 2002; Clark *et al.* 2003; Bamberg and Möser, 2006; Abrahamse and Steg, 2009). In general, attitudes have been defined as “the mental state of preparation for action” (Fishbein, 1967:3). Abrahamse and Steg (2009) explain that this mental state of preparation is determined by whether the person favours the outcome(s) of the behaviour. It has been noted that an individual’s evaluation of the outcomes of a given behaviour are shaped according to their values (Ajzen, 1991) or even religious beliefs (Fransson and Gärling,

1999). One focus group participant recognised that some pro-environmental behaviour might relate to religious convictions:

“Yes because we're stewards. Sorry, got my religious hat on now, sorry. Yeah, we are stewards of the earth so we have to make sure we leave it in the same state, if not a better state than the way we found it.” (P2 Group 3).

This was not a unanimous view, however, and it was recognised that there were differences between individuals in terms of the attitudes they hold and values they have:

“The thing is, you've got those that will and those that won't. That's true in any situation. You'll have those that do their best and will take this on board and will try to do whatever they need to do, but then you've got those who don't give a monkey's about what will happen in the future...those people who don't think past their own little bubble.” (P1 Group 2).

Values appear as a construct in a large number of pro-environmental behaviour models (Stern *et al.*, 1999; Vermeir and Verbeke, 2006; Pickett-Baker and Ozaki, 2008). In the context of pro-environmental behaviour and sustainable consumption, Pickett-Baker and Ozaki (2008:282) describe values as “enduring beliefs that a given behaviour is desirable or good and include valuing the environment”. The authors explain that they play a primary role in determining whether an individual adopts pro-environmental behaviour. However, a value-action gap has been identified and research has found that additional mediating factors often control behaviour adoption (Kollmuss and Agyeman, 2002; Vermeir and Verbeke, 2006). This was evident in the focus groups with the additional mediating factors of habit and trust being identified, as explained in the next sections.

5.3 Habits

In their study of household water consumption Gregory and Di Leo (2003) confirmed that attitudes towards water usage were a poor predictor of actual water consumption. Along with environmental awareness, personal involvement and situational factors such as socio-demographics, Gregory and Di Leo (2003) noted the important role that unreasoned processes play in determining water consumption; for example, habits play an important role in the adoption or lack of adoption of pro-environmental behaviours. Cognitive psychology literature argues that habits and routines are important in determining behaviours (Ajzen, 2002), and habits are noted as being one of the key challenges to changing behaviours to be more pro-

environmental (Stern, 2000; Gregory and Di Leo, 2003; Jackson, 2005; Jorgenson *et al.*, 2009; Steg and Vlek, 2009; Jansson *et al.* 2010; Pierce *et al.* 2010).

The results of the focus groups supported these conclusions, with participants typically commenting that many of their actions related to household water use were a result of habit rather than conscious decisions:

“The thing is, if you're busy in the day working, then it's so easy to come home and put the washing machine on, then put the dishwasher on, have a bath. We do it all without thinking.” (P1 Group 4).

As described in Jansson *et al.* (2010:360), habits are the “automatic link between a goal and a specific behaviour”. This means that people often automatically behave in a way that enables them to achieve their goals, even if they are not cognitively aware that this is what they are doing. Consequently many studies explain the need to consider habits when assessing the adoption of pro-environmental behaviours. Jackson (2005) explains that it may not even be necessary to change attitudes in order for people to adopt more sustainable practices, but that implementing strategies to change habits may be sufficient. Focus group participants agreed that we sometimes need practical help rather than persuasive arguments:

*“It just happens. You put it in the washing machine and you take it out and hang it up and you don't think about it. I think that's what we need...a machine that says you've done three washes this week *makes alarm sound* so you can't do anymore. That sort of thing. You therefore think that you've got to plan what I put in the washing machine. You need something that makes you think about something we take for granted.”* (P1 Group 2).

5.4 Trust: personal, social and institutional

In their model of water consumption behaviours, Jorgensen *et al.* (2009) included the concepts of the theory of planned behaviour. However, noting the contextual limitations, they suggested that aspects such as consumers' interest in the environment and the outdoors, their present water use behaviour (habits) and perceived risk of future shortages, along with their attitudes towards pricing could all determine whether households reduce their consumption. Of particular interest, though, the authors recognised the role of trust; an aspect previously not explored when investigating water use behaviours.

Focus group participants discussed a number of separate facets of trust: trust in themselves, in society and institutional trust in water companies. Participants expressed the need to trust that their actions would have an effect; that there were realistic targets which they could meet and that their achievements would be recognised.

“You can sign up voluntarily for a programme and you fill in the details of the things you've done...like when you've turned off the tap...and slowly it builds up over a period of time. What they then do is aggregate information from your community or your street or whatever and then you can see...you get the feedback. You then can think 'gosh I did contribute to a very real quantifier'. Something like that which helps people understand that they really are making a difference for the effort they are putting in.” (P5 Group 4).

Participants wanted to be sure that others were adopting the necessary behaviour, not only at a local level but at national and international levels as well; and the need for institutional trust was evident. All groups discussed the need for improved infrastructure and storage, which would demonstrate shared responsibility between themselves as individuals and the wider institutions. Jorgensen *et al.* (2009) explained that as well as belief that other consumers are doing the same, water saving behaviour is likely to be greater if the consumer trusts that the water company is doing all they can to preserve the water supply. This view was expressed by participants in all the focus groups, with a typical comment being:

“You hear that so much water is lost, I can't remember the percentages, through leakages and that's down to maintenance. It makes you feel a little bit disappointed.” (P2 Group 2).

Institutional trust can also refer to the consumers' belief that the information they have been provided with is factually correct and that the source of the information is dependable (Osterhus, 1997; Cleveland *et al.*, 2005). In all the focus groups, a degree of mistrust in those institutions which made predictions about the effect of climate change was evident. During the discussion, participants were shown maps of Wales which illustrated the effects of a variety of future climate change impacts, under different greenhouse gas emission scenarios. These maps, produced by climate modelling experts, indicated the levels of water-stress to which Wales might be subject in the future. However, the participants were not all convinced.

“I don't know if I believe it though....you wonder why we should trust it.” (P3 Group 4)

“I just get the feeling that they don't really know what is going to happen in the future. We know that climate is changing, but I'm not confident, even with these predictions, they really know what is going to happen.” (P5 Group 2).

6 Conclusion

Although technological improvements in the water supply infrastructure will play a part in securing future supply, it has been recognised that one of the most economic and effective ways to reduce the risk of water-stress is to reduce consumption. However, in order to overcome the barriers of water-intensive lifestyles in the UK, there is a need to gain a better understanding of the factors that may lead to long term reduced consumption. Although extensive research has been conducted to examine the factors determining consumers' environmental behaviour, studies mainly focus on household recycling and electricity usage, with a very limited number examining water consumption. The research reported here aimed to focus on this, and investigate the potential barriers to reducing household water consumption.

The ideas to explore emerged from a review of academic literature into pro-environmental behaviour. Models of pro-environmental behaviour broadly identify two types of behaviour: the rational, which is based on information, whereby consumers make decisions based on the pros and cons of a situation or choice; and the pro-social which also takes into account other people as well as individual ethics. Academic research suggests that there is more to decision making than simply obtaining information, and that there is a need to blend the two models together in order to better understand consumer responses.

A series of focus groups were used to confirm these ideas, and identify any additional factors which might apply in the context of household water consumption and water-saving behaviour. The research sought to examine the influence of a number of potential scenarios, under different climate change predictions, on the opinions expressed.

The study confirmed the importance of information, knowledge and awareness, together with attitudes and values. It was also apparent that habits were ingrained in the participants' use of water in the household. The concept of habits determining behaviour adoption is well supported in academic literature. Pro-environmental behaviour models adopting the theory of rational choice generally assume that people make behavioural decisions based on a process of cognitive deliberation. This however ignores the fact that people perform certain behaviours simply as a result of habit and therefore do not necessarily consider the outcome of their action. Habitual behaviour

related to water use around the home was evident, with the focus group participants having very little understanding of the consequences.

The research also highlighted the important role of gaining consumer trust and the potential impact that emotional responses to predicted future scenarios might play in shaping behavioural intentions towards reducing water use. Personal, social and institutional trust was identified as important factors which might affect motivations of consumers to adopt water-saving behaviours. However, mistrust in the scenarios and climate change predictions, together with an element of doubt that their own locality would be affected by water shortages, produced scepticism which would need to be overcome in any campaign focused on reducing household water consumption.

In addition to addressing the factors already discussed (knowledge, attitudes, habit and trust) water companies business models might also wish to incorporate price incentives via different pricing mechanisms. However, in the UK household water is a low-cost situation with prices keenly regulated and, as such, theory suggests that rational choice will be inappropriate to describe the behaviour of water consumers. The results reported here support this conclusion, with participants commenting that, *"...water is regarded as a cheap resource"* and that, *"people don't really have to think about what it's costing them. People just use it and don't think."* The water companies should therefore seek to change personal attitudes and norms as opposed to motivating customers through financial incentives, which the research suggests may prove ineffective in this situation.

7 References

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Employee Engagement – Concepts and Experiences

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Abstract

The main focus of this paper lies in identifying important success factors for employee engagement initiatives regarding sustainable lifestyles. We give insight into existing concepts and experiences, such as the guideline ‘sustainable behavior at work and in private life’, CO₂-monitoring as a carbon calculator tool and communication platform for companies, and different learning formats (Course Personal Changes towards a more Sustainable Lifestyle, reflexive elements in CSR/Stakeholder Management Course, Microtraining Sustainable Lifestyles).

Keywords

Employee engagement, employee behavior, sustainable lifestyle, sustainable business culture, education for sustainable development

1 Introduction: why employee engagement matters

Lifestyle in the western world is too intensively consuming resources, energy and land area to be sustainable. The assessment of the ecological impact of one’s individual lifestyle shows: On average 25% of greenhouse gas emissions are due to the heating and electricity, 23% due to nutrition and 14% to mobility. The remaining consumption (number of different buying decisions summarized) accounts for 28%, the public infrastructure (only indirectly influenced by individuals) adds another 10% (UBA Germany, 2010).

According to consumer based analysis in Austria, consumption accounts for 15,6t greenhouse gas emissions per person. In contrast pure production based figures, like the national emission statistics, only amount for 10,58t per person (Karner et al., 2013).

Climate change has drawn attention towards the urge of more sustainable consumption and production patterns. The importance of acting sustainably underlines i. a. the OECD (Hall et al., 2010). The Progress Report (UNEP, 2011) of the Marrakech process initiated in 2003 for sustainable consumption and production patterns, inter alia emphasizes the need to pay more attention to the demand side and the promotion of sustainable lifestyles towards consumers. Behavior change and social innovation are as important as better technological solutions and innovations, and more knowledge is necessary with respect to behavioral changes of consumers and the most effective mix of policy instruments.

Although in the past view years, an increase in 'environmental sustainability-conscious (ESC)' consumers (Steve, Anayo, Ireneus, Shed, & Moses, 2012) could be observed, sustainable lifestyles do not reach all segments of the population and all aspects of life to trigger the necessary effects: Some population segments seem to be more sustainable in some life style domains and (over) compensating in others. For instance, according to 'Umweltverhalten, Umweltbedingungen 2007' (Statistik Austria, 2009) people with well-educated background have a high sustainability performance regarding the purchase of organic food, but they cause much higher greenhouse gas emissions by their mobility mix than less-educated parts of the population.

According to the 'Umweltbewusstsein in Deutschland' study 2010 more than 25% of the German population is confronted with negative health effects due to environmental problems. Over 50% expect an increase in wars due to limited natural resources. The general awareness of nature damage is high and 62% wish the politicians to set more actions towards a sustainable Germany. It is quite obvious that the majority of people are concerned with environmental issues, however it remains questionable to which extent these concerns manifest themselves in sustainable lifestyles, especially if this might include accepting cutbacks to help reduce pollution and CO₂ emissions.

1.1 Correlation of environmental awareness, behavior and the social context

Environmental and sustainability research show that it is very difficult to fix the most important factors determining environmentally friendly behavior (see e.g.: Diekmann & Preisendörfer, 2003; Maloney & Ward, 1973; Diamantopoulos et al., 2003). There are several components that determine if actual behavior corresponds to a person's

environmental awareness and oral statement of intent. According to Maloney and Ward (1973) the two important components that allow prediction of future behavior are knowledge and personal attitudes (motivation, feeling of responsibility or engagement etc.).

Because of the increasing importance of ecological positive behavior, environmental consciousness has been assessed by several studies and used in a wide range of social science fields (Diamantopoulos, Schlegelmilch, Sinkovics, & Bohlen, 2003). Yet assessment of environmental consciousness is difficult due to the lack of a common definition (Maderthaner & Szykariuk, 1999). The most frequently used definition is from Diamantopoulos et al. (2003). According to them environmental consciousness is the result of an interaction of environmental knowledge, environmental attitude and environmental behavior.

Environmental knowledge is referred to as 'characteristic that influences all phases in the decision process' (Steve et al., 2012) and significantly determines the way consumers evaluate products and services (Steve et al., 2012). Empirical data support the hypotheses that knowledge correlates with the actual ecological behavior, and therefore knowledge can be seen as a good predictor of behavior (Chan, 2000; Vining, Linn & Burdge, 1992). Environmental attitude as well seems to be one of the good predictors for environmental friendly behavior (Van Liere & Dunlap, 1980). The most widely used measure of pro-environmental attitude is the New Ecological Paradigm (NEP) Scale (Dunlap et al., 2000; Hawcroft & Milfont, 2010). The NEP Scale includes 15 items that measure the extent to which a person has an ecological worldview (i.e. a concern for the natural environment and recognition that humans are affecting nature).

Bacon and Roberts (1997) carried out a study on the correlation between the attitudes and the behavior of individuals and found it to be positive. Similar results are provided by Simmons and Widmar (1990), who found a significant relationship when measuring pro-environmental behavior in the field of recycling. However, the authors as well stressed the importance that people in addition to a pro-environmental attitude must be motivated and capable of dealing with the effort of recycling. Diekmann and Preisendörfer (2003) compared people in high-cost and low-cost situations and found that people in low-cost situations were more likely to engage in pro-environmental behavior than in high-cost situations. They concluded that attitude and knowledge are not the only components that influence positive ecological behavior. Consumers' choices are also limited by structural factors such as working life conditions, urban structure and everyday life patterns (Sanne, 2002). Everyday practice is characterized by a complex causal relationship between pro-environmental attitudes and real behavior (Thørgersen, 2004). For Jackson (2005), the individual affective motivation, intentions and preferences often are in conflict with moral concerns, social

norms and situational context. Choices will be made in careful consideration of individual intentions and if those are in line with external opportunities and social norms. A social group might therefore have a high potential to influence the individual behavior to a great extent.

2 The setting workplace

As depicted in the previous chapter, our coping with everyday life respectively our behavior depends on many factors: our own attitudes, habits, emotional experiences, existing options and contexts, the behavior and wishes of others. In order to induce changes the use of appropriate settings is crucial. Setting is a term used in health promotion sciences, which defines settings as places or social contexts in which the lives of people take place and which have a major impact on their health (WHO, 1986). These include, for example, workplace, neighborhood, school or leisure facilities. Successful interventions and measures with the aim to influence Behavior consider and use the settings in which target groups can be reached.

A majority of present population groups spends much of their time at the work place. The organization of daily life is thus very much determined by the setting workplace. Recent research (Bissing-Olson et al., 2013) shows that emotional experiences influence daily pro-environmental behavior in the workplace. The results suggest that work environments that promote positive affect could, besides other multiple benefits, increase the employees' pro-environmental behavior. The working context therefore might have a great potential to determine the effectiveness of learning processes.

3 Research design

To disseminate sustainable lifestyles the authors believe, that it is essential to address, beside classical educational paths, employees as a new target group. Experiences and routines gained in work life have a great potential to be pursued in private life (Klade et al., 2013; Muster, 2011; Seebacher et al., 2010). This approach is also in line with CSR mission statements and guidelines which put emphasize on employee trainings and involvement (GILDE, 2010).

Results of the project 'Sustainable Behavior at Work and in Private Life' (Seebacher et al., 2010; Klade et al., 2013) brought a first understanding about sustainable provisions offered by companies, mutual learning about sustainability issues at work and spillover into private life. In-depth analysis by interviews, focus groups and workshops in four good practice companies pointed out self-reported

spillover effects between colleagues, as well as spillover effects at home and in the family.

The hypothesis analyzed in the research leading to this paper is, that it is important to include sustainable lifestyles into the working place culture to spread it broadly in the society. The research aims at finding parameters that should be taken into account when planning and implementing sustainable lifestyle offers for employees in order to successfully promote life style changes.

To this end the authors had a closer look at the lifestyle change concepts they have been applying in different settings and conducted a meta-study by screening collected feed-back and reflection papers of participants and trainers. In a next step we contrasted the findings with the different design principles of the analyzed concepts and compiled a set of nine success factors.

In the next chapter the underlying concepts and experiences are introduced, followed by a closer look at success factors derived from sustainable lifestyle change projects. Finally, future research activities are discussed.

4 Concepts and Experiences

We start with existing concepts and experiences to raise employee engagement for sustainable lifestyles such as the guideline ‘sustainable behavior at work and in private life’. Further we are interested in the effects and impacts of carbon calculator tools especially of the CO₂-monitor (Bußwald et al., 2010). After that we will discuss different learning formats (Course Personal Changes towards a more Sustainable Lifestyle, reflexive elements in CSR/Stakeholder Management Course, Microtraining Sustainable Lifestyles) in detail.

4.1 Sustainable behaviour at work and in private life

The project “Sustainable Behavior at Work and in Private Life”, financed by a program of the Austrian Federal Ministry of Science and Research (Klade et al., 2013, Seebacher et al., 2010), investigated how practices on the occupational level affect sustainable behaviour on the private level, which means to create a spillover from one lifestyle domain to another. The project revealed the following results:

Sustainability activities and measures are successful if they foster a change in routines (in the case of existing non-sustainable, bad habits). Sustainable routines are formed by „learning by doing”, which means by repetition and training. A spillover can also be initiated by “learning through examples”. It was assumed that role models,

especially leading managers, are of importance for developing sustainable routines. This assumption has only partly been proved. The results of the interviews with the employee-focus groups indicate that changing of routines most of the time happens in the course of peer-to-peer learning. Employees are hence inspired by fellow employees.

„It is like a chain reaction: I go and get an apple, the other one does the same.“

Owners and managers are quite important for initiating a new sustainability activity in the company. But, the breaking of unsustainable habits and adopting of alternative behavior is most often inspired by learning from the colleagues.

Participants of the focus groups in the ‘Sustainable Behavior’ project highlighted the advantage of learning within the company. They reported that concentration on new information or behavioral patterns is a lot easier within the familiar social context of colleagues.

„You can concentrate on the topic and do not need to get acquainted with new persons“.

They also appreciated to learn about topics being relevant both for work and private life (e.g. nutrition, energy saving, thermal insulation).

A good working atmosphere is the most relevant precondition for employees to accept activities from the company-side aimed at fostering sustainable ways of living. It has to be clearly communicated that provisions are voluntary and non-participation is ok too.

Furthermore, the design of inspiring learning situations should not be limited to a specific type, but rather provide a „suitable“ mixture of different activities. The individual testing of “new routines” should be combined with the mutual exchange and training together with colleagues.

One important output of the “Sustainable Behavior” project is a toolkit, which provides practice examples of what companies could offer and how they can identify a company-tailored spectrum of provisions.

4.2 Training concepts and experiences

The findings of the project ‘Sustainable Behavior at Work and in Private Life’ inspired the development of new training concepts, which will be depicted by the following three examples.

Personal Changes towards a Sustainable Lifestyle

This students' course is held since 2011 at the Centre for Social Competence (University of Graz, Austria) in the winter terms (Seebacher, 2013a). Students design and work on a sustainable lifestyle project for a period of one semester. The project focuses on the own private (and work) life. Students mutually support themselves in a group of peers.

The first two sessions are dedicated to the introduction of sustainable lifestyles, the analysis of the personal status-quo and the finding of ideas for improvement. At the third meeting, students have to present their sustainability project and they build peer groups of 4-5 persons. These peer groups have to meet at least three times in between the next course meetings, which consist of two interim reflections and the closing "ceremony", comprising an appraisal of the projects results and an outlook at the transfer phase.

Till now all of the goals set by the students were reached. These goals can vary from minimizing the meat or milk consumption, buying food from the region to reducing plastic and engaging in sport programs.

Positive reactions from friends and families showed that it is possible to inspire others to engage in pro-sustainable behaviour. The majority of the participants were motivated to further pursue the set goals and to create spill-over effects into the work setting and private life.

Self-reflections in pro-seminar CSR / Stakeholder Management

Since summer term 2012 one of the authors, Seebacher U. is organizing a pro-seminar on CSR / Stakeholder Management (at the University of Graz as well), mainly for students of environmental systems sciences. Based on the assumption that relevant pre-requisites for successful change processes are the awareness about the own motives (see GILDE 2010) and the readiness for personal change, the students are challenged with the following three tasks:

1. Observe your CSR awareness and actual (consumption) behavior during the next week and take notes. This is done rather at the beginning of the course and individual findings are exchanged during next class in groups of 4-5 people, reporting only the group summary to the plenum.
2. Observe the CSR performance in your organization (usually university, but also in part-time job). This task is given after the introduction of the main fields of CSR activities. Results are again exchanged in small groups and then reported to the plenum.

3. After the end of the course, students have to hand over 1-2 pages of self-reflection.

Though the individual lifestyle is only one small element in the course, the reflection papers as well as the group-wise feed-back at the end of the course give hints, in what way personal changes have been induced. Participants appreciated the look at the individual lifestyle.

"... it was the first time I've thought about the effects of my behavior on the environment."

Some participants already observed personal changes, as most of them intend to improve their consumption behavior. They found ways for improvement in their organizations, started to talk about CSR topics in their private life and wanted to evaluate employee engagement activities of their future employers.

Microtraining Sustainable Lifestyle

There is a trend towards short learning formats, offering "learning nuggets" in e.g. five to six minutes. One trigger is the economic constraint for trainings, but the short formats also meets changing habits in media consumption, as for instance evidenced by the popularity of the Internet service YouTube. Microtraining is a way to give people information in a short time, and to support informal and peer-to-peer learning. (see e.g. de Vries & Brall, 2008; Jochen Robes, 2009; Montserrat et al., 2010). Yet, microtraining is no established term and is used differently by professional trainers.

Within the frame of the SUSTAINICUM project of three Austrian universities (www.sustainicum.at; which aims at providing an open pool of teaching material to integrate sustainability in higher education) the Sustainable Lifestyle Microtraining was developed (Seebacher, 2013b).

The microtraining concept used refers to the microtraining method developed in the Leonardo da Vinci program of the European Union. This project aimed to gain practical experiences in the context of sustainability subjects in companies (such as environmental management, energy efficiency or environmental purchasing) and facilitate the use of this learning format. According to the EU project's definition, microtraining is a way of conveying information between people in only 15 – 20 minutes.

Microtraining does not replace formal learning but is a time-saving method for sharing knowledge and using the expertise of all participants. A microtraining cycle consists of several micro sessions within which a main topic is dealt with. A microtraining session starts actively through a presentation, introductory questions or

illustrative examples. Then there will be a practice or demonstration, followed by a brief discussion and the preview of the next unit.

The 'Sustainable Lifestyle Microtraining' concept assumes that, with the help of the microtraining material, teachers or students themselves can act as micro trainers and support personal change in a group setting. The available material provides information on the chosen subjects in a short time and is guidance for the regular engagement with sustainable lifestyle within the frame of other courses or as a stand-alone training.

According to the main 'screws' in everyday life (with respect to environmental relief potential, see e.g. UBA Germany 2010) the three areas of food, mobility and energy were selected for preparing the SUSTAINICUM Microtraining Sustainable Lifestyle documents. The sessions can be integrated into all courses, irrespective whether the main topic refers to sustainability.

Over a period of 3 months to a semester short inputs stimulate reflection of the own lifestyle, promote exchange with other peers and starts change processes. The first two units frame the microtraining concept and its integration into the main course and introduce the topic of sustainable lifestyle. For each of the three topics 'food', 'mobility', 'energy' three successive sessions are provided, each of them following this structure:

- 'Get started': is about raising awareness and assessing the status quo, with short input of 'facts & figures'
- 'Step it Up': Based on the individual context possible steps of change are defined.
- 'Go for Green': Supported by the peer-to-peer exchange, the participants work out their personal goals till the end of the microtraining cycle.

Each session is completed by a preview on the individual task that must be performed by the participants until the next time and a short hint on how the next session refers to it. Most often, the exchange of experiences or the finding of new ideas shall take place in small subgroups within the participants' (peer) group. The final session (closure) is dedicated to the evaluation of the results of the microtraining and offers space for feedback and evaluation.

Generally, evaluations of microtrainings show, that they are especially effective when the person considers the topic as useful and interesting. It is an economic and efficient way to support the acquisition of appropriate knowledge and induce reflexive

learning. Yet, additional pilot trainings are necessary in order to evaluate whether microtrainings are an effective way to induce sustainable lifestyle changes.

4.3 CO2-Monitor: a monitoring tool for employee engagement

CO2 monitor is a web-based platform/tool that can be used by companies to offer their employees CO2 accounting functionality. On this platform, employees cannot only calculate their CO2 emissions, but can also set personal aims and learn from each other by exchanging their experiences with sustainable lifestyles on the platform.

CO2 monitor is currently mainly used by big companies in Switzerland and Austria. First evaluation of participation rates of employees show, that 2-3% of employees can be reached rather easily, 10% are possible but already need higher efforts, 60% are the maximum share of employees so far reached by organizations/companies using CO2 monitor. Experiences show that there is a high correlation between communication activities of the company and registration and use rates of CO2 monitor. When companies launch a kind of CO2 saving competition, the number of users significantly goes up, especially if there are attractive prizes.

On a more detailed level we see that personal benefit (e.g. go on the platform and you will find special offers for energy saving Christmas presents; directly be able to order CO2 compensation via the platform without having to consult further platforms etc.), personal involvement (new success stories launched) and controversial / new topics (like newsletters on scale gas or geo-engineering) are the most important drivers to achieve attention and to trigger activities.

Many companies report that group actions (like team competitions) are also most popular and suitable to activate high participation rates.

So far, it has not been systematically researched, which activities trigger highest CO2 saving rates respectively which activity and organization type combinations correlate with success rates.

5 Success factors: what can be learned from sustainable lifestyle change projects

Data of focus groups, feed-back collected after trainings and workshops, participants' statistics of the CO2 monitor tool and evaluation of participants' engagement profiles, reflection papers of participants, and the self-evaluation of the authors as trainers provide the empirical data base to deduct success factors.

Experiences gained by the activities of Seebacher and Busswald (as described in chapter 4) are in line with the results of the lifestyle projects performed at (mostly American) universities (Kirk & Thomas, 2003). The educational concepts (presented in chapter 4.2) can easily be transferred to other settings and target groups, such as managers and employees in companies or public institutions, members in regional networks or educational institutions. The findings provide a better understanding of key success factors and give hints on important aspects concerning design, implementation and transfer phase of employee engagement initiatives.

Table 1: Success factors for personal life style changes

No	Success factor	Description
1	Define lifestyle change as a project	When embedding life style changes into a project with concrete goals and time frame, eventual obstacles and ways to overcome them can be seen more clearly. For company projects (like CO2 monitor) this means that the team of employees responsible to lead and carry out the campaign needs to set clear targets and accompany the whole process, including intermediate evaluation steps and fine-tuning of the process over time.
2	Pay attention to the introductory phase	During the introductory phase it is essential to create a common understanding and enthusiasm on the project. It is important to thoroughly collect all necessary information and do the planning. 'Facts & figures', insights into the peculiarities of change projects and proper planning (reachable goals, milestones, indicators ...) are helpful.
3	Co-operation with personal environment	Doing the project as a team (maybe also including team competition aspects) is a strong positive motivator.
4	Design interim meetings during run time for motivation, reflection and continuing process	Change of lifestyle is a continuous process – this has to be reflected in the project. Regular interim review meetings give the opportunity to exchange experiences with the other group members, refine or redefine the projects goals, evaluate progress and reinforce the motivation to proceed. Incentives from time to time are needed.
5	Be aware of exceptional situations or even schedule them	Taking into account that, e.g. at Christmas holidays, will be a change in the daily routines and provide the first test of the new habits.

6 The leading group or trainer's personal readiness for change is needed	When integrating the "CSR/personal lifestyle nuggets" into your project, the leading group/trainer in the project should be willing to confront themselves with their own lifestyle and be part in the program.
7 Make use of peer-group learning	Together with project approach, the trainer's attitude and good working atmosphere (see success factor 1, 6 and 9), the peer-group learning concept most probably is the key factor for successful trainings on sustainable lifestyle.
8 Illustrate personal benefits	In a world with lots of options, it is essential to see and feel personal benefits to decide for a certain option.
9 Care for a positive working atmosphere	A relaxed and trustful environment is an important precondition to engage in life style change experiences and try out new patterns of behavior (Bissing-Olson et al., 2013). Provisions are the more effective and attractive, the more they take into account everyday life experience and the lower the barriers to participation are.

6 Conclusions and outlook

Based on the learnings from selected sustainable lifestyle change projects success factors to be taken into account in the planning and implementation phase of employee engagement lifestyle change concepts could be derived. It has to be kept in mind however, that due to the by now limited data basis of the evaluation the results presented should be mainly interpreted as 'proof-of-concept'. It is expected, that the additional assessment of future activities will lead to a more detailed analysis. A preliminary study based on the 'new environmental paradigm' scale from Dunlap et al. (2000) will account for further results to this issue. Starting from the environmental attitudes of the individual the study focuses on concrete options for environmental friendly behavior of employees in their work setting in selected fields of action (energy consumption, mobility, nutrition). With the results we hope to get important information on the correlation of environmental attitudes and eco-friendly behavior at work and in private place of individuals at the one hand and the existing employee engagement actions of companies at the other hand. The results shall provide a good starting point for environmental interventions in organisations and businesses adapted to the needs of different target groups.

Preliminary results after a first three weeks survey period in summer 2013 allow for some first tentative conclusions. They have to be interpreted with caution, because the participation rate was not very high and more than 80% of the participants claimed

to work at an organization that is doing business in the field of sustainability, therefore the results will not be representative. 89 people started the questionnaire and 40 completed all parts. In total the majority of participants can be assigned the 'ecological worldview' according to the New Ecological Paradigm (NEP) Scale of Dunlap et al. (2000). Except of one, all agree that the humankind is exploiting the earth and 34 participants think that we will soon experience a major ecological catastrophe if we don't change our lifestyles. About 75% believe that technical innovations will mainly contribute to solutions, and 85% state that humans are still depending on the laws of nature.

This overall confirmation of the 'new ecological' (Dunlap et al., 2000) worldview is reflected in decisions made on environmental friendly behavior of the individuals: 82% state to use energy efficient travel alternatives on business journeys. Only 14 participants say they use the car on their way to work. For the majority sustainability is a very important topic in their private life as well as at the work place. 20% want more organizational commitment or concrete environmental activities and offers, like workshops, events, sustainability projects or other offers.

Busswald, Seebacher and other partners have already designed a research project to further elaborate quick and big win approaches: One important aim is to develop a method to monitor the effects of different types of employee engagement activities.

We are convinced that companies/organisations will change to a more sustainable and environmental production easier, if this is widely accepted and carried by their employees.

If the awareness for environmental issues can be fostered in employees it will, as a consequence due to spill-over effects, change the behavior in their private life as well. If this is successful, it should be possible to raise the general pro-environmental behavior in the population.

„I had been wrong in thinking that changing our way of life would be an elaborate sacrifice and heroic deeds when in reality things that we did every day that were neither glamorous nor exciting were the most significant [...]. It wasn't perfect, but who says it has to be?" Excerpt from the personal balance sheet of family Webster after a year of "Oil diet". See Recipes for Disaster (2008) at:<http://vimeo.com/16481347>

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Effectiveness Research of the Leadership-Trainings of a Leading Austrian Home-Centre Chain Based on Natural Horsemanship: A Best Practice Sample of Responsible Leadership

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Abstract

Often employees advance to a leading position without the necessary expertise to manage people. Through a consistent executive development in the context of a balanced Corporate Social Responsibility (CSR) program, companies show their responsibility awareness and offer their managers possibilities to develop their leadership skills beyond professional competence. One recent method to foster “soft-skills” like social competence and emotional intelligence is leadership-training based on Natural Horsemanship. The present study evaluates the effectiveness of horse-based leadership-trainings of a leading Austrian Home-Centre chain, in order to foster emotional intelligence, social competence, as well as a clear and unambiguous body language. Overall an improvement in body language in terms of behaviour and body movement could be observed, which according to Pongratz (2002) indicates an increase in legitimacy of authority. Furthermore the survey interviews of the executive managers’ subordinates have shown a significant improvement concerning “inspirational motivation” as well as a matching tendency towards transformational leadership. Also under consideration of a potential ceiling effect, no improvements regarding emotional intelligence and social competence could be observed by self-assessment questionnaire-studies. Matching observations with questionnaires results show that subjects who improved their use of body language also improved regarding emotional intelligence.

Keywords

Leadership-training, Horses, Emotional Intelligence, Social Competence, Body Language

1 Introduction

The present paper arises from research carried out within the framework of a doctoral thesis at Karl-Franzens-Universität Graz and shows the empirical research and findings concerning the development of emotional intelligence, social competence and a clear and distinct body language by horse-based leadership-trainings. On the example of the trainings of a leading Austrian Home-Centre chain, first the problem will be outlined, as well as the current state of research and the theoretical framing. In the next step, the research questions and hypotheses will be introduced as well as the applied methods. Finally, findings will be presented and discussed under consideration of the limitations of the study.

Leadership development often lacks an appropriate education involving proper leadership competences. Such disregard may result in demotivation of employees, who do not accept and respect their new executive managers, as well as less motivated leaders, who feel left by their employees. Especially emotional intelligence and social competence are regarded as essential for leadership (see Mehnert, 2008, 12–14). Through a consistent executive development, in the context of a balanced CSR program, companies show their responsibility awareness. These companies offer their managers possibilities to develop their leadership skills beyond professional competence. For the present paper Salovey and Mayer's (1990, 189) definition of emotional intelligence as the ability to appreciate internal emotions and those of others, to understand them and be able to influence them, is to be seen as decisive. Furthermore Zimbardo and Gerrig's definition of social competence is essential, as they define it as the personal abilities and attitudes, which enable a person to interact successfully with others, including also the ability to influence the behaviour and attitudes of others in order to make them react as desired (see Zimbardo & Gerrig, 1996, 660). Beyond professional competence, social competence and emotional intelligence, a capable executive manager should also be endowed with a clear and distinct body language (see Pongratz, 2002, 255–274). The training- and education-market provides a lot of different methods to train and educate "soft-skills" for executive manager. One method to foster parts of emotional intelligence, such as empathy, as well as nonverbal communication, is horse-based leadership-training. Executive managers are educated based on the rules of Natural Horsemanship and learn through the abilities attentiveness, trust and respect, how to take in a leadership position over a horse (see Roberts, 2008, 139). Since various analogies can be found

between the social system of a herd of horses and human social structures (see Krueger, 2010, 8), a direct implication of the findings to the everyday working life can be assumed. As the principals of transformational leadership (attentiveness, trust and respect) cover with those of Natural Horsemanship, it can be assumed that a change in leadership behaviour to transformational leadership is possible. The executive managers of a leading Austrian Home Centre chain routinely attend such horse-based leadership-trainings once in their career. The aim of this study was to examine the effectiveness of these trainings regarding improvement of the before mentioned soft skills as well as leadership behaviour in accordance with derivative legitimacy of authority corresponding to Pongratz (2002).

1.1 Current state of research

Relevant literature shows numerous studies regarding the effectiveness of conventional leadership-trainings. Horse-based leadership-trainings have not been investigated sufficiently, concerning their effectiveness yet. Since 1986 meta-analyses about leadership-trainings have been published in different psychological journals like the Journal for Applied Psychology. All of them, generally, show positive training-effects and indicate that leadership-trainings prove moderately effective, although methods differ strongly (see Burke & Day, 1986; Niemiec et al., 1992; Colquitt, LePine & Noe, 2000; Collins & Holton, 2002; Powell & Yalcin, 2010). Burke & Day (1986, 243) reason, that the quality of the trainers significantly influences the achieved results. A recent meta-analysis of Powell & Yalcin (2010) showed no essential increases in efficiency of leadership-trainings during the last 50 years. The best results can be achieved through interventions for increasing learning aptitude as well as training activities aiming at the behaviour of leaders (see Powell & Yalcin, 2010, 227). The most significant effects could be observed through trainings which take the organization's individual strategies into account (see Collins, 2002, 175–176). Diverse psychological studies indicate that the efficiency of executive managers depends significantly on their emotional intelligence (see Goleman, 2004, 3). Leadership-trainings that specifically apply methods to increase emotional intelligence, show consistently positive effects (see Sala, 2001, 2). According to Boyatzis (2002, 5) emotional intelligence can still be developed in adulthood. In contrast to the so-called "Honeymoon-Effect"²⁷ (Boyatzis, 2002, 5), frequently encountered after leadership-trainings, Boyatzis & Oosten (2002, 5) indicate that leadership-trainings, specifically focused on methods to increase emotional intelligence, lead to long-term improvements.

²⁷ Honeymoon-Effect: Great enthusiasm/euphoria felt around an experience that lasts for only a short time and volatilizes shortly after.

Regarding leadership-trainings with horses, in German-speaking regions, on the one hand, different qualitative studies (e.g. Büchele, 2009; Stempel, 2011) were performed as well as theoretical papers (e.g. Dick, 2012; Zoller, 2008). On the other hand, there are quantitative studies referring to self-made questionnaires, with low sample-size and solely post-test measurements (e.g. Kolzarek & Lindau-Bank, 2011). They consistently show positive results. In Anglo-American regions this topic was investigated theoretically (e.g. Seymour & Elhaleem, 1991; Rickards, 2000; Strozzi, 2004; Goldman Schuyler & Kaye Gehrke, 2006; Hagen 2007; Roberts, 2008; Jennings & Stahl-Wert, 2008; Kaye Gehrke, 2009) with special emphasis on what executive managers can learn through handling horses and how and why a direct assignability of the experiences to the everyday working life is possible. Empirical studies in this field are still widely missing.²⁸ Therefore, in 2012, the University of Kentucky started a pilot study on this topic. Results were published in spring 2013 and showed an increase regarding emotional intelligence of the investigatory-group in contrast to the control-group in all of the measured dimensions. The most significant increase was shown in “Relation Management”. There were used standardized measuring-instruments but only a small random sample with eleven subjects in investigatory- and ten in control-group.

1.2 Theoretical Framework

Animal-assisted education is considered to support social emotional learning processes (see Vernooij & Schneider, 2008, 41). Schwarzkopf & Olbrich (2003, 253–267) postulate that animal-assisted education aims at the improvement of emotional and social intelligence. Further it raises the ability for empathy. As already Watzlawick, Beavin & Jackson (1969, 63–64) as well as Vernooij & Schneider (2008, 23) determined, animals, especially horses and dogs, react substantially on nonverbal communication and show direct and immediate behavioral reactions. Thus the communication of animals is limited to analogue forms they communicate always fair-minded and react to lowest analogue signals of body language and pitch of voice, of which humans cannot even take notice. Schwaiger (2000, 27) reported that horses have evolved a particular sense of recognizing the genuine personality and inner greatness of a person. In horse-based leadership-trainings this capability is used to discover debilitating forms of behaviour and feelings, to create congruity among verbal and nonverbal communication – to become more authentic, to learn to discern the own signals of body language more attentively and to appoint them more selectively,

²⁸ “Most research to date has been focused on the effectiveness of equine-human mental health and physical therapies. Literature searches have found no published research that looks specifically at the effectiveness of collaborating with horses to teach humans leadership competencies. For this emerging industry to be credible, solid academic research needs to be conducted” (Center for Leadership Development, University of Kentucky, 2012, [online]).

in summary just to develop and improve leadership skills (see Vernooij & Schneider, 2008, 208). Weber's sociology of domination served as theoretical foundation from organizational theory perspective, as well as his bureaucratic model (1922), and the derivative legitimacy of authority, through nonverbal communication by Pongratz (2002). The communication theory prospect is based, among others, on the theories of Schulz von Thun (2011).

The aim of this study was, to examine the effectiveness of the horse-based leadership trainings of a leading Austrian Home-Centre chain, regarding improvement of the before mentioned soft skills and leadership behaviour, in accordance with derivative legitimacy of authority corresponding to Pongratz (2002). The study was designed as a two-group-pre-test-post-test-plan (see Bortz & Döhring, 2006, 559), at which three different groups were tested, each before and after the training.

In order to follow the described aim of the study and on the above mentioned theoretical framing, the following research hypotheses for an effectiveness study of horse-based leadership-trainings were expressed:

Hypothesis H1:

If executive managers have to do with dogs or horses in their everyday or private life, their social competence and emotional intelligence is more distinct in comparison to executive managers who have not.

Hypothesis H1a:

The more executive managers have to do with dogs or horses in their everyday or private life, the more distinct their social competence and emotional intelligence.

Hypotheses H2–H5:

Executive managers trained by Natural Horsemanship, will improve social competence (H2), emotional intelligence (H3), empathy (H4) and leadership behaviour (H5) compared to the waiting group.

Hypotheses H2a–H5a:

If the horse-based leadership training leads to an improvement in nonverbal communication respectively in leadership behaviour, also social competence (H2), emotional intelligence (H3), empathy (H4) and leadership behaviour (H5) will be improved.

Hypothesis H6:

Executive managers trained by Natural Horsemanship, will improve nonverbal communication skills. Thus their legitimacy for leadership will be improved.

Hypothesis H7:

The cognitions and methods of a horse-based leadership-training can be transferred to

daily management routine and lead to medium-term changes regarding leadership behaviour.

Based on these hypotheses correspondent research questions (Q1–Q7) have been identified. Q1 asks, whether executive managers, who deal with dogs or horses in their everyday or private life, have a higher level of social competence and emotional intelligence than others. Q2–Q5 discuss to what extent the social competence, emotional intelligence, empathy, and the leadership skills of executive managers who attend Natural Horsemanship based leadership-trainings can be improved, compared to those who have not participated in the training during the study (waiting group). Q6 aimed at answering how Natural Horsemanship leadership-trainings affect the nonverbal communication of the trained executive managers and thus their legitimacy for leadership. Finally Q7 questions whether the cognitions and methods of a horse-based leadership-training can be transferred to daily management routine and whether it may lead to long-term changes in leadership behaviour.

2 Methods

For answering the research questions Q1–Q7, different research methods were used, which were both of quantitative and qualitative nature. Overall three different quantitative analyses and one qualitative analysis were realized. They finally were combined regarding Mayring’s model of triangulation to analyse the effectiveness of Natural Horsemanship based leadership-trainings (see figure 1).

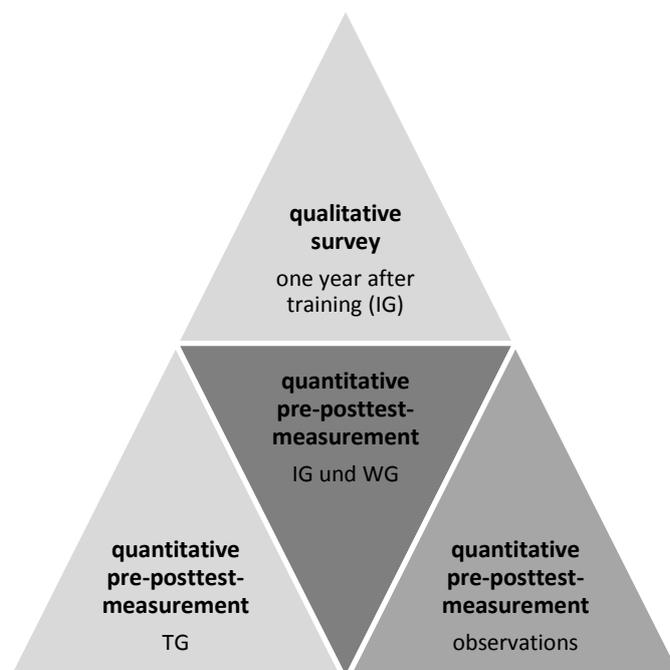


Figure 1: Model of triangulation according to Mayring (2001)

The empirical evaluation was performed as pre- and post-test with investigation-, waiting- and transfer-group (subordinates of managers in investigatory-group). Results were determined using correlation-analyses, variance analyses, and nonparametric tests (Wilcoxon, Mann-Whitney).

For the first time a quantitative and qualitative evaluation on horse-based leadership-trainings was performed with focus on effectiveness using psychological questionnaires like the Trait Emotional Intelligence Questionnaire (TEIQue), the Multifactor Leadership Questionnaire (MLQ) and the Leadership Behavior Inventory (LBI). In addition, video analyses of training units and qualitative survey interviews, one year after the trainings took place.

2.1 Quantitative Research

1. pre-post-test-measurement of an investigatory- (IG) and a waiting-group (WG)
2. pre-post-test-measurement of a transfer-group (TG)
3. pre-post-test-measurement of observations by means of video-tape records of investigatory-group (IG) during leadership-trainings

Within the quantitative research three different groups were measured:

(IG) investigatory-group: executive managers, who participated in the horse-based leadership training

(WG) waiting-group: executive managers, who did not participate in the horse-based leadership training during the study, but on a later point of time

(TG) transfer-group: subordinates of executive managers of investigatory-group

2.1.1 Random Sampling

The empirical investigation took place from March 2011 to April 2011 within the framework of the horse-based leadership-trainings of a leading Austrian Home-Centre chain, in Waldzell/Upper Austria. During these horse-based leadership-trainings a total of 97 subjects were observed. 49 belonged to the investigatory-group and 48 to the waiting-group. The investigatory-group was chosen by the department of human-resource development of the Home-Centre chain. It contained Austrian and German executive managers of logistic-departments, service-centres, regional custodians of different provinces, as well as executive managers of IT-departments and administration.

The waiting-group consisted of executive managers of construction departments, administration, as well as chief managers of affiliates in Austria and Germany. The definition "waiting-group" was chosen to express the possibility for the members of this group to participate in the horse-based leadership-training later.

The presented study was designed as a quasi-experimental analysis in which investigatory subjects could not be allocated randomly. They were selected by the Home-Centre chain's responsible for Human Resources. Instead of randomizing subjects of the waiting-group were parallelized regarding important demographic characteristics, to facilitate comparability between the two groups (see Table 1). Thus executive managers of the same management level were acquired, who had not participated in any kind of horse-based leadership-training before and who had volunteered in this study.

Table 1. Comparison of arithmetic means (M) and standard deviations (SD) between investigatory-group (IG) and waiting-group (WG)

	IG (N=49)		WG (N=48)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
years of service in org.	9.816	5.581	9.448	5.955
years in current leading pos.	3.633	2.679	3.958	3.541
number of subordinates	27.430	44.684	28.980	47.458
	<i>median</i>		<i>median</i>	
age group	4 (36 – 40)		4 (36 – 40)	

The random sample of the investigatory-group contained 49 subjects, whereof 21 were female and 28 male. The waiting-group contained 48 subjects, whereof again 21 were female and 27 male. The rate of return was 44 of 49 subjects of the investigatory-group and 46 subjects of 48 of the waiting-group.

2.1.2 Used Questionnaires

Horse-based leadership-trainings have been analysed scientifically regarding their effectiveness by means of quantitative and qualitative analyses under assignment of standardized psychological questionnaires. TEIQue was filled in by IG and WG, before and after the intervention, LBI and the MLQ were filled in by IG, WG and TG as well, before and after the intervention. TEIQue is a self-assessment inventory to comprehensively measure trait EI (see Petrides, 2009). It consists of 153 items, measuring 15 distinct facets, that are divided into four superior factors, well-being, self-control skills, emotional and social skills, as well as global trait emotional intelligence in a seven-ary rating-scale (e.g. Freudenthaler, Neubauer, Gabler, Scherl, & Rindermann, 2008, 673). The LBI is a multisource feedback device, to capture success-relevant facets of leadership behaviour, and is adequate for self-assessment as well as for assessment by others. With this device success-relevant leadership behaviour in

terms of learnable and changeable competences can be determined. The questionnaire is eligible for pre- and post-test measurement for targeted effectiveness review in leadership research (see Bergner, 2009, 160). MLQ surveys the executive manager's particular style of leading and is capable of either self-assessment or assessment by others and may be used also for measuring changes (pre-/post-test)(see Felfe, 2006, 61–78). LBI and MLQ are measured on a five-ary rating-scale. According to Sala (2001) also widespread sociodemographic questions have been asked as already mentioned above (see Bortz & Döhring, 2006, 559).

2.1.3 Analyses

(H1, H2 – H5) Pre- and post-test measurement of investigatory- and waiting-group

A two-group-pre-test-post-test-plan (see Bortz & Döhring, 2006, 559) has been applied, at which each of the groups was tested before and after the training. Self-efficacy of horse-based leadership-trainings could be measured via questionnaires regarding a possible improvement of social competence and emotional intelligence, as well as regarding changes in leadership behaviour. The waiting-group received an identical questionnaire at the same time points. Subjects of all groups filled in the same questionnaire each before and after the horse-based leadership-training (approx. one week before and two weeks afterwards).

(H5) Pre- and post-test measurement of transfer-group

A transfer-group was established, assembling two to three subordinated employees of each executive manager. Altogether 24 subordinates participated in this investigation, with a rate of return of 16. Subjects of the transfer-group received an adapted questionnaire in terms of assessment by others and only two of the three questionnaires (MLQ and LBI) approximately one week before and two weeks after their executive managers attended the horse-based leadership-training. During analyses, the generated data set was aggregated on assessed executive managers. In total seven executive managers were observed by their subordinates.

(H6) Pre- and post-test measurement of observations by means of video-analyses from live-recordings

Furthermore videos from live-recordings of two exercises during the horse-based leadership-training were analysed. The random sample of the video-analyses accounts for twelve subjects. They have been evaluated by thirteen students of psychology by means of an observation form, created on the basis of own observations of the author as well as feedback of the trainers during lessons under support of an expert²⁹ for nonverbal communication. The observation form is structured in three levels: body movement, behaviour and relationship. It has been validated concerning observer's

²⁹ Leyrer, E. (Centre of social competence, University of Graz)

agreement at which intra-class-coefficient-values are located between 0.800 and 0.925. The internal consistency check results from exclusion of respectively one variable of body movement and relationship in Cronbach α -values between 0.800 and 0.977.

2.2 Qualitative Research

An e-mail survey (four questions) among the investigatory group, one year after the horse-based leadership-training was performed, asking for the following four issues:

1. reminders of the training
2. situations in daily management routine, in which the training-experiences could have been realized
3. benefit of the horse-based leadership-training
4. personal highlights of the horse-based leadership-training

2.3 Qualitative Sampling

The qualitative survey within investigatory-group subjects has been executed via e-mail one year after intervention (see page 6). The qualitative sample accounted for 44 subjects of investigatory group with a return rate of 18.

2.3.1 Analyses

(H7) Qualitative survey within investigatory-group subjects one year after intervention

The survey was analysed according to qualitative content analysis based on Mayring (2000). By means of the software MAXQDA, a category system corresponding to Mayring (2010), was generated in order to compute frequencies of the mentioned answers.

3 Results

In this section, the main results of the pre- and post-test measurement, concerning research questions Q1–Q7 and hypotheses H1–H7 as outlined before will be illustrated for the investigation-, waiting-, and transfer-group. Furthermore, results of observations by means of video-analyses from live-recordings, as well as of the qualitative survey one year after intervention will be presented.

(H1, H2–H5) Pre- and post-test measurement of investigatory- and waiting-group

Regarding hypothesis H1 no significantly higher input values regarding social competence and emotional intelligence could be observed on subjects who keep dogs or horses in their everyday/private life in contrast to subjects who do not. Considering the time they spend with animals in their everyday or private life, it has been observed, that for example TEIQue facets self-esteem ($r = 0.255$; $p = 0.037$), optimism ($r = 0.301$; $p = 0.013$), and relationship ($r = 0.271$; $p = 0.026$) were correlated positively with time they spend with animals. Thus hypothesis H1 could be confirmed, at least for some issues of social competence and emotional intelligence.

Results of pre-and post-test self-assessment-measurement of investigatory- and waiting-group show no significant improvements in contrast to the waiting-group, neither regarding social competence (H2) and emotional intelligence (H3), nor regarding empathy (H4) and leadership behaviour (H5). Also under consideration of a potential ceiling effect, no improvements regarding these competences could be determined. Thus, questionnaire-self-assessment-survey, hypotheses H2–H5 have to be refused.

(H5) Pre- and post-test measurement of transfer-group

The questioning of the executive manager's subordinates (transfer-group) added up to a significant improvement regarding "Inspirational Motivation" ($p = 0.018$; $\eta^2 = 0.635$) as well as a matching tendency for transformational leadership ($p = 0.090$; $\eta^2 = 0.405$) of questionnaire MLQ. Variable "Inspirational Motivation" shows a reliability of $\alpha = 0.771$. Furthermore, a significant increase of planning- and coordination competence of questionnaire LBI could be observed ($p = 0.005$; $\eta^2 = 0.757$) with a reliability of $\alpha = 0.940$ (details see appendix tables 5–6). Considering the results, in context of questionnaire-assessment by others survey hypothesis, H5 can be confirmed. Detailed tables of results (T-test) will be shown at the appendix.

(H6) Pre- and post-test measurement of observations by means of video-analyses from live-recordings

Overall, an improvement in body language in terms of behaviour and body movement could be observed, which, according to Pongratz (2002), indicates an increase in legitimacy of authority. Thereby subjects of the investigation group improved regarding one item of body movement, describing a self-confident body movement (body3; $p = 0.002$; $\eta^2 = 0.615$; see table 2) and two items of behaviour, describing the position executive managers take in towards the horse and the exposure to pressure they practice (behavior1 $p = 0.003$; $\eta^2 = 0.570$; behavior3 $p = 0.001$; $\eta^2 = 0.664$; see table 2) as well as regarding behaviour overall including the third item, that describes a certain, active, consistent and goal-oriented body language (all three items; $p = 0.009$; $\eta^2 = 0.477$; see table 2). Thus hypothesis H6 can be confirmed. Detailed tables of results (univariate variance analyses) will be shown at the appendix.

Table 2: Univariate variance analysis: significant observations H6

	Pre		Post		$F_{3,9}$	p	η^2
	M	SD	M	SD			
body3	3.276	0.535	4.160	0.509	17.580	.002	0.615
behav1	3.199	0.906	4.436	0.383	14.599	.003	0.570
behav3	2.930	0.522	3.814	0.406	21.740	.001	0.664
behav_tot	3.083	0.704	3.900	0.394	10.037	.009	0.477

Power-analyses (G*Power) of these results, show values between 0.823 and 0.988. Items which show Cronbach-Alpha values lower than 0.600, have been disregarded according to explanations concerning internal consistency check on page 10 of this paper.

(H7) Qualitative survey within investigatory-group subjects one year after intervention

By answering the four questions of the e-mail survey one year after the intervention (see 2.2) subjects provided a detailed report about what they learned regarding establishing pressure moderately, or how they changed their leadership behaviour in handling their subordinates. Within their most significant impressions in relation to the horses they mentioned for example that they lost fear and got more self-confident and proud throughout the training as well as positive emotions they had. They often mentioned respect, trust and sensitiveness as important values communicated by the horses.

Table 3 shows the results of the qualitative survey in form of a frequency analysis based on the created category system corresponding to Mayring (2010) within investigatory-group subjects one year after intervention (see page 6).

Table 3: Frequencies of codings regarding qualitative survey (MAXQDA) out of e-mail survey; one year after intervention

Category	Sub-category	Frequency	Percent
Reminders of the training (V1)	Emotions (V1_1)	13	25%
	Situations (V1_2)	17	33%
	Experiences (V1_3)	14	27%
	Development of competences (V1_4)	8	15%
Practice transfer (V2)	Situations with subordinates (V2_1)	10	34%
	Situations with clients (V2_2)	2	7%
	Leadership principles (V2_3)	7	24%
	Leadership behaviour/appearance (nonverbal communication) (V2_4)	10	34%
Meaning of the training (V3)	For own person / personality (V3_1)	9	30%
	for leadership rule (V3_2)	8	27%
	for all areas of life (V3_3)	13	43%
Highlights (V4)	Specialexercises (V4_1)	17	44%
	Awarenesses (V4_2)	12	31%
	Relationship to horse (V4_3)	10	26%
Total of coded statements		150	

As shown in table 3 most of the subjects reported on certain situations, during the horse-based training, when they were asked for their reminders one year after. Second most often mentioned reminders were experiences they made through the intervention. Regarding practice transfer situations with subordinates and a changed leadership behaviour/appearance (nonverbal communication) were recalled equally frequent on first rank. When subjects were asked to comment on the meaning of horse-based leadership-trainings, they most frequently mentioned awareness and findings, that are useful for all areas of life. As personal highlights of the training, they most often referred to special exercises. However, the last exercise on the second day with the free running horse was mentioned most frequently. Under consideration of these results hypothesis H7 can be confirmed.

(H3–H5) Ancillary analyses

Together with the main investigation, also socio-demographical data has been collected and analysed, related to input values of pre-test measurement. To mention only striking findings, for example MLQ facets contingent reward ($r = -0.241$; $p = 0.022$)

and transactional leadership ($r = -0.240$; $p = 0.022$), are negatively correlated to the time subjects spend with animals in their everyday/private life. This means that the more time executive managers spend with animals, the less they reward their subordinates and the less they practice transactional leadership. This is consistent with the finding that transformational leadership (to be seen as opposite to transactional leadership) can be improved through training with animals. Many other TEIQue, MLQ, and LBI facets are correlated positively to age, satisfaction in their profession and the self-assessment of job performance. Hardly any correlations could be found regarding sex, level of education, income, period of leading position, working hours per week and quantity of subordinates.

Furthermore, results of the video-analyses from live-recordings have been matched to questionnaire-results of twelve randomly sampled subjects. One of subjects however did not fill in post-test questionnaires. Results were generated by means of Pearson- and Spearman-correlation-analyses of pre-post-test-differences of questionnaire-items related to pre-post-test-differences of observation-items that show significant improvement. Hence, the items, body3 and behavior1 and 3 as well as behaviour total, run into correlation. As shown in table 4, improvement of item body3 (self-confident appearance) correlates positively to TEIQue facets empathy, stress-management, emotion-management and to TEIQue-total score. These facets of TEIQue also positively correlate to items behavior1 and 3 as well as to behaviour in total (except behavior1 and tot_tei), which refer to leadingly going forward, well-balanced exposure to pressure and an active, certain, consequent and goal-oriented body language. These results may indicate, that an improvement of body language leads to an improvement of emotional intelligence. Regarding MLQ, that investigates style of leadership, a positive correlation with management by exception – passive, which approves leading interventions only in case of need (exceptional case), could be found. This may implicate, that an improvement of body language, accompanied with an improvement of self-confidence (as seen in correlations with TEIQue facets), leads to a change in leadership behaviour in a way, that executive managers show more trust to their subordinates allowing them to work more self-responsible with less control.

Table 4. Correlation observations vs. questionnaire-survey

		Diff_body3 (n = 11)		Diff_behavior1 (n = 11)	
		<i>r</i>	<i>p</i> (2-sided)	<i>r</i>	<i>p</i> (2-sided)
TEIQue	Diff_emp (Spearman)	0.718	.013	0.803	.003
	Diff_str (Spearman)	0.817	.002	0.739	.009
	Diff_man (Pearson)	0.605	.048	0.636	.035
	Diff_tot_tei (Spearman)	0.612	.045	0.525	.097
MLQ	Diff_MBP (Spearman)	0.602	.050	0.614	.045
		Diff_behavior3 (n = 11)		Diff_behavior_total (n = 11)	
		<i>r</i>	<i>p</i> (2-sided)	<i>r</i>	<i>p</i> (2-sided)
TEIQue	Diff_emp (Spearman)	0.681	.021	0.853	.001
	Diff_str (Spearman)	0.582	.060	0.779	.005
	Diff_man (Pearson)	0.624	.040	0.645	.032
	Diff_tot_tei (Spearman)	0.770	.006	0.727	.011
MLQ	Diff_MBP (Spearman)	0.461	.154	0.490	.126

Under consideration of these results hypotheses H3, H4 and H5 may be confirmed under the prerequisite that the horse-based leadership training leads to an improvement in body language and thus in legitimacy of authority.

4 Limitations of the study

Limitations of the present study are the small sample sizes, especially of the transfer-group. This quite small sample size is due to a management change during investigations, which led to the problem that executive managers of the pre-test transfer-group have not been the same as during post-test-measurements. Most subjects in the investigatory-, respectively transfer-group were affected by this change, so that altogether only seven executive managers could truly be evaluated. Also sample sizes of the investigatory- (49 subjects) and waiting-group (48 subjects) were relatively low. However, in comparison to other studies within the research area of coaching effectiveness, they can be considered adequate.

Almost all arithmetic means of the measured items were considerably higher than arithmetic means in the random sample of the questionnaire's validation report. This can be explained by the fact that the random sample only consisted of executive managers, who worked in their leading position for more than 3,5 years on average. Furthermore they were part of the organization for more than 9 years. As the questionnaires TEIQue, MLQ and LBI are self-assessment inventories, it can be assumed that experienced executive managers may generally have a high level of self-assessment.

Another point worth to consider is, that the horse-based leadership-training is promoted within the Home-Centre chain as training for advanced executive managers. That is to say, it is not a fundamental training for leadership skills but an advanced program for already developed leadership skills.

As a further limitation of the current study, the difficulty to measure how horses may have influenced the achieved results disregarding other parameters like the personality of the trainer or the used methods has to be mentioned. To antagonize this difficulty, measurements were created in a way that post-tests have been executed before post-coaching (without horses). This was planned to be accomplished by the internal trainer (who held the horse-based trainings too) in individual meetings with every subject of investigatory-group about one month after the horse-based leadership-training. Furthermore, results show a tendency to transformational leadership, a kind of management style, which particularly can be practiced with horses.

5 Triangulation and Discussion

As already mentioned, the three different quantitative analyses and the qualitative analysis were combined in a multi-level framework to analyse the effectiveness of Natural Horsemanship based leadership-trainings regarding Mayring’s Model of triangulation (see figure 2).

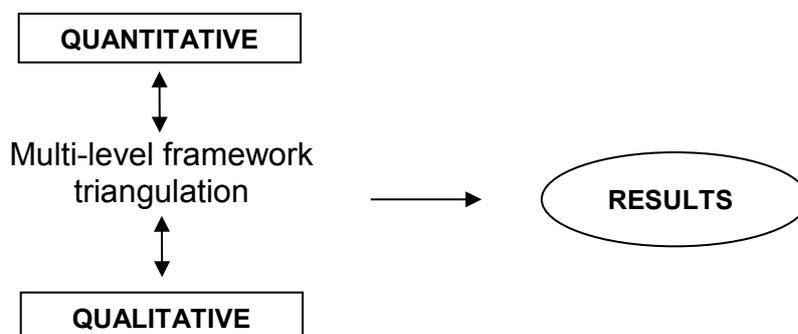


Figure 2: Possibilities of integration of qualitative and quantitative analyses on design-level (see Mayring, 2001, 6)

The purpose of the model of triangulation is to approach research questions through different perspectives and to answer them through different methods. The point is not to determine which method leads to more proper results. In fact results should support one another so that intersections and oppositions can be identified (see Mayring, 2001, 6–7). Using data-triangulation on the one hand and “Between-method-Triangulation” (Flick, Kardorff, Keupp, Rosenstiel & Wolff, 1991, S. 312–313) on the other hand, the present study comes to the following conclusion:

By means of horse-based leadership-trainings, as two-day courses, “Traits” like emotional intelligence or social competence can hardly be improved. An improvement of legitimacy of authority referred to Pongratz (2002) is certainly possible by well-directed training of body-language and nonverbal communication, during horse-based leadership-trainings, as current results confirm.

The particular effect of horses, during leadership-trainings, becomes obvious in the results of the pre- and post-test measurement of the transfer-group, which show a significant improvement concerning „Inspirational Motivation“ of executive managers, with an effect size (η^2) of 0.635. This variable of MLQ accounts for transformational leadership for which a tendency of improvement could be observed. This result fortifies the assumption that an improvement of leadership behaviour, respectively a change in it, according to transformational leadership may be possible.

The described results of the quantitative survey are supported by results of the observations by means of video-analyses from live-recordings of two exercises during the horse-based leadership-training. Observations showed significant improvements regarding body-movement and behaviour with effect sizes (η^2) between 0.570 and 0.664. By correlating significant results of observations with questionnaire-items, a positive correlation to empathy, as well as to some items of emotional intelligence and leadership behaviour appeared. Improvement in body language through horse-based leadership trainings and thus in legitimacy of authority provided it can be concluded that also facets of emotional intelligence as well as a change in leadership behaviour may be achieved.

In summary, results of the qualitative survey, one year after the intervention, are consistent with the findings of Boyatzis & Oosten (2002, 5). Accordingly, the so-called “honeymoon-effect” (Boyatzis, 2002, 5) after leadership-trainings that use well-directed methods to improve emotional intelligence does not appear, but rather long-term effects can be observed. One year ago subjects described certain feelings and emotions they had during the horse-based leadership-training as well as special exercises and situations they experienced with horses and how they apply the learned methods in their everyday management routine. They described changes in contact with their subordinates and regarding their leadership behaviour/appearance (body language). As assumed subjects confirmed, that the effect of horse-based trainings is to be seen as worthy for all areas of life, not only for exercising management skills.

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7 Appendix

Pre- and post-test measurement of transfer-group (H5)

Table 5: T-Test MLQ – Transfer

	pre		post		T_6	p	η^2
	M	SD	M	SD			
CR	4.286	0.425	4.492	0.439	-1.722	.136	0.331
IS	4.054	0.543	4.095	0.274	-0.306	.770	0.015
MBP	3.560	0.664	3.363	0.522	0.927	.390	0.125
MBA	3.286	0.214	3.280	0.253	0.068	.948	0.001
LF	4.214	0.328	4.119	0.531	0.603	.569	0.057
I1b	4.341	0.388	4.460	0.413	-0.748	.483	0.085
I1a	3.976	0.476	4.131	0.581	-1.430	.203	0.254
IM	4.304	0.318	4.506	0.268	-3.232	.018	0.635
IC	3.923	0.593	3.911	0.526	0.121	.908	0.002
EFF	4.071	0.623	4.048	0.633	0.225	.829	0.008
EEF	3.865	0.425	4.048	0.584	-1.515	.180	0.277
SAT	3.762	0.568	3.762	0.543	0.000	1.000	0.000
AUS	3.923	0.663	3.869	0.642	0.881	.412	0.115
Transform_F	4.087	0.417	4.162	0.411	-2.020	.090	0.405
Transakt_F	3.786	0.295	3.886	0.305	-1.653	.149	0.313
Passive_non_F	2.673	0.234	2.622	0.233	0.321	.759	0.017
Outcomes	3.900	0.499	3.952	0.553	-0.949	.379	0.130

Table 6: T-Test LBI – Transfer

	pre		post		T_6	p	η^2
	M	SD	M	SD			
Int_Umg	3.738	0.300	3.660	0.379	1.621	.156	0.305
FK	4.619	0.973	4.869	0.610	-1.491	.187	0.270
Verh	3.671	0.157	3.676	0.094	-0.098	.925	0.002
Net	3.095	0.477	3.143	0.488	-0.362	.730	0.021
Mot	3.746	0.523	3.909	0.387	-1.683	.143	0.321
Pk	3.726	0.430	3.929	0.338	-4.321	.005	0.757
Inf	3.900	0.238	3.755	0.168	1.271	.251	0.212
SEman	3.765	0.504	3.619	0.399	1.005	.354	0.144
Man	3.979	0.445	3.929	0.379	0.546	.604	0.047

Del	3.891	0.218	3.681	0.251	1.626	.155	0.306
LBI_ges	3.813	0.323	3.817	0.290	-0.084	.936	0.001

Full tables of Pre- and post-test measurement of observations by means of video-analyses from live-recordings (H6)

Table 7: Univariate variance analysis: observations H6 „body movement“

	Pre		Post		$F_{3,9}$	p	η^2
	M	SD	M	SD			
body1	3.699	0.555	3.353	0.722	1.539	.241	0.123
body2	3.442	0.629	3.442	0.574	0.000	1.000	0.000
body3	3.276	0.535	4.160	0.509	17.580	.002	0.615

Table 8: Univariate variance analysis: observations H6 „behavior“

	Pre		Post		$F_{3,9}$	p	η^2
	M	SD	M	SD			
behav1	3.199	0.906	4.436	0.383	14.599	.003	0.570
behav2	3.122	0.750	3.449	0.562	1.107	.315	0.091
behav3	2.930	0.522	3.814	0.406	21.740	.001	0.664

Table 9: Univariate variance analysis: observations H6 „relationship“

	Pre		Post		$F_{3,9}$	p	η^2
	M	SD	M	SD			
Rel1	4.064	0.336	3.705	0.529	3.934	.073	0.263
Rel2	3.276	0.738	3.628	0.870	1.025	.333	0.085
Rel3	3.122	0.763	3.237	0.315	0.291	.600	0.026

Table 10: Univariate variance analysis: observations H6 „all levels“

	Pre		Post		$F_{3,9}$	p	η^2
	M	SD	M	SD			
body_ges	3.472	0.535	3.652	0.467	0.701	.420	0.060
Behav_ges	3.083	0.704	3.900	0.394	10.037	.009	0.477
Rel_ges	3.487	0.594	3.524	0.485	0.027	.872	0.002

Relevance and Development of the “Business Sustainable Management” Competence in Vitoria-Gasteiz Business Management and Administration Degree†

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Abstract

After analyse the Business Sustainability Management competence through two principal tools: (a) analysing the evolution of student’s perceptions of this competence (b) analysing the school lecturer’s perceptions on this topic, as they will be the responsible of the development and evaluation of this competence; we can conclude that our results show a significant increase of the level of development of the BSM competence as perceived by students on the new degrees when compared to students on the short-cycle degrees and that the academic staff agrees with the use of a broad definition of BSM competence.

Keywords

Graduation Competences, Competence Development, Business Sustainability, Social and Environmental Management, Innovative education

1 Introduction

The Bologna Process in Higher Education has brought about important changes in European universities over recent years. At the Vitoria-Gasteiz Business School of the University of the Basque Country we have faced the challenge of designing and developing a new degree: Business Management and Administration (BMA) degree. Within this process, the definition of the degree competences emerged as one of the more complex tasks because they express both our commitment to the student, and the milestones to evaluate the learning process (Lafuente et al., 2011; Lopez Caro et al., 2011).

The management of the business social and environmental dimensions, herein identified as Business Sustainable Management (BSM), is one of the competences of the new degree, and will be one of the focuses of this paper. However, the increasing economic and social relevance of BSM in contemporary business environment has not been matched by its relative weight in the syllabus of the new Business Administration degrees for most Spanish universities.

The recent introduction of the new degrees thus provides us with an unrivalled opportunity to observe whether there are differences between the students on the former short-cycle Degree in Business Studies and the students on the current BMA Degree, and whether those differences are significant. Additionally, we are aware of the intrinsic complexity of the BSM concept and the absence of a clear definition of BSM, and the high complexity associated with it.

This paper is structured as follows. The nexus of the BSM competence in the BMA Degree offered by Spanish universities is first compared in order to place the one offered by our centre in context. In the third section we review the different approaches that attempt to define BSM. Having prepared an interview to know the lecturers' opinions about the BSM definitions, in the fourth section, we analyse quantitatively and qualitatively the results obtained. Additionally, we study the School student perception and set out the paper hypothesis. The results obtained are then presented. The final section considers the most important conclusions reached.

2 Relevance of the “BSM” competence in the Spanish BMA degrees and its situation in Vitoria

Table 1 summarises the comparative performed by Iturricastillo et al. (2009) regarding the extent of public dissemination of the competences defined by the Spanish universities that offer the BMA Degree on their programmes. The upper row of the table contains the 19 universities offering the BMA Degree which publish information on the graduation general competences. The first column of the aforementioned table lists the general competences defined by at least two different universities. The last column shows the number of universities that include each of the competences in their graduation profile and the competences are ordered from their greater to lower presence in Spanish universities.

The graduation competences whose contents can be related to the BSM competence are the three in bold, particularly the first two and only the first, which focuses on the ethical dimension, has a relatively broad degree of coverage in Spanish BMA degrees (8 out of 19, or 42%). This shows that the integration of the BSM competence in the Spanish BMA degrees is rather scant.

Table 1: Ranking of the competences on graduation of the BMA Degree of the Spanish universities that have made it public*

GENERAL COMPETENCES (Capacity of / for...)	Alicante	Cataluña	Mondragón	Sevilla	Deusto	Vitoria-Gasteiz	TOTAL
To plan, manage a company	X	X	X		X		X	14
Take decisions		X	X		X	X	X	13
Team working	X		X		X	X	X	13
.....								
To develop work ethic dimension⁽¹⁾					X		X	8
.....								
To understand the social responsibility					X	X		4
.....								
To assume responsibility and commitment						X	X	3

*) Source: Iturricastillo et al. (2009) p. 9.

On the contrary, the BSM competence has been set up as a central aspect when designing and implementing the BMA Degree at the Vitoria-Gasteiz Business School (UPV/EHU).

The BSM competence as a significant core area of the BMA Degree is due to the following factors: (i) the greater commitment of contemporary society towards sustainability, amongst young people in particular; (ii) the emphasis on sustainable management of Vitoria-Gasteiz, chosen as European Green Capital 2012; and finally, (iii) the strong teaching and research commitment of a significant group of lecturers of the Business School.

In fact, not only has the BSM been incorporated in the framework of the degree competences, but a new Minor associated to the development of these points (“Minor in Business Social Management”) has been designed and currently being implemented. In turn, the greater involvement of a large number of lecturers has fostered participation in numerous agreements with companies and institutions in related educational innovation and research projects, along with a significant number of doctoral theses being defended in this area.

We believe that all these circumstances should increase the perceived degree of development and relevance in relation to the BMA Degree among students and graduates in the medium and long term. In our case, the inclusion of the competence

is not merely an esthetical or formal point, but rather that it is in response to concerns shared by the academic team and our students in particular, have increasingly greater perception of these issues.

On the other hand, although the companies' concern over the management effects on the available resources has been growing, we see that this concern has not been adequately reflected in most of the degrees more closely linked to business management.

3 “Business Sustainability Management” definition approach

3.1 Sustainability approaches

Analysing the institutional context and conceptual framework, we can say that the pressing environmental problems of 70s led that different international organizations began to become aware of these problems.

Thus, in 1972 the Conference of United Nations (UN) shook relations between environment and development. In parallel, the same year the Club of Rome published "The Limits to Growth", better known as "Meadows Report". This document warned about the existence of biophysical limits to the growth of economic systems and advocated zero growth for rich countries.

Although this previous approaches, Sustainable Development (SD) did not occupy any place in the institutional area until the late 80s.

The UN World Commission on Environment and Education (WCED) in 1987 presented the report "Our Common Future", better known as the "Brundtland Report" (BR). This report formally established the concept of SD (WCED, 1987:54):

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

This definition so ambiguous parts of a previous diagnosis that is very clear: "The security, well-being, and very survival of the planet depend on such changes" (WCED, 1987:38), in reference to the changes that should be carried out due to environmental and global resources problems, such as the destruction of the ozone layer or reduction of drinking water, which is evidenced from the 80s and intensified later.

In order to address these problems, another major milestone in the world was the 1992 UN Conference in Rio de Janeiro, which produced a plan of action for the SD.

The definition of SD is so generic that has led to many interpretations, in general, different from its genuine meaning and the name "sustainable" has been introduced in many terms but without respond to the true meaning of sustainability.

However, a thorough analysis of the BR highlights a number of elements that are central to the full adoption of the concept of SD (Bermejo et al., 2010): (a) development means: "the satisfaction of human needs and aspirations is the main objective of development" (WCED, 1987:54), (b) SD itself contains two fundamental concepts: (1) the concept of needs and (2) the idea of limitations imposed by the state of technology on the environment's ability to meet present and future needs, (c) sustainability refers only to the environmental dimension and (d) we need a long-term strategic planning for the necessary transformations to change the development model.

According to Bermejo et al. (2010:17), BR adopts a number of premises in the construction of the concept of sustainability:

- *It doesn't advocate unlimited growth, only the necessary to achieve the satisfaction of basic needs.*
- *The technological development is necessary, but it doesn't solve everything.*
- *Sustainability relates only to the environmental dimension, which is crucial.*

The BR also calls to action and is still alive 25 years later, supported by prestigious scientists and UN agencies. In the past 50 years, about 60% of major goods and environmental services provided by ecosystems worldwide is being degraded or are being used unsustainably (MEA, 2005:6).

The SD requires, ultimately, a deep reflection aimed at the transformation of the current development model (based on the growth in the use of natural resources and materials) and its impacts on natural ecosystems. The conditions that determine the sustainability of the natural system are of special importance because apart from them there is no possibility of building social and economic model. If we don't carry out radical structural changes in production and consumption systems overall, it seems that the outlook will not improve in terms of sustainability and human welfare.

According to the orthodox interpretations of sustainability, there are two main orthodox interpretations of the concept of SD: The theory of dematerialization (Herman et al., 1990) and the Triple bottom line theory (Elkington, 1997).

The interpretation of the theory of dematerialization holds that it can continue to grow indefinitely and at the same time reduce resource consumption and environmental impacts. This theory arises from the idea of dematerialization growth or decoupling growth of physical basis. In this sense, this theory matches the BR in that it identifies sustainability with the environment and this determines the economic dimension. However, it is not coherent with the BR because it defends unlimited growth and ignores the social dimension of meeting the basic needs of people.

On the other hand, the main argument of Triple bottom line theory is that sustainability concerns not only the environmental but also refers to the economic and society. This theory is defended by the main international organizations and it is the most widespread perception on the SD.

It is also assumed by the main business centres of power and transnational corporations. The frameworks of the Corporate Social Responsibility (CSR) of companies and their management models such as EFQM use this orthodox view of SD. According to this point of view, sustainability is based on a triple bottom line: economic, social and environmental and the three approaches have the same range and are comparable between them.

Following this interpretation we move from one point of view that defines the fields of development (economic and social dimensions) and sustainability (environmental dimension) to another one in which the SD becomes a generic term applicable to these three dimensions and that it can integrate into the SD, core elements of the current global socioeconomic system. This triple bottom line omits any reference to the growing scarcity of natural resources.

3.2 BSM previous definitions

Despite the existence of a common definition of SD concept, there is not a clear definition of BSM that can be used in BMA degrees.

There are many initiatives that try to define the BSM concept with a common definition, among others, EFQM, United Nations Global Compact, Guides of Global Reporting Initiative (GRI) and the Principles for Responsible Management Education (PRME). In the Spanish case many organizations have signed UNGC and GRI and we can state that in Spain the topic of BSM has a big importance.

The Principles for Responsible Management Education (PRME), launched in 2007, provide an engagement framework to advance corporate responsibility through the incorporation of universal values into curricula and research. The PRME have been developed by an international task force of sixty deans, university presidents and

official representatives of leading business schools and follow from a recommendation of all academic stakeholders of the Global Compact. In this initiative, business schools and management-related academic institutions, and universities are also encouraged to participate.

Regarding the EFQM, the EFQM Excellence Model allows people to understand the cause and effect relationships between what their organization does and the results it achieves. The fundamental concepts of Excellence outline the foundation for achieving sustainable excellence in any organization. They can be used as the basis to describe the attributes of an excellent organizational culture.

4 Vitoria-Gasteiz School study

Despite the existence of a common definition of SD concept, there is not a clear definition of BSM that can be used in BMA degrees, because the definition of SD is so generic that has led to over 300 different explanatory definitions (EEA, 1997:21) and many interpretations, in general, different from its genuine meaning.

Notwithstanding this, we believe that it is not possible to develop effectively a competence if there is not an agreed definition of it. Hence, we believed it to be necessary to start analysing the BSM competence through two principal approaches: (a) analysing the school lecturer's perceptions on this topic, as they will be the responsible of the development and evaluation of this competence (b) analysing the evolution of student's perceptions of this competence.

In the first approach, we contacted with all subject coordinators (20) of the first two courses (the courses implanted in the analysed period) of BMA Degree in Vitoria-Gasteiz Business School. The interview was structured on a previously designed questionnaire that tried to cover the whole spectrum of approaches that may be related to BSM competence with closed and open questions (see Appendix). The aim of this questionnaire was to analyse deeply the BMA degree lecturer's opinion about the BSM dimensions mentioned in the literature.

The analysis of the evolution of these variables (relevance, development, and the gap existing between both) associated to the BSM competence is based on a questionnaire administered to 418 students of the first two courses of BMA Degree and the last two courses of the short-cycle Degree in Business Studies at the Vitoria-Gasteiz Business School between May 2011 and May 2012. This questionnaire is administered, answered and collected in the School every two years to observe the perception of students on BMA degree competences as well as their satisfaction with

the School, among other things. We will be glad to show the entire questionnaire model if any person is interested.

4.1 School Lecturer's perceptions

Seeking the opinion about the BSM definition, we have taken different possible BSM definitions (taken into account the previous revision) and through qualitative and quantitative interviews, we state the starting point existing in the School. During the interviews, the lecturers will be asked to consider points relating to the concept of BSM and to its application as a transversal competence in their subject.

The interview model (see Appendix) is based on 4 different types of questions. In the first question, they had to say what it is the degree of importance of different BSM concept dimensions in the context of the BMA Degree. In the second question, they had to ask about the degree of development of the same BSM concept dimensions in their subject and the assessment system of their subject to reflect the achievement of the BSM competence. In the third question, they had to comment if they would be willing to delve further into this transversal competence (BSM) in the future. Depending on the response to this question they had to explain the difficulties to envisage for a greater development of BSM in the School in the future or the reasons for their negative answer. The fourth question was open.

Our descriptive analysis is based on the answers to a questionnaire administered to 20 lecturers (all subject coordinators) of the first two courses of BMA Degree in Vitoria-Gasteiz Business School because this year we are implementing the third course and the Minors.

The different sustainability dimensions indicated in the survey seem to cover the whole spectrum of approaches that may be related to BSM competence.

In general, the academic staffs perceive BSM to be a more relevant competence in the BMA degree. As can be observed in Figure 1, the mean relevance perceived by the academic staff in the training of the students is over 7 points out of 10 in all dimensions except regarding altruism.

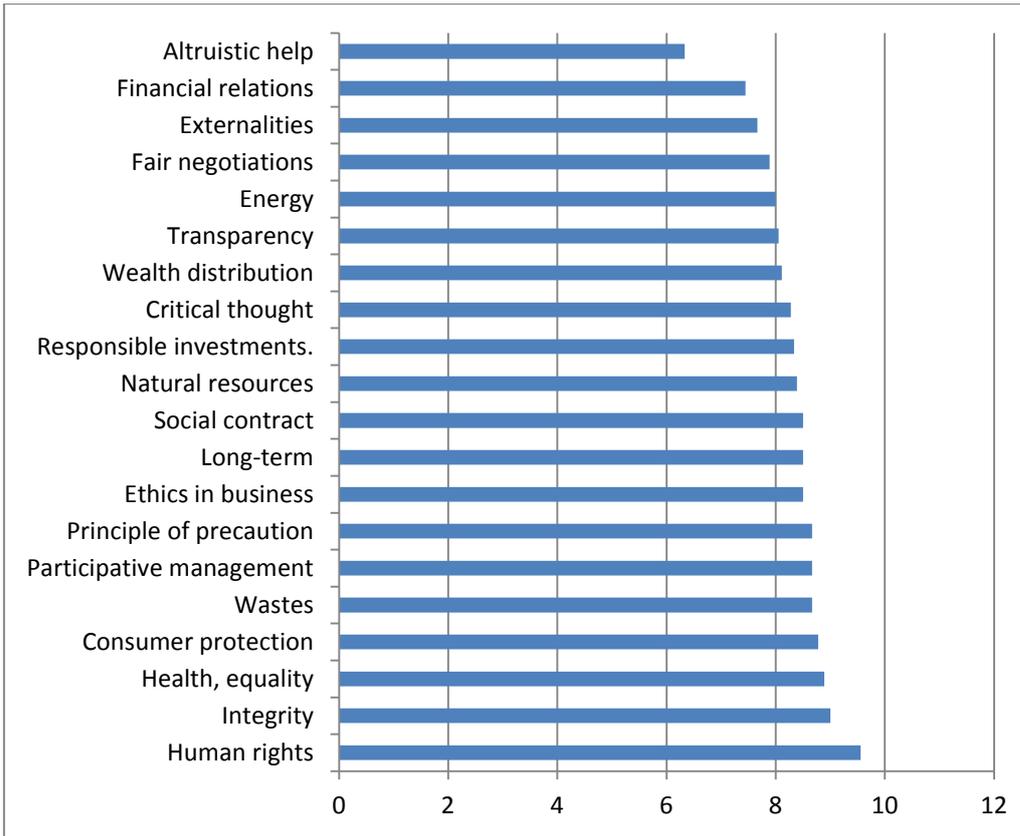


Figure 1: Mean regarding the perceived relevance of dimensions of BSM by the academic staff

Even though a not inconsiderable part of the lecturers reported that they do not work on these aspects in any way in their subjects (specifically, 35%), it can be seen in Figure 2 that all the dimensions are included in the first two years of the degree, in a minimum of 3 and a maximum of 8 subjects (out of a total of 20).

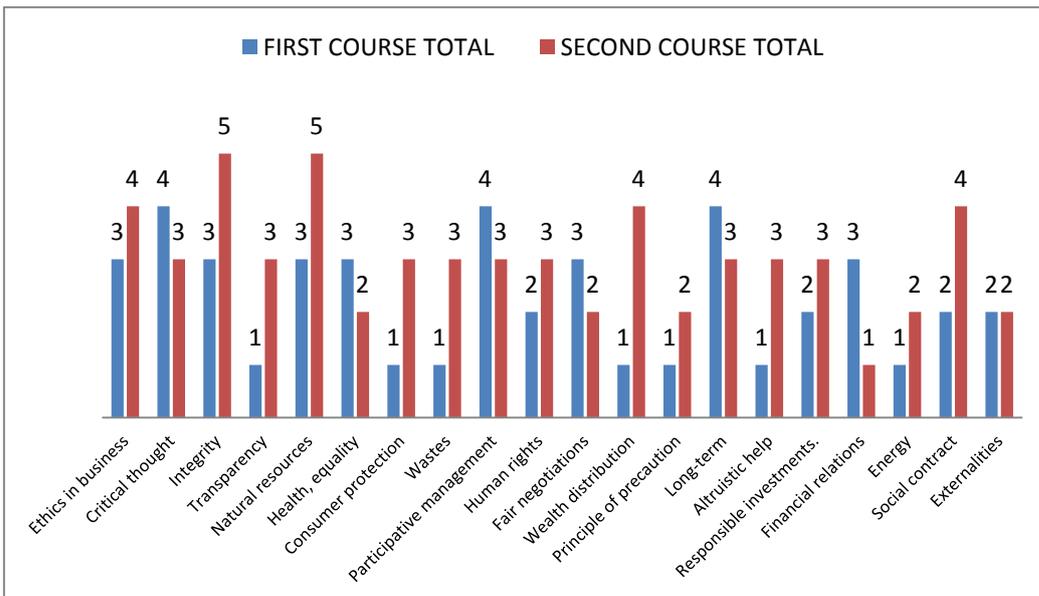


Figure 2: Number of subjects where the competence is developed by Course

If we consider the depth to which they are covered, this competence is considered superficially or partially only in three dimensions (externalities, principle of caution and energy).

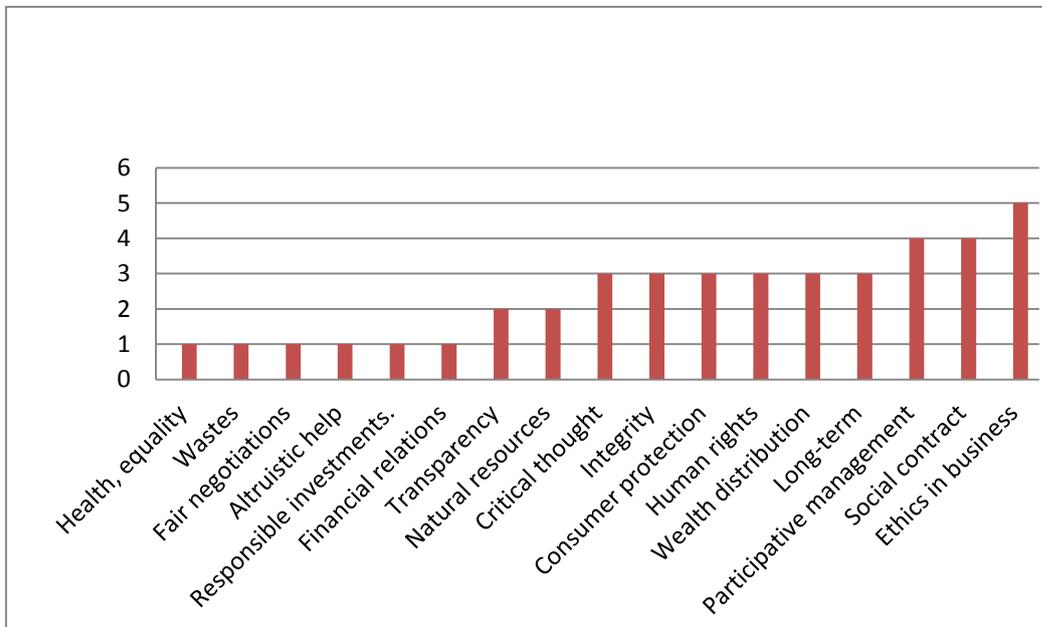


Figure 3: Number of subjects that cover BSM competence extensively or in depth according to dimensions

It could be mooted that the lecturers who perceive the competence as more relevant are those who then develop it in their subjects. Effectively, a certain degree of correlation ($r=0.35$) is detected between the mean relevance perceived and the average development in their subjects.

With respect to assessing the BSM competence, less than half of the lecturers who report covering it in some way in class assess it to establish whether the students have effectively acquired the competence.

75% of the lecturers report being willing to work this competence jointly with other lecturers in the future, and those who were not willing give different reasons for not doing so (particularly lack of time). Lack of time was also given by the teachers willing to cover the competence as an obstacle for greater development in the future.

4.2 School Student's perceptions

In Fernandez-Ferrin et al. (2013) through the use of cluster and ANOVA analysis, we studied the relationships between competences and satisfaction in a sample of 148 students.

The cluster analysis revealed the existence of two groups of students differentiated by the high and low degree of perceived importance regarding the professional relevance of three competences. At the same time, belonging to one or other groups is significantly related to: (1) the satisfaction of the students regarding different aspects of the centre/degree, (2) the perceived importance of the remaining competences of the degree and (3) the degree of development attained in the set of general or transversal competences.

4.2.1 Hypothesis and methodology

Hypothesis approach

Based on the relevance-performance analysis as a strategic tool in higher education (Ford et al. (1999), Nale et al. (2000), O'Neill and Palmer (2004)), our main purpose is to check the impact of the introduction of the BMA Degree on the perception of the students of the relevance and development of the BSM competence.

We believe both aspects, the perception of the relevance and the perception of the development of the competence, to be important. Thus, high relevance allocated to the competence can be considered to indicate the success of its inclusion in the study plan. On the other hand, the degree of development is a central variable, given that it will measure, in our case exclusively from a subjective point of view of the student, the perceived level achieved.

In short, and as an integrating measure of the previous two, we believe that the existing gap between both variables is a fundamental element to measure the divide between the relevance given to that competence and the level of development of said competence perceived by them. Obviously, the objective is to reduce this gap.

The first work hypothesis group that we are going to test, associated to the improvement obtained in the degree of perceived relevance and development associated to the BSM competence deriving from the introduction of the BMA Degree, is:

H1a: The introduction of the BMA Degree increases the degree of perceived relevance associated to the BSM competence.

H1b: The introduction of the BMA Degree increases the degree of perceived development associated to the BSM competence.

H1c: The introduction of the BMA Degree reduces the gap existing between the degree of perceived relevance and development associated to the BSM competence.

In turn, we also wish to measure the evolution of these variables (relevance, development, and the gap existing between the two) as the student's progress in their studies. Logically, the work hypothesis is that if the students progress appropriately in their training, the degree of perceived relevance and development associated to the BSM competence should steadily increase. In turn, the gap existing between those two variables is expected to shrink as the course progresses and should be minimal on completion.

We thus indicate below the second work hypothesis group that we are going to test, associated to the improvement obtained in the degree of perceived relevance and development associated to the BSM competence deriving from the progress of the students throughout their study plan:

H2a: The progress of the students throughout their studies increases the degree of perceived relevance associated to the BSM competence.

H2b: The progress of the students throughout their studies increases the degree of perceived development associated to the BSM competence.

H2c: The progress of the students throughout their studies reduces the gap existing between the degree of perceived relevance and development associated to the BSM competence.

Population studied

Our analysis is based on the answers to a questionnaire administered to 418 students of the BMA Degree at the Vitoria-Gasteiz Business School conducted in two stages: May 2011 (230 students), and in May 2012 (188 students). The questionnaire was administered, answered and collected in class, both for the Spanish-speaking groups (2) and for the Basque speaking one (1), among the students attending class.

It should be noted that the BMA Degree began to be progressively implemented during the 2010-11 academic year. The introduction of the BMA Degree will be completed during the 2013-14 academic year.

At the same time, the short-cycle Degree in Business Studies has been gradually dismantled: the first year of the short-cycle stopped being offered during the 2010-11 academic year, second in the 2011-12 year and, finally, the third and last course stopped being offered in the 2012-13 academic year.

Table 5: Technical records

Round	Year	Studies Plan	Population size (students enrolled)	Sample Size (students surveyed)	Sample error (NC = 95%; p=q=0.5)
2011 (May)	1st	Degree	135	103	
	2nd	Short-cycle	120	48	
	3rd	Short-cycle	244	79	
Subtotal 2011			499	230	4,7%
2012 (May)	1st	Degree	129	113	
	2nd	Degree	133	36	
	3rd	Short-cycle	168	39	
Subtotal 2012			430	188	5,4%
TOTAL			929	418	3,6%

Methodology used

Once the distribution of the variables being studied has been analysed, and the absence of normality noted, to observe the influence of the introduction of the Degree in the perception of the degree of development and relevance of the BSM competence, we consider it convenient to use non-parametric statistical hypothesis test such as the Wilcoxon rank test for two related samples, Mann-Whitney U test for two non-related samples, etc. All our variables are measured on a 5-point Likert scale.

4.2.2 Results obtained

Descriptive analysis

Table 6 summarises the descriptive statistics of the variables analysed in this study and the results set out in Table 6 show a degree of perceived relevance over the mean value (3) of the scale used both by the degree and short-cycle students can be seen, irrespective of the time when it was obtained and the academic year. Thus, a clear upward trend can be observed in the value of the mean perceived relevance among the students surveyed in 2012, as they progressed in their studies, which was not the case among the 2011 students. In any event, the mean values are very similar and only certain differences are noted among the students in the higher years (2nd and 3rd) with respect to first-year students.

Table 6: Descriptive statistics

Round	Year	Study Plan	Relevance	Development	GAP (Rev – Dev)
			Mean (St. Dev.)	Mean (St. Dev.)	Mean (St. Dev.)
2011 (May)	1st	Degree	3.6(0.909)	2.9(0.773)	0.7(1.123)
	2nd	Short-cycle	3.8(1.051)	2.5(0.919)	1.3(1.359)
	3rd	Short-cycle.	3.7(0.965)	2.7(0.838)	0.9(1.296)
2011 average			3.7(0.958)	2.8(0.837)	0.9(1.252)
2012 (May)	1st	Degree	3.5(1.013)	3.1(0.961)	0.4(1.050)
	2nd	Degree	3.7(1.007)	3.2(0.904)	0.5(1.308)
	3rd	Short-cycle	4.0(0.957)	2.6(1.066)	1.4(1.324)
2012 average			3.6(1.016)	3.0(0.994)	0.6(1.226)

On the other hand, a degree of perceived development is observed that is clearly lower than the mean value (3) of the scale used on the short-cycle students, which was not the case for degree students, for whom very close values were reached or higher. In general terms, by years, the trend is positive, particularly among the Degree students. As regards the differences between the degree of relevance and development, a clear gap is noted in favour of the perceived relevance with respect to the level of development obtained. In any event, this difference is clearly lower among the students in 2012 compared to the 2011 students. In turn and which we consider being more relevant, the gap is clearly lower for the Degree students (0.5), compared to the short-cycle students (1.1).

These data, in the absence of the mean difference statistic analysis, rather indicate that the introduction of the Degree has helped to improve the level of perceived development of the BSM competence (which is not the case of the level of perceived relevance) and therefore, to ostensibly reduce the gap. On the other hand, a significant positive correlation was noted between the Relevance and Development variables (Pearson correlation = 0.138^{***}; sig. = 0.006), for the set of observations. Therefore, it can be concluded that the students that assign greater relevance to the BSM competence also tend to associate greater value to the degree of associated development and vice versa.

Hypothesis contrast

The Kolmogorov-Smirnov test applied to the variables used in this paper, both from the grouped point and disaggregated by rounds and by levels (years) show a clear absence of normality in the distributions. Acceptable levels of significance (over 5%) for certain years are only noted for the GAP variable, defined by the difference

between BSM Relevance and BSM Development (included in the last column of Table 7). This evidence forces us to use non-parametric tests to contrast the hypothesis put forward, while it makes it analysing the homoscedasticity of the distributions irrelevant, as it is bound, in any event, to the use of robust tests.

Table 7: Normal distribution test (K-S test)*

Round	Year	Study Plan	Relevance	Development	GAP (Rel – Dev)
			K-SZ(sign)	K-SZ (sign)	K-SZ (sign)
2011 (may)	1st	Degree	2.306 (0.000)	2.500 (0.000)	2.293 (0.000)
	2nd	Short-cycle	1.719 (0.005)	1.824 (0,003)	1.533 (0.018)
	3rd	Short-cycle.	1.850 (0.002)	2.320 (0.000)	1.702 (0.006)
All students 2011			3.297 (0.000)	3.930 (0.000)	3.246 (0.000)
2012 (may)	1st	Degree	2.129 (0.000)	2.675 (0.000)	2.531 (0.000)
	2nd	Degree	1.764 (0.004)	1.435 (0.033)	1.533 (0.018)
	3rd	Short-cycle	1.361 (0.046)	1.641 (0.009)	1.354 (0.051)
All students 2012			2.847 (0.000)	3.520 (0.000)	2.739 (0.000)
All students 2011+2012			3.928 (0.000)	5.172 (0.000)	4.222 (0.000)

*) Kolgomorov-Smirnov Z test and (in brackets) associated significance level.

The above descriptive analysis shows countless differences between the mean levels of perceived relevance and development. The mean contrast tests confirm these differences, as they are significant. On average, for all participant students, relevance levels were significantly higher (Mean=3.68, Mdn=4) than development levels (Mean=2.74, Mdn=3, T=39, $p < .05$, $r = -.54$).

We are now going to contrast the two hypothesis put forward. The first of them, H1a, must be clearly rejected. The above descriptive analyse shows that if we compare, for each of the two rounds (2011 and 2012), the value awarded by the degree students compared to the short-cycle students, the value is greater among the latter.

However, this could be due to the fact that the students perceived the competences as being more important as they progress on their course. In any event, the evidence is similar in the only case where this bias can be eliminated (the 2nd year group, which was the short-cycle degree in 2011 and the degree in 2012). Second-year

degree studies (Mean=3.8, Mdn=4) did not seem to differ in perceived Relevance levels from second-year short-cycle studies (Mean=3.7, Mdn=4, U=759, $p>0.1$).

The second of them, H1b, cannot be rejected, as we conclude that, effectively, the training, orientation and coordination actions associated to the new BMA Degree have helped to increase the development of the competence in question. The above descriptive analyse shows that if we compare, for each of the two rounds (2011 and 2012), the value awarded by the degree students is clearly higher compared to the short-cycle students. From an accumulated point of view (2011+2012), degree students were significantly more development perceived level (Mean=3.05, Mdn=3) than short-cycle students (Mean=2.65; Mdn=3, U=14811, $p<0.01$). These results are similar if we compare the two second-year groups, who in 2011 were on the short-cycle degree (Mean=2.5, Mdn=3) and to the degree in 2012 (Mean= 3.2, Mdn= 3, U=466.5, $p<0.01$).

The third hypothesis, H1c, likewise cannot be rejected, as we conclude that the introduction of the new BMA Degree has, effectively, helped to reduce the gap existing between the degree of perceived relevance and development. Corroborating the results of the above descriptive analyse reveals that if we compare, for each of the two rounds (2011 and 2012), the value awarded by the degree students, it is clearly lower compared to the short-cycle students. From an accumulated point of view (2011+2012), degree students (Mean=0.53, Mdn=0) showed a significantly greater gap (measured as perceived relevance less perceived development) than short-cycle students (Mean=1.15; Mdn=1, U=14333, $p<0.01$). These results are similar if we compare the two second-year groups, who in 2011 belonged to the short-cycle degree (Mean=1.29, Mdn=1) and to the degree in 2012 a (Mean= 0.5, Mdn= 0.50, U=555, $p<0.05$).

It should be noted that the gap reduction is underpinned by a creditable circumstance, the significant increase in the perceived development levels among the degree students, and not to a (non-existent) reduction of the perceived levels of relevance.

With regard to the second hypothesis group that measures the effect of the progress of the students in their studies on the perceived levels of relevance and development of the BSM competence, we must take a clear limitation into account: the co-existence of two study plans. Thus, to eliminate the noise generated by this circumstance, we should only compare (and analyse the significance of the difference) the students in the 2nd and 3rd years of the short-cycle in 2011, and the 1st and 2nd year Degree students in 2012.

None of the three hypotheses that make up this second group can be accepted. We consider that this may be due to the bare (minimum) difference of years

considered within each study plan for each academic year or rounds of data analysed. Thus, when we obtain a broader spectrum, of 3 or 4 consecutive years, the results obtained will be more relevant and informative.

5 Conclusions and Implications

Based on the information in the public domain provided by the universities, the comparative performed leads we conclude that the BSM competence in the syllabus of the Spanish BMA degrees is rather scant. Meanwhile, the BMA degree offered by the Vitoria-Gasteiz Business School (UPV/EHU) offsets this deficit, including this competence explicitly among other measures adopted.

At the beginning of this educational innovation project we have seen that there are many different approaches and definitions of SD and BSM, but it is not easy apply this definition in a BMA degree due to the different interpretations that can have. To overcome this difficulty we have constructed an operational BSM competence to work with it. To do this, we followed a process in which we have taken different dimensions of sustainability that could be part of operational BSM (taken into account the previous revision) and it has been asked teacher's opinion about these dimensions.

The academic staffs agrees with the use of a broad definition of BSM competence and focused on all the aspects that can be included in the concept, as they believe that given the different nature of the subjects taught in the degree, it can be implemented in a more appropriate way. Thus, the different sustainability dimensions indicated in the survey seem to cover the whole spectrum of approaches that may be related to BSM.

From the point of view of the students, we can conclude that the introduction of the new degree has contributed to reducing (approximately by a third) the gap between the perceived relevance and the actual level of development of BSM competence in the degree.

In fact, our results show a significant increase of the level of development of the BSM competence as perceived by students on the new degrees when compared to students on the short-cycle degrees. Regarding the level of relevance attached to the BSM by the students, we observe no significant differences between the students on the short-cycle and new degrees. Nevertheless, the level of relevance increases importantly as the students advance in their specific degree.

However, instead of becoming complacent, these results can be improved if we take advantage of the greater commitment of society towards sustainability; the emphasis on sustainable management of the urban development model of Vitoria-

Gasteiz (European Green Capital 2012); and the strong teaching and research commitment of a significant group of lecturers of the Business School.

We trust that the innovation process where we have designed a methodology and a work process to develop BSM competence in a BMA degree could serve to work the different transversal competences, especially BSM competence of the BMA degrees, also extendable to other degrees at the University of the Basque Country (UPV / EHU) and other European universities.

Moreover, the Europe 2020 strategy with three priorities about Smart growth, Sustainable growth and Inclusive growth, seek a growth based on the values that are part of the BSM competence. Thus, the relevance and the development of this competence in the BMA degree is becoming more important for BMA degree students in Europe.

Finally, future work will need to examine critically if the gap between the relevance given to BSM competence and the level of development continues to shrink. Thus, when we obtain a broader spectrum, of 3 or 4 consecutive years, the results obtained will be more relevant and informative.

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7 Appendix: Interview Model

During this interview, you will ask to consider points relating to the concept of Business Sustainable Management and to its application as a transversal competence in the teaching of the subject of which you are the coordinator at the Vitoria-Gasteiz Business School.

1. - From your point of view and in the context of the BMA Degree, mark the degree of importance of the following dimensions of BSM concept. Please answer on the scale (from 0: Not at all important to 10: Very Important)

Sustainability Dimensions	Importance
a) Business activity based on ethical standards, respecting ethics in business (ethical approach)	
b) Critical thought, based on business commitment to transformation of current production/consumption models	
c) Integrity, rigorous behaviour in business activity (avoiding fraud, corruption, unfair competition, etc.)	
d) Transparency and accountability to society. Measuring and disseminating results regarding the social and environmental effects (reports, quality plans...)	
e) Sustainable use of natural resources	

- f) Health protection, equality, safety and non-discrimination in business management
 - g) Consumer protection (protecting public health, eliminating abusive practices, etc.)
 - h) Reducing and appropriate management of the waste
 - i) Participative management, leadership and organisation. Importance of the individuals that make up the organisation (conciliation, equal opportunities, non discrimination, etc.)
 - j) Respecting human resources (avoiding child labour, non discrimination, accepting diversity...)
 - k) Fair negotiations inside and outside the company (without fraud or orchestration, little labour conflict, etc.)
 - l) Balance in the distribution of the wealth generated by the company among the different stakeholders
 - m Adopting the principle of precaution regarding the irreversibility of certain environmental damage in business decisions
 - n) Commitment to long-term approach and strategy, in contrast to generating short-term wealth
 - ñ) Altruistic help and collaborations, cooperation for development
 - o) Environmentally responsible and social investments.
 - p) Sustainable and ethical financial relations, not exclusively driven by profitability
 - q) Energy saving and conservation throughout the life cycle of the product
 - r) Accountability towards society. Implicit social contract between society and organisation
 - s) Internalisation of environmental externalities
- Others...
-

2. - Are you developing some of these points related to BSM to some extent in your subject?

If the answer is affirmative:

2a) Specify which of the aforementioned areas you are covering and to what extent. Please answer on the following scale:

1 (superficially): Sporadic references

2 (partially): In certain themes or teaching methodologies (training periods, etc.)

3 (extensively): Usually during the year

4 (profoundly): It is an integral part of the subject

Sustainability Dimensions	Development
a) Business activity based on ethical standards, respecting ethics in business (ethical approach)	
b) Critical thought, based on business commitment to transformation of current production/consumption models	
c) Integrity, rigorous behaviour in business activity (avoiding fraud, corruption, unfair competition, etc.)	
d) Transparency and accountability to society. Measuring and disseminating results regarding the social and environmental effects (reports, quality plans...)	
e) Sustainable use of natural resources	
f) Health protection, equality, safety and non-discrimination in business management	
g) Consumer protection (protecting public health, eliminating abusive practices, etc.)	
h) Reducing and appropriate management of the waste	
i) Participative management, leadership and organisation. Importance of the individuals that make up the organisation (conciliation, equal opportunities, non discrimination, etc.)	
j) Respecting human resources (avoiding child labour, non discrimination, accepting diversity...)	
k) Fair negotiations inside and outside the company (without fraud or orchestration, little labour conflict, etc.)	
l) Balance in the distribution of the wealth generated by the company among the different stakeholders	
m) Adopting the principle of precaution regarding the irreversibility of certain environmental damage in business decisions	
n) Commitment to long-term approach and strategy, in contrast to generating short-term wealth	
ñ) Altruistic help and collaborations, cooperation for development	
o) Environmentally responsible and social investments.	

- p) Sustainable and ethical financial relations, not exclusively driven by profitability
 - q) Energy saving and conservation throughout the life cycle of the product
 - r) Accountability towards society. Implicit social contract between society and organisation.
 - s) Internalisation of environmental externalities
- Others...

2b) Does the assessment system reflect the achievement of BSM competence?

If the answer is affirmative:

2b.1) In which activities is that achievement assessed? *Mark appropriate answers*

Exam	
Deliverable (paper, exercises, etc)	
Oral presentation	
Others.....	

2b.2) In which % is it assessed?

3. - Would you be willing to delve further into this transversal competence (BSM competence) in the future, in coordination with other degree lecturers?

If the answer is affirmative, which difficulties do you envisage for a greater development of issues related to BSM competence in the School in the future?

Working with other PDI	
Resources (time, materials, etc.)	
Lacking of training of the academic staff	
Lack of willingness by the academic staff	

If the answer is negative, what are the reasons for your negative answer?

I do not consider it necessary for the training of students in this degree	
Lack of resources (time, support, etc.)	
Lacking of training of the academic staff	
I do not believe that it is a priority transversal competence	

4. - If you believe that we have not covered a concept, would you like to raise any other point related to BSM?

An Exploration of Leadership and Sustainable Development within UK Further Education Colleges

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Abstract

This article presents the UK Further Education (FE) sector and provides an objective comparison with the UK Higher Education (HE) sector as its neighbouring tier within the UK education system. A summary of literature on sustainable development (SD) and leadership within education highlights the prevalent lack of dedicated research on SD within FE despite its considerable presence within the UK education system. As an initial method of knowledge contribution, a study that adapts Wright's 2010 and 2012 studies (which examined HE leadership and management perception of SD) to examine the leadership perception of SD within FE will be proposed. The Transition Management Framework (TMF) as a multi-level recursive framework will be introduced and summarised as a theoretical basis on which to determine the orientation of leadership of SD within FE. The article ends with initial findings of research carried out to date and theoretical conclusions.

Keywords

College, sustainable development, further education, leadership, education.

1 Introduction

“Though conventional wisdom holds that all education is good, and the more of it one has, the better...The truth is that without significant precautions, [it] can equip people merely to be more effective vandals of the Earth” (Orr, 1994: 5).

The education system we have developed over the last hundred years is designed and driven by access to unlimited, cheap, fossil-fuel energy with students educated to compete and consume rather than care and conserve (Sterling, 2001; Quilley, 2009). The continuing environmental degradation is the work of people with Undergraduate, Masters and Doctoral degrees, and many key decisions that influence the state of the

world are made by people with perceived know-how or in management positions (Orr, 1992; Lidgren, 2006); as stated by Phillips (2009), it is self-evident that 'action' is unlikely to come from people whose training has been within the current unsustainable paradigm.

There are three tiers to the UK education system:

1. Higher Education (HE) that takes place within Universities focused on degree programmes.
2. Further Education (FE) involving training and skills from basic to higher vocational and academic education that takes place within colleges; and,
3. Compulsory education within schools for children.

Over the past few decades a prevalence of research on SD within HE has emerged which on the whole has not made the distinction between the different tiers of the education, both within the UK and internationally. On the one hand the principles of this research could be assumed valid and transferable for the application to other tiers within the education sector; however this would be to discount the very different characteristics and dynamics within each tier of the education sector. Though FE has received acknowledgement in some of these studies as part of the tertiary education sector, it has not been focussed on as a separate tier in its own right. There has been much sector led and government published guidance on SD, however since the beginning of the current recession, strategic leadership from the UK government departments responsible for colleges has dwindled, almost to a standstill. Due to the more direct relationship between colleges and government policies, it is imperative that in a changeable political landscape, college leaders have a clear understanding of SD and the contribution of their leadership within their own organisations and the sector as a whole.

Focussing on the perceptions of FE college leaders, three research questions have been developed; 1. Is FE addressing Sustainable Development? 2. What is the relationship between the awareness and practice of SD by FE leadership? 3. Within a group of college leaders, what is the nature of disconnect between awareness and practice of SD?

This paper firstly provides an introduction to the FE sector and an objective headline comparison with HE provides detail on the study's context. This is followed by a brief literature review on SD research within HE to highlight the literature gap upon which this study is based. A further literature synopsis describing the synergy of leadership and SD is provided and how this study's exploration of both will be analysed using the Transition Management Framework (TMF). This paper provides intermediate

considerations of research conducted in 2013 and highlights the context from which the study concept has emerged.

1.1 The Further Education sector in context

The UK FE sector is a generic term for all post- compulsory education which does not take place in a secondary school and consists of Further Education Colleges (FECs), Adult and Community Learning providers (ACL), and Work- Based Learning providers (WBL). There are 407 FECs in the UK consisting of 340 in England, 41 in Scotland, 19 in Wales and 6 in Northern Ireland (AoC, 2012). Figure 1 denotes English colleges, which comprises 219 FECs, 94 sixth form colleges, 15 land- based colleges, 3 art, design and performing arts colleges, and 10 specialist designated colleges.

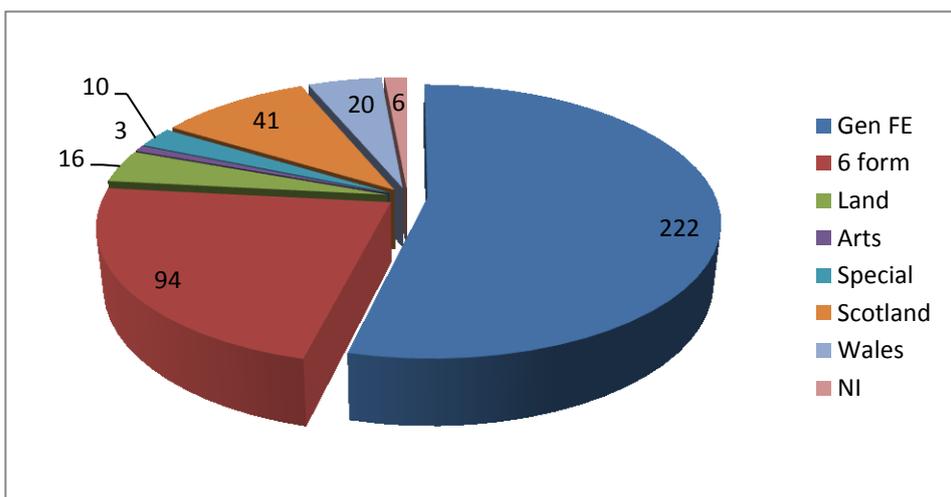


Figure 1: Further education colleges in England (AoC, 2012)

Both HE and FE provide post- compulsory education beyond secondary school level, however whereas Universities grant academic degrees at an under-graduate and post- graduate level, colleges deliver training and skills from basic to higher vocational education training, foundation degrees, diplomas and apprenticeship programmes (BIS, 2011). Annually in the UK, colleges educate and train over 3 million people, including 40% of 16 – 18 year olds, and provide 40% of entrants into higher education (HE) (AoC, 2012).

Treat (2013: 5) describes the role of community colleges “not as international education centres, but rather serving the needs of the local community and local employers, and by definition creating local economic development through the provision of a trained workforce”. Describing UK colleges specifically, Foster (2005: 6) describes its three key roles as; “1) labour market preparation for young people, 2) supporting employers in workplace learning, and 3) meeting the wider learning aspirations of the people and communities colleges serve”. Colleges are not unique to

the UK; in North America, Continental Europe and Australasia these are generally known as ‘community colleges’ and perform a similar role to those in the UK .

UK colleges were incorporated in 1992 as a result of the Further and Higher Education Act which removed them from local authority control; incorporation provided colleges with greater autonomy and the legal freedom to respond quickly and flexibly to market forces and student needs (FE week, 2013), as well to develop their strategy, curriculum provision, use of assets (property etc.) and workforce (AoC, 2011 [a]). Changes to the Further and Higher Education Act also granted University status to institutions previously known as ‘polytechnics’, which allowed them to award their own degrees rather than degrees being validated through existing universities (Silver, 1991).

Both HE and FE are governed by market forces and customer demand, however whereas HE places increasing emphasis on lucrative research contracts (Cullingford, 2004), FE is more vulnerable to changing political agendas and target driven funding due to its reliance on central government funding (Foster, 2005). Due to the trend towards reduced central government funding allocations, it is increasingly necessary for colleges to diversify income streams and realise operational efficiencies to mitigate this funding shortfall, i.e. doing more with less (157 Group, 2011). This diversification combined with an increasingly complex post- 16 education system (due to the emergence of ‘University Technical Colleges’, ‘Academies’, and ‘Free Schools’) has compounded public and media confusion of the identify of a college (FE Week, 2013) and consequently conveyed “a lack of focus and obscurity of purpose” (Foster, 2005: 22).

1.2 Sustainability within Further and Higher Education

Universities and colleges as the educators of future decision makers have a moral obligation to be leaders in sustainability (Orr, 1992; Clugston and Calder, 1999). As societal change is a consequence of the interaction between organisations and institutions (Westley, 2011) and educational institutions as sub- systems of wider society are shaped and oriented by the norms of the social context they serve (Sterling, 2004), there is distinct potential for institutions to improve the understanding of the interface between organisational and social change (Stephens, 2010). This role is not a recent phenomenon. Scott and Gough (2004) describe the role of universities as places of learning and research, businesses and key community stakeholders and as such are accountable in each for their impact on the environment, society and the economy, however even then Calder and Clugston (2004) and Blewitt (2004) stated that progress of SD within institutions was underfunded and dependent on too few overworked individuals. More widely, universities and colleges face a “new normal” whereby “campus professionals are asked to cut costs, increase employee productivity but not

payroll, and recruit and cultivate a new generation of administrative leaders to supply quality leadership succession” (Krizek, 2012: 20) Efficiency opportunities will eventually become exhausted within existing products, processes and infrastructure and cannot be relied upon long term to deliver a more sustainable society (Garud, 2012); in the meantime, however, education and vocational skills within FE remain key components of the UK governments targets for achieving economic growth (Wolf, 2011; CAVTL, 2013) and firmly based upon a continued Newtonian economic model, whereby education serves the needs of industry, consumerism, and an over reliance on technical solutions (Batterham, 2003; Cullingford, 2004; Leitch, 2006; Davies, 2009; Waas, 2010; Lozano et al, 2013).

After decades of discussion, the significance of HE’s role has not diminished and whilst SD research continues to be conducted within HE and in collaboration with industry, transformational change in either “remains elusive and remote, yet it is more salient and important than ever” Sterling (2013: 5).

Higher Education Declarations for Sustainable Development

Ambitious international declarations and commitments on sustainability have proliferated since the 1970’s, produced by those within, or with an inherent stake in, HE- for example the United Nations Conference on the Human Environment 1972, the Global Higher Education for Sustainability Partnership 2000, or the Graz Declaration on Committing Universities to Sustainable Development 2005 (Wright, 2004). Many of these declarations specified their focus on HE, however it is not known if those aimed at ‘education’ more broadly have had any direct bearing on colleges either in their buildings, outreach or curriculum delivery. There is a notable absence of research considering whether those colleges who have engaged with the SD agenda have done so by following the lead of universities, who in turn engaged with SD as a result of signing up to one of these declarations.

Focussing on best practice case studies offers limited value to theory development despite being useful amongst peers within the sector (Karatzoglou, 2013); therefore developing a clearer understanding of how declarations can be implemented effectively within institutions is a critical step to promoting sustainability (Wright, 2002). As it stands, the validity of an institution’s commitment to sustainability and the signing of a national or international agreement are not mutually exclusive and there is evidence to suggest that non-binding declarations rarely influence a university’s sustainability practices (Bekessy, 2007). This is because “the processes of SD require leadership, participation and commitment in all areas; it is not something that can be imposed from above or secured exclusively from action below, it needs both” (Blewitt, 2004: 5). This on-going gap between rhetoric and reality, or theory and practice (Wals, 2010; Stevenson, 2007; Shiel 2013) could in part be explained by the two separate

constituencies: environmental managers are not involved with curriculum, and those in curriculum do not have to consider environmental management (Scott and Gough, 2004). Many, if not most, advocates of sustainability in higher education have tended to come from the fields of environmental studies, education, and facilities management, and have concentrated on the eco-efficiency of universities, rather than addressing sustainability in a holistic, interdependent and systemic way (Fien, 2002; Sterling 2013). Declaration frameworks do however provide a platform for universities to compare performance which provides a basic means of evaluating, learning and benchmarking (Moon, 2011) reflecting the axiom, “What gets measured, gets done”.

1.3 Leadership and the Transition Management Framework

“There are almost as many different definitions of leadership as there are persons who have attempted to define the concept” (Stogdill, 1974: 259) is a sentiment, which reflects the terminology of SD. Since its mainstream inception in the 1987 Brundtland Commission, definitions and interpretations of sustainability and sustainable development have proliferated leading to the perception of it simply being a catch phrase or fad perpetuating the semantic arguments in defining the term (Blewitt, 2004; Cullingford, 2004; Lozano, 2006); and has prevented orientation of meaningful action being made (Blewitt, 2004; Dunphy, 2007; Cook, 2010; Christen 2012).

Yukl provides one definition of leadership as “the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives” (Yukl, 2006: 8). The locus of decision making may be vested in a top individual or as distributed leadership at a series of levels (Minkes, 1999) although both methods of leadership have an important role in endorsing strategy for SD (Shiel, 2013), there is a priority need for integrated and integrative leadership within HE and in collaboration with other sectors (Cullingford, 2004). Despite the surprising lack of literature that explores the interface between leadership traits and SD (Shiel, 2013), it is clear from Yukl’s definition that an effective leader is also likely to have the right set of attributes to lead SD; such as the ability to learn, emotional intelligence, systemic thinking, and embracing empathy and diversity (Ballard, 2005; Davies, 2009; Shiel, 2013). Arguably, effective leadership is pivotal to the long-term success of any organisation or business, not least for the sustainability agenda to which it is also a common barrier (Wright, 2010; Elmualim, 2010; Tilbury, 2011). It is therefore imperative that all leaders and senior management teams take responsibility for starting this process and have a common understanding of the term sustainable development (Wals and Jickling, 2002).

During recent decades, the ability of leaders to implement policies in a top-down manner has diminished, and instead policies are developed with a diversity of societal

actors (Loorbach, 2010). Shifting the dominant mind set in an increasingly complex society with persistent societal level problems perpetuates the cause and effect of short term political decision making; the navigation of competing agendas creates only temporary societal consensus which transforms the original problem thereby deterring leaders from considering long term decision making necessary for sustainability (Doppelt, 2010; Loorbach, 2010; Ryan and Cotton, 2013). Within education, the academic values and traditional methods of working that support tenured faculty and weak board governance present an additional challenge to building capacity for SD leadership (Doppelt, 2010; Milgiore, 2012). Consequently there remains a lack of coherent leadership within HE with few education leaders grasping fully the wider implications of the SD agenda beyond employing a dedicated role such as an environmental manager (Shiel, 2013; Lozano et al, 2013).

1.4 Applying the Transition Management Framework

Rather than devising a solution to the problem of an apparent lack of leadership of SD within FE, the research aim of this study will attempt to determine the general perception and understanding of SD by FE leadership. For example, leaders naturally want to sustain their college, but may or may not see SD as a strategy, or part of a strategy, for doing so or the wider contribution education can make in the pursuit of a more sustainable society. To fulfil this research aim, a methodology similar to Wright's 2010 and 2012 studies will be adopted, whereby Principals and senior leaders of the largest urban colleges in England will be interviewed to investigate their conceptualisation of SD. The methodologies used in both the 2010 pilot study and in the 2012 facilities management study are suitable for adaptation to this study as an exploratory mechanism to examine a cohort of sector leaders who have previously received little academic attention. However, whereas Wright indexed interview data to generate common themes, which were analysed against each question, this study will use the Transition Management Framework (TMF) (Loorbach, 2010; Stephens, 2010) as a tool for analysing the responses against the transition management spheres as indicated in table one.

The TMF is a framework built upon four different types of management activities that are relevant to societal transitions and influence long term change built on the premise that there is a relationship between the nature of a "system", its specific patterns and dynamics, and the way that the systems actors influence and react to these (Loorbach, 2010): "The TMF is therefore analytically based on the concept of transitions as multilevel, multiphase processes or structural change in societal systems" (Loorbach, 2010: 166). Though it is still in development (Loorbach, 2010) the characteristics of any tier within the education sector provide a tantalizing opportunity

to explore the role of a college as a change agent within larger societal transitions as well as the challenges associated with change within colleges (Stephens, 2010).

Table 1: The sphere of governance activity and their key characteristics that will be applied to this study. Respondent themes that relate to colleges (niche – introspective), the sector (regime, professional community), or macro – level themes (landscape – society), can be associated to either a strategic, tactical, operational or reflexive level of governance activity. Adapted from Stephens 2010: 613 and Loorbach 2010:171.

Transition Management Sphere	Focus	Problem Scope	Time scale	Level of Activities	Phase of transition
Strategic	Culture	Abstract	Long term (30 years)	Landscape	Four phase model of transition (pre-development, take-off, breakthrough, and stabilisation) may be challenging to apply to HE.
Tactical	Structures	Institutions	Mid-term (5 - 15 years)	Regime	What is the transition and vision in HE?
Operational	Practices	Concrete	Short-term (0- 5 years)	Niche	Different opinions about what phases HE is in with respect to both its own transition and its role in contributing to a society-wide transition.
Reflexive					Examination and review of activities

Architects of the TMF speculate on its use for sectoral analysis and invite exploration of its value in different contexts such as “the analysis of the ways in which different universities and/ or the sector as a whole are oriented toward maintaining the status quo rather than fostering change” (Stephens, 2010; 613). This echoes Sterling’s accommodative, reformative and transformative responses by HE to SD (Sterling, 2013), however Stephens (2010) observes that the four defined phases of transition of the TMF may be challenging to apply to the complex internal and external dynamics of the HE system; “although a transition may be apparent in hindsight, the complexity of the sector makes it difficult to plan for and its’ linear view could inflate or diminish progress made” (Stephens, 2010: 615). This complexity is not confined to HE, however the TMF’s descriptive ability to distinguish governance activity through a multi-level perspective remains suitable for this study, which is focussing on leadership dynamics only.

As stated by Dunphy et al (2007), a combination or sequence of incremental and transformative change should be adopted by leaders depending on the organisation’s specific situation but must ultimately be driven by the organisation’s strategy. As there is very little exploration of how to foster strategic levels of activity within education (Stephens, 2010) and even less exploration of the scale of strategic direction or progress on SD within FE, a study of leadership perceptions of SD provides a logical place at which to start the exploration of the sectors’ transition.

2 Findings

Colleges represent a significant stake of the UK and international education system, however, whereas there is an abundance of research published on SD within HE in journals such as the Journal of Cleaner Production (Lidgren et al, 2006, 'A systemic approach to incorporate sustainability into university courses and curricula'; Waas et al, 2010, 'University research for sustainable development: definition and characteristics explored'), Higher Education Policy (Shriberg, 2002, Institutional assessment tools for sustainability in higher education: strengths, weaknesses, and implications for practice and theory') International Journal of Sustainability in Higher Education (Wright, 2002, 'Definitions and frameworks for environmental sustainability in higher education'; Lozano, 2011, 'The state of sustainability reporting in universities'), Environment Education Research (Winter and Cotton, 2012, 'Making the hidden curriculum visible: sustainable literacy in higher education'), and Journal of Education for Sustainable Development (Wals, 2011, 'Learning our way to sustainability'), there is a prevalent lack of academic research focussing specifically on colleges. Instead, guidance specifically for FE comes in the form of best practice case studies and advisory reports from membership bodies and in some instances local government. In the absence of academic literature, research findings will be based on this literature in addition to the examination of data gathered from each tier of leadership as denoted by figure 2.

This section will provide theoretical considerations to each of the research questions based on initial research findings.

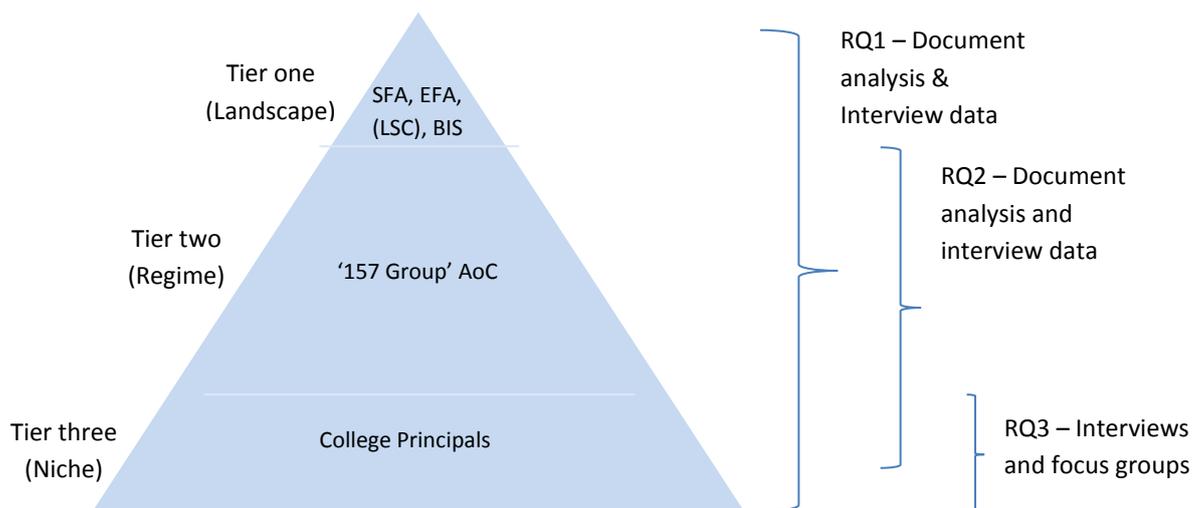


Figure 2: Tiers of leadership considered within this study

Tier one - The Learning and Skills Council (LSC), the predecessor of the current funding council of UK colleges, the Skills Funding Agency (SFA), produced a document in 2005 entitled 'From here to sustainability', describing its vision for colleges and their

contribution to the LSC's sustainable development 2007 and 2010 milestones. The LSC however was closed in 2010 and superseded by the SFA, since when there has been little subsequent reference to or equivalent SD document or aspiration published. In the absence of SD leadership from the SFA, the sector received a further setback when the sustainable development team within the UK government sponsoring department of FE, the Department for Business, Innovation and Skills (BIS) (who developed the 2010 'Carbon Reduction Delivery Plan' [CRDP]) was dissolved in 2011. Though the focus of this report was on carbon reduction, the UK government's low carbon skills agenda has increased the profile of education for sustainable development but principally within the limited narrative of 'Science, Technology, Engineering and Mathematics' (STEM) curriculum areas such as engineering and construction, environmental/ renewable technologies and conservation/ land management (Kythreotis, 2011: 5). This is reflected in the AoC 2011 study on headline findings of 16 – 19 enrolment which shows an increase in popularity of STEM courses as a general trend (AoC 2011: 4 [b]); however the responsiveness of the sector to changing technological and societal imperatives is both its opportunity and curse. Foster (2005: 7) stated that "developing financial incentives to steer students onto courses valuable to the economy" is one way in which colleges of the future will meet the demands of the 21st century. But what is valuable to the economy and what therefore steers government funding priorities is cyclical and therefore often short-lived.

Since 2011, neither a replacement team nor information on the targets set by the CRDP has been forthcoming.

Tier two - The Association of Colleges (AoC) is the predominant FE sector membership organisation with 344 of the 407 number of colleges subscribed as members across the UK. The AoC represents and promotes the interests of FE colleges regionally and nationally; it has produced several documents on sustainability within FE since 2007 – greater than any other sector membership organisation or funding council. An analysis of the key messages from these publications will be used here to introduce an intermediate consideration in determining the relationship between the awareness and practice of SD by FE leadership.

'Green Colleges brochure' (2007) – The first of the AoC publications, this brochure discusses small scale projects within colleges but not large, whole college initiatives. Despite denoting some progression within the sector, it highlights financial barriers against wider engagement and asks for government policy intervention.

'Achieving Green Colleges' (2008) – The purpose of this report was to set out short, medium and long term goals to help colleges achieve the AoC's vision in creating a holistic and whole college approach to embedding SD within leadership and management, curriculum, community, and campus. Whilst the goals of this report are

ambitious, the overall message is confused with the only long term goal stating that “Colleges have significantly reduced their resource and energy use and have made good progress on the goal towards becoming carbon neutral” overlooking the AoC’s mission earlier in the document which is predisposed to curriculum enhancement and behaviour change.

Many of the case studies used within this report were also used within the ‘Green Colleges’ brochure; all of the examples used remain small scale and do not denote a whole college holistic approach.

‘The Journey to Sustainable Colleges: South- West College Case Studies’ (2008) – Focussing on colleges within the south- west region of England only, this report demonstrates a whole organisation approach within some smaller colleges but the majority of the participating colleges continue to focus on a single theme of SD, most notably estates and buildings. This report highlights that the ethos and values of individual colleges have a major impact on the evolution and development of SD but this autonomy has also led to an inconsistent sector approach. Within the teaching and learning theme, the report notes that the funding council (LSC) and inspecting body (Ofsted) must act as SD advocates for colleges to consider SD a priority.

‘Greening FE’ (2011) – Echoing previous reports, this publication highlights the persistent lack of guidance or specific legislation compelling colleges to implement SD and that external behaviour change will drive a demand for education providers to respond. This document again demonstrates an estates/ buildings bias towards SD and states that the sectors’ ability to reduce carbon emissions has been diminished since the 2009 collapse of a funding programme to improve FE buildings. Reflecting on the suitability of focus by BIS who argue that the estates/ facilities function is key to the successful implementation of a sustainability strategy, the AoC observe that most sustainability leads within the sector are outside the estates/ facilities function, that colleges can contribute far more to sustainability than carbon reduction (which ironically has been made more difficult by diminishing government funding), and that successful initiatives in colleges require strategic leadership and a holistic whole-college approach.

‘Rio+20 the FE College context and contribution’ (2013) - In 2013, the AoC ‘sustainability portfolio group’ was re-established and produced a short paper to the national consultation on education, in response to Rio +20 ‘The Future We Want’ which outlined the contribution that FE will make to the agreed priority areas. Though fundamentally the document denotes a shift in emphasis to addressing SD within curriculum, the response is centred around a statement made by college leaders based on identifying barriers to progress on sustainability; “The key challenge identified by College leaders is how best they can integrate education for sustainable development

across the extensive curriculum and training offer (demanded by its customers), whilst ensuring they continue to meet the more immediate needs of individuals and employers” (AoC, 2013). The contribution is limited to operational considerations which echo the priorities of BIS, i.e. low carbon and green skills carbon enrichment within established disciplines, the obvious barriers to which are perceived as financial since this relies on investment in new technologies. In the meantime, the AoC have invited dialogue with the UK government to articulate policy and objectives, but with no suggestion of deterring the focus on perpetuating existing business models.

Tier three – Forming the primary data set of this study, 15 semi- structured interviews were conducted in 2013 with Principals or senior leaders of colleges most of whom are members of the 157 Group of colleges. The 157 Group consists of the largest and most successful of urban colleges in England with strengths in leadership and a prescribed level of quality in teaching and learning and will be focused on within this study as a result of their quasi-leadership role within and for the sector.

Interview questions were modelled on those asked by Wright (2012) with the purpose of investigating how a cohort of college Principals conceptualise SD and sustainable colleges, the role colleges place in achieving sustainability, key issues facing colleges, and perceived barriers to implementing sustainability initiatives in their colleges.

Preliminary analysis of the interview data reveals several emerging key themes, most notably, the majority of participants when describing their interpretation of sustainability focussed on the importance and symbiotic relationship of their local economy’s financial and social sustainability and the continuation of their college; that a perceived lack of time and financial solvency prevents colleges from engaging with sustainability; interview discussions in most cases evolved from initially focussing on operational sustainability, particularly within buildings as a means of achieving sustainability, to a wider recognition of holistic sustainability, cultural change and multi- level leadership; and that when asked to describe a sustainability activity taking place within their college, most participants described projects relating to their catering provision using local and seasonal produce, college wide recycling initiatives, or the inclusion of renewable technologies within a new building.

As a subsequent note, notwithstanding the specific request to interview Principals, when arranging these meetings a third of Principals chose to put forward instead their senior leaders responsible for estates and facilities. In itself, this is revealing and supports the preliminary analysis that on first consideration, leaders of FE conceptualise SD physically through their buildings and technology.

3 Conclusions

Reflecting on initial research findings it is possible to draw theoretical considerations against the TMF.

1) Is FE addressing Sustainable Development? Using initial research conducted at all three tiers (as denoted in figure 2), it is suggested that FE is addressing SD but inconsistently at each management level.

Within the FE landscape, SD within FE is at a pre-development stage with tactical activities addressing only the financial and social aspects of SD. At a regime and niche level where colleges have greater autonomy, SD has seen further advancement, but is restricted to operational stages of transition as it remains within the remit only of a minority of practitioners across the sector. Though best practice is shared amongst practitioners, there appears to be an absence of wider cross – institutional awareness, interdisciplinary collaboration or strategic cohesion.

2) What is the relationship between the awareness and practice of SD by FE leadership? Initial research has revealed a dichotomy between SD awareness and practice spanning the landscape, regime and niche of FE. At a landscape level, SD awareness has been demonstrated (up until 2010) within the discourses of ‘carbon reduction’ or ‘green skills’, but at a regime and niche level, the interpretation and incentive to action SD within these parameters has been left wanting since many leaders perceive engagement with either to depend on high capital investment. The relationship between awareness and practice of SD by FE leadership is therefore weak, and is stalling niche level activities at an operational level.

3) Within a group of college leaders, what is the nature of disconnect between awareness and practice of SD? On a case by case basis, the niche level of leadership understanding of SD has shown a general awareness of SD at a strategic level based on discussions surrounding the culture and purpose of the education sector, but when asked to articulate examples of SD within the sector, or how the sector can contribute towards SD, interviews reflected the same messages of those published in the AoC reports (2007 – 2011). For example, examples of practice were limited to operational activities, and the barriers to wider strategic engagement based on a lack of government investment or incentivisation. The focus on operational activities and financial barriers also negates the cultural and educational contributions towards FE colleges can make and that have been recognised by most leaders interviewed. There is a disconnect therefore between how a leader perceives SD, and how this is practised, not just within organisations, but the wider discourse at a regime level amongst FE leaders. Over a six year period therefore, it can be concluded that despite repeated requests to government by the FE regime leadership for clearer guidance or

incentives to engage with SD, leadership at a landscape level has decelerated and has stalled consistent engagement and practice of SD within colleges at both a regime and niche level.

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Drivers of climate friendly food consumption: comparing the purchase of domestic, organic and meat products

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Abstract

This study compares the impact of attitudinal factors, personal capabilities, contextual factors and habits on different dimensions of climate-friendly food consumption - namely the purchase of locally produced (domestic) products, organics and the avoidance of meat products. In this endeavour, the study employs structural equation models to data drawn from a survey in Austria (n=220). The four types of predictors are able to explain 67% in the variance of purchasing domestic products, 27% in the variance of purchasing organics and 28% in the variance of avoiding meat products. Overall, the study demonstrates the considerable difference in drivers of the three purchase decisions under investigation. The results question previous studies measuring environmental behaviour based on aggregated indices across different behavioural domains (e.g. mobility, recycling, food purchase): Different strategies instead of one single approach seem therefore appropriate to support consumers to behave climate friendly when purchasing food. Furthermore, the findings point out that personal and social norms of climate protection are related to purchasing domestic and organic food. These results are alarming when their objective climate impact is taken into consideration: purchasing meat, as the most influential dimension, is not related to norms of climate protection at all. Interventions and a public discussion on the climate impact of meat consumption could help to slowly change the public perception of different consumption styles and their climate impact.

Keywords

Shopping behaviour, food consumption, climate change, survey, structural equation modelling

1 Introduction

In 2007, 16% of greenhouse gas emissions caused by private consumption within the EU-27 were related to food and beverages (EEA, 2012). Increasing consumer demand for climate friendly products may provoke a shift towards less CO₂-emitting production and distribution practices. Thus, promoting diet changes has become an interesting option to encounter this development. A comprehensive understanding of motives driving food consumption is of paramount importance to find strategies of promoting behaviour change.

Against this background, the paper compares the causal factors of different dimensions of climate friendly food consumption - the purchase of locally produced (domestic) and organic products as well as the avoidance of meat products. These product choices are investigated, because they are widely considered as highly influential when it comes to the climate impacts of food consumption (e.g. Tanner et al., 2004; Fritsche & Eberle, 2007; Stehfest et al., 2009; Gerber et al., 2010; EEA, 2012). For this purpose, the study employs structural equation modelling based on data drawn from a cross-sectional survey in the region of Styria (Austria).

With its comparative approach, the present study expands on the previous literature on food consumption: Many studies within this research area focus on a single dimension like meat consumption (e.g. Kalof et al., 1999) or purchasing organics (e.g. Schäfer, 2003; Weiß, 2006; Bellows et al., 2008). Others aggregate various dimensions to one single scale of ecological food consumption (e.g. packaging, transport distance, meat products and storage) (e.g. Gatersleben et al., 2002; Tanner et al., 2004) or even to one scale of general ecological consumption (e.g. mobility behaviour, recycling and food purchase) (e.g. Mainieri et al., 1997; Kaiser et al., 2005). These approaches prevent a detailed comparison of the determining structures of different types of food choice. In contrast, rising evidence suggests that the causal determinants of behaviour may vary greatly across, as well as within, behavioural domains (e.g. Stern, 2000; Loureiro & Lotade, 2005; Welsch & Kühling, 2009). This means that behavioural drivers do not only differ for example between installing solar thermal systems and food purchase, but also for buying eco-labelled food and fair trade food (ibid.).

Hence, the present study investigates and compares different dimensions of climate friendly food consumption – namely the purchase of domestic, organic and meat products – to draw implications for future research on climate friendly consumer behaviour, as well as for the practical implementation of intervention strategies to foster climate friendly food consumption.

2 Theoretical background and research aims

The paper considers climate friendly food consumption as one type of environmentally significant behaviour according to Stern (2000). This conceptualization is based on the distinction between pro-environmentally intended behaviour (e.g., donations to environmental NGOs, signing petitions) and environmentally significant (or important) behaviour (ibid.). The latter is not necessarily driven by pro-environmental intentions; but supposedly to a larger extent by a set of other factors like habitual routines or financial restrictions. Thus, the study follows Stern's (2000) theoretical framework and combines four categories of factors (attitudinal factors, personal capabilities, contextual factors and habits) to explain three different dimensions of climate friendly food consumption.

2.1 Climate friendly food consumption

Based on the CO₂ intensive production of **meat products** (e.g. 13.311 CO_{2e} per kg beef vs. 150 CO_{2e} per kg fresh vegetables), a vegetarian (or meat reduced) diet can be considered as climate friendly (Fritsche & Eberle, 2007; Friedl et al., 2008). **Organic production** also decreases the greenhouse gas emissions of food compared to conventional production (e.g. by 5-15% per kg meat, by 5%-35% per kg vegetables) (Fritsche & Eberle, 2007; Lindenthal et al., 2010). Finally, the purchase of **domestic** (locally produced) and **seasonal food** can diminish the climate impact of food based on shorter transport distances (Grünberg et al., 2010; EEA, 2012; Fritsche & Eberle, 2007). Hence, these dimensions of food consumption can be considered as relevant from a scientific point of view³⁰. Still, it has been controversially discussed to what extent organic and domestic products can be understood as climate friendly, because counterexamples demonstrate that they sometimes even cause more emissions than conventional and imported food (Grünberg et al., 2010). Based on these results, the three dimensions can be ranked among each other: Avoiding meat products is most important for reducing climate impacts, followed by purchasing organics. The impact of buying domestic and seasonal products can be considered as least important among the three dimensions.

In comparison to the climate impact of different types of food, it is also important to consider consumer's subjective interpretation of climate friendly food. When asked about ideas for reducing the climate impact of food consumption, Austrian consumers mention first and foremost reducing long transport distances (31%), buying domestic and seasonal products (13%) and reducing chemical fertilizer (13%). Reducing meat

³⁰ It has to be taken into consideration that other influential dimensions (e.g. packaging, storage) do exist, but cannot be investigated here as this would exceed the scope of the study.

consumption is not mentioned at all³¹ (FMA, 2010), showing that the most effective ways to combat negative climate impacts of food consumption are not salient to consumers.

2.2 Determinants of climate friendly food consumption

For inducing a behavioural change it is important to know why consumers buy climate friendly products. The present study therefore aims at investigating the different dimensions of climate friendly food consumption as understood in this paper (the purchase of domestic, organic and meat products) regarding their determinants. Stern's (2000) theoretical framework seems adequate for analysing climate friendly food consumption, particularly as it is understood to be an important type of environmentally significant behaviour.

Many studies within environmental research focus on goal-directed behaviour, which explicitly intends to benefit the environment. Stern (2000) describes this type of behaviour as Intent-oriented environmentalism. The focus of previous studies on goal-oriented behaviour explains why the dominant theories within the field of environmental research, like the 'Theory of Planned Behaviour' (Ajzen, 1991) or the 'Norm Activation Model' (Schwartz, 1977), put their attention on explaining behaviour with behavioural intentions. According to Stern (2000), these theories are only appropriate for explaining Intent-oriented environmentalisms but not necessarily for environmentally significant behaviour; which lies in the centre of attention in the present study. This type of behaviour may be, but is not exclusively determined by altruistic and rational considerations. Decisions like food choices are met on a daily basis. Thus, they are supposedly also affected by other factors like habits, personal characteristics or the behavioural context. Figure 1 subsumes the four categories of driving factors proposed by Stern (2000) (attitudinal factors, personal capabilities, contextual factors and habits) and the specific indicators used in the present study:

³¹ Similar results can be drawn from qualitative interviews (n=9), which were conducted in the explorative phase of the study. When asked about their association with 'climate friendly food', interviewees mentioned regional, seasonal and organic food, but not meat products.

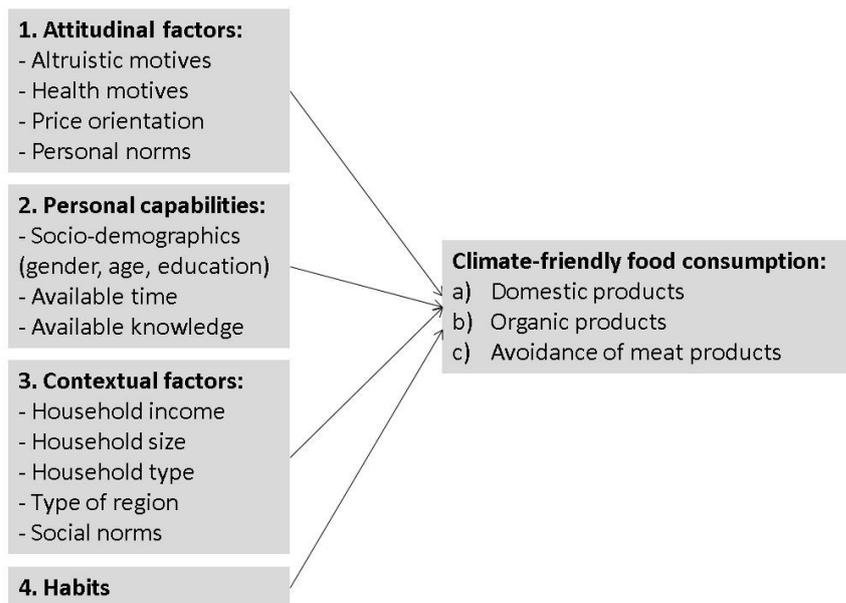


Figure 1: Driving factors used for investigating the purchase of domestic, organic and meat products

Previous research indicates that all four types of drivers seem highly relevant in the domain of food consumption:

Attitudinal factors: Altruism can be understood as concern for the welfare of others (Schwartz, 1977). Previous studies show the influence of altruism (e.g. ethical concerns, valuing care of nature) on avoiding meat consumption, ecological food consumption or the purchase of domestic food (de Boer et al., 2013; Gatersleben et al., 2002; FMA, 2010). Health motives (e.g., reduction of chemicals and additives) have been shown to influence organic food choice or purchasing domestic products (FMA, 2010). The influence of price orientation (sensitivity) has been identified in other domains of sustainable behaviour like housing (Welsch & Kühling, 2009). Personal norms are defined as self-expectations based on internalized values (Schwartz, 1977) and have demonstrated an impact in various behavioural domains (e.g., environmental conservation, travel mode choice, meat consumption) (e.g., Harland et al., 1999; Hunecke et al., 2001; Kaiser et al., 2005).

Personal capabilities (characteristics): Several empirical studies show that females purchase more organic products and less meat products (Loureiro & Lotade, 2005; Bellows et al., 2008; Kalof et al., 1999; de Boer et al., 2013). In contrast, the findings regarding the effect of age are inconsistent and show that younger respondents either buy more or less organic and meat products (e.g., Loureiro & Lotade, 2005; de Boer et al., 2013; Kalof et al., 1999; Friedl et al., 2008; Bellows et al., 2008). Similarly, some studies find no impact of education on reducing meat consumption (Kalof et al., 1999; de Boer et al., 2013), whereas others report a positive effect on buying ecological food, organics or less meat (Gatersleben et al., 2002; Bellows et al., 2008; Friedl et al., 2008). The available time and knowledge to identify climate friendly products can be

understood as perceived behavioural control (Ajzen, 1991), which refers to the perception that performing a particular behaviour is easy or difficult. Its impact has already been demonstrated in a variety of behavioural domains (for meta-analyses see Armitage & Conner, 2001; Bamberg & Möser, 2007).

Contextual factors: Evidence about the influence of income is not conclusive. It can for instance have a positive or no effect on buying organic food (Loureiro & Lotade, 2005; Bellows et al., 2008; Schäfer, 2003; Welsch & Kühling, 2009). Household size is not found to be influential for buying ecological food (Gatersleben et al., 2002) However, the presence of children in the household (household type) seems to be important for eating styles of respondents (e.g., Friedl et al., 2008; Pedersen et al., 2012). According to Tanner et al. (2004), the type of region (urban vs. rural areas) has also a significant effect on the purchase of ecological food. Finally, the social context seems relevant for individual behaviour: Social norms refer to the moral rules which are present in a group and the perceived social pressure to obey them (Ajzen, 1991). Welsch & Kühling (2009) find significant effects of the behaviour of reference persons on the intensity of respondents to buy organic products; in contrast, Harland et al. (1999) find no significant predictive power of social norms on reducing meat consumption.

Habits: Habitual behaviour is characterized by a high level of automaticity (lack of control and awareness), which reduces (or even bypasses) deliberative choices (Verplanken & Orbell, 2003). The impact of habit on behaviour was already successfully demonstrated in different domains (e.g. travel mode choice, snacking habits) (Verplanken et al., 1997; Bamberg & Schmidt, 2003; Klöckner & Blöbaum, 2010; Verplanken, 2006).

3 Methodology

To give an overview about the empirical data and statistical methods used in the present study, the following sections describe the sample, measures and data analysis procedure.

3.1 Respondents

The research involved a cross-sectional measurement in the city of Graz (Austria) and surrounding (suburban and rural) areas. The survey for the present research was combined with a project concerning shopping mobility, which used standardized face-to-face interviews from a quota-sample (4 age groups from 18 to 80 years, gender, 3 regions) in the area under examination. After the interview, the participants of this study (n=690) were asked to fill out an additional written questionnaire on the topic of

food consumption. 220 fully completed questionnaires were returned, representing a 32% response rate. The survey was undertaken from August 2010 until January 2011.

The sample has a bias towards women (60%), higher educated persons (58%) and younger persons (36% between 18 and 34 years). Furthermore, household characteristics of respondents have a bias towards respondents from urban regions (43%), households without children (63%), smaller households (28% single households) and a lower net income (56% with a monthly net income of 2,400 Euros or less). The bias suggests that the findings from the present study have to be interpreted with care, because the generalizability to persons in other demographic strata may be limited. Still, it has to be noted that similar effects are reported in other studies based on survey data on the topic of ecological food consumption (e.g. Tanner et al., 2004) and that the bias therefore lies in the 'typical' range of survey data.

3.2 Measures

All measures regarding purchasing behaviour and habits were included in the face-to-face interview. The behavioural determinants were included in the subsequent written questionnaire, offering the advantage that the respondents were not affected by previous questions on climate protection, which could evoke consistent answers due to social desirability (see chapter 3.1). All items and instructions described in the paper are translated from German. The factorial structure of all concepts and their discriminant validity was empirically tested with a Confirmatory Factor Analysis (see chapter 4.1).

Behavioural determinants

Shopping motives: To detect general priorities of respondents regarding their food purchase, they were asked to assess the following criteria regarding the importance for their choice of food on a nine-step scale ranging from 1-9, where 9 indicates the most favourable response: (1) *Environmentally sound cultivation/livestock breeding*, (2) *support of regional farmers/fair trade*, (3) *species-appropriate breeding*, (4) *avoidance of chemicals and additives*, (5) *low price*. These motives had to be ranked according to their importance together with general shopping motives (e.g. product quality, taste, durability) to avoid excessive agreement to altruistic motives (for a similar procedure using trade-off situations see Mainieri et al., 1997; Loureiro & Lotade, 2005).

Socio-demographics: Among the socio-demographic variables, the respondents *age* in years, *gender* (0=female, 1=male) and *education* (0=primary or secondary education, 1=higher education with school leaving exam) were included in the study.

Household characteristics: The *equivalent household income* (in Euro per month)³² and *household size*, which refers to the number of household members, were measured on metric scales. The *household type* (presence of children in the household) (0=no, 1=yes) and *type of region* (1=urban, 0=sub-urban/rural) were measured on dichotomous scales.

Habits: Habits were measured by items reflecting the level of automaticity related to food purchase. The items are rated on five-step scales ranging from 1 to 5, where 5 indicates the most favourable response. The item wording is held close to the Self-Report Index of Habit Strength (SRHI) (Verplanken & Orbell, 2003) and adapted to the area of food purchase: (1) *For the most part I select the food I buy spontaneously, without considering it for a very long time.* (2) *I like to take my time to choose the food to buy* (reversed direction). (3) *Normally I think about it thoroughly before I chose the food to buy* (reversed direction). (4) *Before I buy food I read the product information written on the packaging* (reversed direction).

Additionally, the questionnaire included personal and social norms as well as behavioural barriers (time and knowledge) explicitly focused on climate protection. These items were assessed on five-step scales ranging from 1 to 5, where 5 indicates the most favourable response. To ensure that all participants interpret the notion of 'climate friendly' food correctly, the questionnaire gave the following definition; *climate friendly food means food that produces less CO₂-emissions compared to conventional food during production, storage and retailing.*

Personal norms (PN): Personal norms were measured with items referring to feelings of responsibility and obligation (Bamberg et al., 2007): (1) *I feel responsible to take care of climate protection when I buy food.* (2) *I feel obliged to take care of climate protection when buying food.*

Social norms (SN): Descriptive and injunctive social norms (Ajzen, 1991) were measured with the following items: (1) *My friends appreciate the purchase of climate friendly food.* (2) *My family expect that I buy climate friendly food.* (3) *Some of my friends mind to buy climate friendly food.* (4) *Climate friendly food is not important to my family* (reversed direction). (cf. Cook et al., 2002).

Lack of time and knowledge: When answering the question, *What deters you currently from buying (more) climate friendly food?* respondents had to indicate to which extent the following causes apply to them: (1) *lack of time to read/obtain information,* (2) *lack of knowledge to identify climate friendly food.*

³² The equivalent household income represents the household income divided by the equivalent number of household members. The first household member equals 1, all other adult household members equal 0,5 and children younger than 14 years equal 0,3 (Statistics Austria, 2010).

Behavioural measures

Purchasing domestic food: The self-reported purchase of domestic (locally produced) food included items referring to the country of origin as well as regarding seasonal food, because both are highly related to the issue of transportation. The items were assessed on five-step scales ranging from 1 to 5 (5= I strongly agree): (1) *When I buy food I ascertain if it was produced in Austria.* (2) *When I buy food I don't care about its country of origin* (reversed direction). (3) *I buy fresh fruits and vegetables regarding the season.* (cf. Tanner et al., 2004; Diekmann & Preisendörfer, 2003).

Purchasing organic food and meat products: Respondents had to estimate the percentage of (1) *organic food* and (2) *meat products* (e.g. meat, sausages) in reference to the whole quantity of food they bought in the last month answering the following questions: *When you think of your purchases in the last months, how much of all the food you bought (1) was organic (2) were meat products?* To facilitate interpretation of results, the percentage of purchasing meat products was afterwards subtracted from 1, so that a high value represents climate friendly behaviour in the sense of meat avoidance.

3.3 Data analysis procedure

First, the fit of the measurement model representing the relationship between the latent variables and their observed indicators is tested using a confirmatory factor analysis (CFA). A good model fit in the CFA is a necessary precondition for applying the latent constructs in structural equation models (SEM), because it represents the equivalence of the model-implied covariance matrix and the empirical covariance matrix (Schermelleh-Engel et al., 2003). A good model fit therefore ensures sufficient internal consistency of latent constructs as well as their discriminant validity. Second, Structural Equation Models (SEM) are applied to simultaneously test the measurement model and the structural model, which expresses the relationship between the latent variables of interest (Nachtigall et al., 2003). Both analyses are conducted in AMOS 19.

These procedures are employed due to their advantage of displaying the relationship between latent constructs after controlling for measurement error in constructs with more than one single indicator (Jaccard & Wan, 1995). Furthermore, they offer the possibility to test complex dependencies, because they are able to deal not only with one but with a system of regression equations (Nachtigall et al., 2003). Furthermore, structural equation models can account for (theoretically justified) correlations between different predictors, which leads to a more realistic picture compared to the assumptions of regression models that predictors are not related. SPSS data files and Full Information Maximum Likelihood (FIML)-estimation are employed to replace missing values by data imputation (Byrne, 2010).

4 Results

4.1 The dimensionality of climate friendly food consumption

The good model fit of the CFA ($\text{Chi}^2/\text{df}= 1.48$; $p<0.00$; $\text{CFI}=0.941$; $\text{NFI}=0.851$; $\text{RMSEA}=0.047$) points to the concurrence between the data and the postulated factorial structure. The correlations among the latent variables used in the model are displayed in the annex (Table). Despite a certain degree of overlap, all dependent variables in the model represent clearly distinguishable constructs. None of the correlations reaches a limit that would threaten discriminant validity. Furthermore, the factor loadings of items in the measurement model are all above 0.5, indicating that the postulated measurement model fits the empirical data well³³. All factor loadings are displayed together with means and standard deviations in the annex of the paper (Table 2).

The correlations among the three measures of climate friendly food consumption (no. 16-18 in Table) indicate only moderate relations among the purchase of organic, domestic and meat products, which range from $r=.19$ to $r=.41$. Thus, it can be concluded, that climate friendly food consumption can be understood as a multi-dimensional concept comprised of three dimensions. These results are in line with previous studies; Loureiro and Lotade (2005) for instance find that consumers differentiate between fair-trade, eco-labelled and organic coffee. As the relations between predictors and dependent variables change considerably (see Table), the CFA already gives a first indication that different drivers influence the purchase of domestic, organic and meat products. The next section deals with this question in detail.

4.2 The determining structure of climate friendly food consumption

Table 1 compares the results of several structural equation models explaining the purchase of a) domestic food, b) organic food and c) the avoidance of meat products. Furthermore, it investigates the explanatory power of the different causal factors proposed by Stern (2000). Therefore, the models are sequentially tested, starting with attitudinal factors only (models 1a-c) and hereafter extending the model with personal capabilities (2a-c), contextual factors (3a-c) and habits (4a-c). The coefficients in the table represent the standardized regression weights of causal paths between

³³ The same factorial structure was furthermore tested using covariance matrices as data input and ML-estimation. The resulting modification indices ($\text{MI}<20$) gave no indication of potential improvements through changing the factorial structure.

predictors and the respective dependent variable. To facilitate model comparability, the portrayal of the full models, including correlations between predictors, is abandoned at this point. The correlations of all models are displayed in the annex of the paper (Table).

Overall, the model fit criteria presented in Table 1 indicate an acceptable fit between the data and the theorized models. Similar to the CFA, the value of Chi^2/df and the RMSEA are within the range of acceptable model fit, whereas the NFI and CFI are below the respective threshold (Schermelleh-Engel et al., 2003). Still, the comparability of the models can be considered as affirmed, because the fit indices (Table 1) and the correlations between the predictors (Table) are stable.

Table 1: Standardized path coefficients in structural equation models explaining the purchase of domestic, organic and meat products

	Constructs	1a	1b	1c	2a	2b	2c	3a	3b	3c	4a	4b	4c
Attitudinal factors	Altruism	.21*	.16	.16	.14	.12	.16	.16	.09	.12	.18*	.10	.13
	Health	.00	.09	-.03	.01	.10	-.02	.00	.09	-.03	-.04	.09	-.04
	Price	-.23**	-.22**	-.13*	-.25**	-.21**	-.08	-.32**	-.22**	-.13*	-.24**	-.21**	-.12
	Pers.norms	.50**	.22**	.09	.49**	.21**	.10	.48**	.11	.09	.28*	.07	.03
Pers. capabilities	Gender				-.12*	.00	-.23**	-.12*	.00	-.23**	-.08	.00	-.22**
	Education				-.02	.01	.28**	-.01	-.03	.20**	-.02	-.03	.20**
	Age				.17**	-.11*	-.11*	.21**	-.13**	-.10	.20**	-.13**	-.10
	Time				.03	-.06	-.08	.03	-.08	-.09	.11	-.06	-.06
	Knowledge				-.09	-.22**	-.04	-.09	-.19**	-.01	-.12	-.20**	-.02
Contextual factors	HH size							-.17**	.02	-.09	-.13	.03	-.08
	HH type							.20**	-.09	.04	.18**	-.10	.03
	Equ. HH income							-.14**	.01	-.06	-.09	.02	-.05
	Region							.03	.11	.23**	.03	.11	.23**
	Social norms							-.03	.15	.03	-.03	.15	.04
	Habits										-.50**	-.09	-.12
	R ² [%]	52.2	21.7	6.9	50.2	26.4	23.9	52.3	27.2	28.2	66.5	26.5	27.8
	R ² change				-2	4,7	17	2,1	0,8	4,3	14,2	-0,7	-0,4
	Chi ²	48.05	12.20	10.57	161.17	103.19	102.49	357.11	275.80	271.64	503.56	410.59	411.60
	df	27	13	13	77	53	53	206	166	166	295	247	247
	Chi ² /df	1.78	0,94	0,81	2.093	1.947	1.934	1.734	1.661	1.636	1.707	1.66	1.66
	CFI	.971	1	1	0.91	0.929	0.929	0.90	0.914	.916	0.884	0.893	0.892
	NFI	.939	.978	.979	0.847	.871	0.869	0.80	0.817	0.818	0.769	0.779	0.778
	RMSEA	.060	.00	.000	.071	.066	0.065	0.058	0.055	0.054	0.057	0.055	0.055

a= domestic products, b= organic products, c= meat avoidance, FIML Estimation, **=p<0.05, *=p<0.1

Table 1 points to considerable differences between the determining structures of purchasing domestic, organic and meat products. The changes of explained variance in models 4a-c and the different pattern of significant paths in these models indicate that the predictors under investigation differ in their ability to explain the three purchase decisions. Overall the predictors achieve 67% explained variance of purchasing domestic products, 27% of purchasing organics and 28% of avoiding meat products.

For determining the most influential among Stern's (2000) factors, the change in explained variance (R²) is compared in each analytic step (1-4). Additionally, we identify the most relevant predictors within each category of factors (attitudinal factors, personal capabilities, contextual factors and habits): In the case of **domestic products**, attitudinal factors (AF) have the highest explanatory power (R²=52%), followed by habits (R²=14%). In contrast, personal capabilities (PC) and contextual

factors (CF) do not contribute to the explanation of this purchase decision. Within the category of AF, strong personal norms on climate protection and altruistic motives support this purchase decision, whereas a high level of price orientation prevents it (see model 4a). Furthermore, the strong influence of habits indicates that a high level of automaticity circumvents a deliberative decision process regarding the origin and seasonality of the product. Even though the regression coefficients of predictors among the PC and CF (e.g., age, household type) also reach a significant level in the final model (4a), they do not contribute much to the explained variance of purchasing domestic products.

With 22%, AF also explain the biggest share of variance in **purchasing organics**, followed by PC ($R^2=5\%$). CF and habits have no explanatory power in the case of organics. Among the AF and PC, a strong price orientation, high age and lack of knowledge prevent a positive purchase decision (4b). The negative effect of age is surprising, because at the same time, age is positively related to the purchase of domestic products. Older respondents favour locally produced food rather than organic, whereas younger age segments favour the latter. Hence, age might be related to traditional motives like supporting local farmers. The effect of knowledge on buying organics seems plausible, because in Austria it becomes increasingly difficult to identify certified organic labels among the plethora of (private and certified) 'green' labels and brands. In comparison, it is easier, especially in the case of fruits and vegetables, to identify the country of origin due to easy to notice product information.

The avoidance of **meat products** is predominantly explained by PC ($R^2=17\%$), followed by AF ($R^2=7\%$) and CF ($R^2=4\%$); habits do not contribute to its explanation (4c). Among the PC, gender and education affect meat consumption to the extent that women and higher educated persons buy less meat (4c). The effect of gender and education might be based on health considerations not directly related to chemicals and additives but to healthy nutrition in general. Among the AF, price orientation affects behaviour in the initial model (1c), but loses significance in the final model (4c), pointing to a certain degree of substitution between the different predictors. Furthermore, respondents from sub-urban or rural locations express more meat orientation compared to respondents from urban locations.

Finally, we turn to the question regarding the connection between the product choices and the topic of climate change. The model comparison reveals that personal norms on climate protection positively influence the purchase of domestic and organic food, whereas they do not affect the avoidance of meat products (1a-1c). Even if the topic of climate change has a facilitating role on purchasing two out of three product types under investigation, these results are alarming when their objective climate impact is taken into consideration, because purchasing meat, as the most influential dimension, is not related to norms of climate protection at all.

4.3 Limitations

When interpreting the results of this study, some limitations have to be considered: Regarding the statistical procedure, it has to be noted that longitudinal or experimental studies would be preferable to test causal effects; yet, the proposed causal relations have been extensively tested empirically in previous studies. Furthermore, it has to be noted that within the SEM framework, all parameters are estimated simultaneously. Consequently, the latent constructs might change their character in different structural models (Nachtigall et al., 2003). That's why the change in explained variance can even become negative when including more predictors into the model, even though this seems counterintuitive, when compared to regression models.

Concerning the measurement, it has to be said that the high effect of habits on the purchase of domestic products ($\beta = -.50$) might be biased by a common method variance, because among all predictors only habit was measured together with the behavioural items of buying domestic products in the face-to-face situation, whereas all others were measured by a subsequent written questionnaire. Procedures to control for a common methods factor could not be successfully accomplished³⁴ Still, there is compelling empirical support for a strong effect of habit on behaviour. Furthermore, the self-reported behaviour was not validated for its actual climate impact, for instance through assessing the carbon footprint of the purchases. Still, for instance Tanner et al. (2004) conclude that self-reported ecological food consumption considerably correlates with the actual ecological footprint that derives from the purchases ($r = -.36$), assuming a sufficient correlation between self-reports and their climate impact in this study.

Finally, it has to be said that the theoretical framework proposed by Stern (2000) is very broad and does not favour a parsimonious model. As a result, the models in the analytic steps (1 to 4) show a certain degree of substitution between the different predictors. Still, Stern's approach of employing a wide scope of determining factors has been proven to be very fruitful for investigating climate friendly food consumption.

³⁴ When controlling habit and behaviour in model 4a for an unmeasured latent methods factor as proposed by Podsakoff et al. (2003), the model encountered problems with identification. The authors (ibid.) describe this difficulty as typical for this type of testing. As other potential effects (e.g. social desirability) were not directly measured, further procedures as described by Podsakoff et al. (2003) (e.g., partialling out a (measured) general method factor) could not be employed.

5 Conclusion

This paper compared the determining structure of different dimensions of climate friendly food consumption (purchasing domestic, organic and meat products). To this end, the impact of Stern's (2000) attitudinal factors, personal capabilities, contextual factors and habits was investigated using structural equation modelling based on data drawn from a survey in Austria.

The study revealed that the drivers, which facilitate or inhibit food choice, vary considerably between purchasing domestic, organic and meat products. These findings question the appropriateness of aggregated measures of pro-environmental actions across different behavioural domains (e.g., recycling, mobility, food consumption) commonly used in environmental research (e.g. Mainieri et al., 1997; Kaiser et al., 2005). Furthermore, the results point to the importance of extended behavioural models, which include a variety of factors, to give a comprehensive picture of the complex motivational structure of climate friendly behaviour. In both regards, the present study exceeds the previous literature in the domain of sustainable food consumption. The determining factors proposed by Stern (2000) explain a satisfying share of variance, ranging from 27% for buying organics and 28% for avoiding meat products, up to 67% for buying domestic (locally produced) food. Overall, the comparison shows that attitudinal factors, habits and personal capabilities seem highly relevant in the domain of purchasing climate-friendly food, whereas contextual factors do not contribute much to its explanation

Regarding the connection of food choices with the issue of climate protection, results reveal that the purchase of domestic and organic products is facilitated by personal and social norms explicitly focused on climate protection. This is an important finding, because it highlights that purchasing domestic and organic products is to a certain extent motivated by climate protection and not only by general motives of altruism (e.g., animal welfare, support of local farmers). In contrast, meat consumption is not influenced by norms of climate protection even if it has the biggest impact on greenhouse gas emissions. Specific interventions and a public discussion on the climate impact of meat consumption could help to slowly change the public perception of consumption styles. But as previously pointed out (e.g. de Boer et al., 2013), consumer communication has to be careful and seductive instead of reproachful to avoid counterproductive consumer reactions. Furthermore, the lack of knowledge predominantly inhibits the purchase of organics. Hence, easy to notice and identifiable product labels seem promising, especially for this type of product choice. Finally, consumer education such that supports a holistic perception of food consumption and the environmental impacts of production and transportation would be favourable, because habitual behaviour with a high level of automaticity prevents deliberative

product choices, especially in the domain of domestic food purchase. Future studies could intensify research in this field; develop intuitive, easy to notice product labels that indicate the environmental impact of products and elaborate strategies to successfully educate consumers on the environmental impacts of their product choices.

6 References

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7 Appendix

Table 2: Means, standard deviations and standardized factor loadings of items in the measurement model

Item	Mean	SD	Construct	Factor loadings
Environmentally sound production	3.04	2.02		.76
Fair trade/ support of local farmers	2.91	1.97	Altruistic motives	.70
Species-appropriate breeding	3.15	2.13		.73
Avoidance of chemicals	3.49	2.39	Health motives	1
Low price	4.22	2.51	Price orientation	1
Feel responsible for climate	2.40	1.09	Personal norms	.85
Feel obliged to take care	2.53	1.21		.88
Gender	1.40	.49		1
Equivalent household income	1414.16	792.08		1
Age	43.76	18.39		1
Education	.58	.50		1
Lack of time	3.01	1.27		1
Lack of knowledge	2.71	1.20		1
My friends appreciate	3.15	1.12	Social norms	.74
My family expects	3.37	1.21		.73
Some of my friends care about	2.64	1.06		.61
Climate protection not important for family	2.38	1.12		.54
Household size	2.56	1.47		1
Household type	.37	.48		1
Type of Region	1.7	.867		1
Product choice spontaneously	3.72	1.29	Habit	.69
Take time for choice	3.49	1.30		.60
Considered choice	4.21	1.02		.63
I read product information	3.07	1.46		.63
Food produced in Austria	2.10	1.13	Domestic and seasonal food	.79
Don't care about origin	1.78	1.14		.78
Seasonal fruits and vegetables	1.89	1.08		.50
Share of organic food (%)	.32	.26		1
Share of meat products (%)	.18	.14		1

Table 3: Correlations of all independent and dependent variables

Constructs	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1. Altruism	1																
2. Health	.52	1															
3. Price	.04	.14	1														
4. Pers. norm	.57	.34	-.26	1													
5. Gender	-.18	-.16	-.09	-.13	1												
6. Education	-.20	-.21	-.21	-.10	.02	1											
7. Age	.33	.19	-.06	.29	-.03	-.23	1										
8. Time	-.27	-.18	.21	-.25	.01	-.05	-.01	1									
9. Knowledge	-.34	-.17	.00	-.27	.07	.01	.05	.62	1								
10. HH-size	-.16	.00	-.02	.01	.05	-.08	-.10	.01	.08	1							
11. HH-type	-.13	.04	.07	-.05	.01	-.03	-.11	.02	.07	.63	1						
12. eq. HH-inc.	-.01	.01	-.26	-.10	.03	.17	.22	.00	.06	-.10	-.05	1					
13. Region	.12	.08	.08	.03	-.06	.32	-.09	-.08	-.15	-.43	-.37	-.07	1				
14. Soc. norm	.48	.31	-.23	.78	-.02	-.18	.33	-.15	-.21	-.10	-.10	-.05	-.03	1			
15. Habit	-.38	-.28	.26	-.58	.19	.00	-.17	.29	.21	.09	.03	.09	-.08	-.45	1		
16. Domestic	.49	.26	-.35	.69	-.18	-.07	.34	-.22	-.23	-.09	.00	-.06	.04	.55	-.75	1	
17. Organics	.33	.22	-.26	.40	-.05	.02	.00	-.33	-.35	-.10	-.15	.00	.16	.37	-.34	.41	1
18. Meat av.	.20	.07	-.15	.22	-.25	.29	-.09	-.19	-.18	-.19	-.13	-.05	.35	.13	-.28	.27	.19

FIML estimation, Chi2= 350.76; df= 237; Chi²/df= 1.48; p<0.00; CFI=.941; NFI=0.851; RMSEA=0.047

Altruism=altruistic motives, health= health motives, price= price orientation, pers./soc. norm= personal/social norms, HH=Household, eq. HH-inc.= equivalent household income, Region= Type of region, domestic=purchasing domestic food, organics= purchasing organic food, Meat avoidance=purchasing low levels of meat products

Table 4: Correlations between predictors in all SEM models

Construct 1	Construct 2	1a	1b	1c	2a	2b	2c	3a	3b	3c	4a	4b	4c
Altruism	Health	.52	.52	.52	.51	.51	.51	.51	.51	.51	.52	.52	.52
Price	Health	.14	.14	.14	.15	.15	.15	.21	.21	.21	.25	.25	.25
Altruism	Price	.04	.04	.04	.03	.03	.04	.12	.12	.12	.18	.18	.18
Altruism	PN	.58	.57	.57	.58	.57	.57	.58	.58	.58	.51	.51	.50
Price	PN	-.27	-.27	-.27	-.25	-.25	-.25	-.14	-.14	-.13	-.15	-.15	-.15
Health	PN	.34	.34	.34	.34	.34	.34	.36	.36	.36	.30	.30	.30
Time	Knowledge				.62	.62	.62	.62	.62	.62	.61	.61	.61
Time	Price				.19	.19	.19	.19	.19	.19	.19	.19	.19
Education	Price				-.20	-.20	-.20	-.22	-.22	-.22	-.21	-.21	-.21
Education	Age				-.23	-.23	-.23	-.18	-.18	-.18	-.18	-.18	-.18
Education	Health				-.12	-.12	-.12	-.15	-.15	-.15	-.15	-.15	-.15
PN	SN							.75	.75	.75	.74	.74	.73
Altruism	SN							.52	.52	.52	.48	.48	.48
Health	SN							.35	.35	.35	.32	.32	.32
HH type	HH size							.63	.63	.63	.63	.63	.63
equ. HH inc.	Price							-.27	-.27	-.27	-.28	-.28	-.28
HH size	Region							-.41	-.41	-.41	-.41	-.41	-.41
HH type	Region							-.37	-.37	-.37	-.37	-.37	-.37
Ausb_di	Region							.31	.31	.31	.31	.31	.31
Age	equ. HH inc.							.21	.21	.21	.21	.21	.21
Education	equ. HH inc.							.21	.22	.22	.21	.22	.22
Habit	Time										.14	.15	.15
Habit	PN										-.40	-.42	-.42
Habit	SN										-.23	-.24	-.24
Habit	Price										.31	.31	.31

a= domestic products, b= organic products, c= meat avoidance, FIML Estimation