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## **An Empirical Investigation into the Adoption of Green Procurement Practices in the German Food Service Industry**

Verena Hauschildt<sup>Ⓐ</sup>, and Birgit Schulze-Ehlers<sup>ᵇ</sup>

<sup>Ⓐ</sup> *M.Sc., Department of Marketing, University of Hamburg, Welckerstr. 8, 20354, Hamburg, Germany*

<sup>ᵇ</sup> *Jun.-Professor, Institute of Agricultural Economics, University of Kiel, Olshausenstr. 40  
24118, Kiel, Germany*

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### **Abstract**

This paper analyzes the relationship between sustainability views, drivers and barriers and concrete procurement practices for sustainability in the German food service industry (FSI), building on earlier work of Rankin et al. (2011) on this topic. Further innovation lies in the explicit regard to product-specific differences in the importance and level of implementation of sustainable sourcing, as well as in the special focus on the FSI, a sector with significant economic importance, for which only small amounts of information can be found. For this study, qualitative interviews among head chefs and quantitative standardized surveys among decision makers from the FSI were conducted.

**Keywords:** sustainability, Food Service Industry, green procurement strategies, sustainable buying behavior

<sup>Ⓐ</sup>Corresponding author: Tel: + 49. 40.42838.8699

Email: V. Hauschildt: verena.hauschildt@wiso.uni-hamburg.de

B. Schulze-Ehlers: bschulze@ae.uni-kiel.de

## **Introduction**

Sustainability Management is one of the most pressing challenges of this century (Raskin et al. 2010). One step towards the management of this wicked problem of sustainability (Peterson, 2009; Rittel and Webber 1973) is creating transparency about the impact of companies' processes on their ecological and societal environment ("inside-out-linkages", Porter and Kramer 2006). Taking a strategic management perspective, it can be assumed that firms can create competitive advantages by quickly adapting to new trends, as is postulated in the dynamic capabilities approach (Teece et al. 1997). This research therefore aims at investigating the state of the art of sustainability management in the Food Service Industry.

As today it is commonly understood that sustainability management has to be extended beyond the single enterprise and to the whole supply chain, this also includes upstream (external) processes (Brindley and Oxborrow 2013; Crespín-Mazet and Dontenwill 2012; Seuring and Mueller 2008). Close cooperation between all companies along the supply chain (manufacturer, retailer and consumer) and involved organizations (NGO's, governmental and agricultural organizations) are required to reach the goals of sustainability; environmental quality, social justice and economic prosperity (Elkington 1994).

A number of studies tackle this question of how to integrate suppliers into corporate sustainability activities using green procurement strategies (Baden et al., 2011; Ciliberti et al. 2008; Wognum et al. 2011). Such strategies are often translated into additional requirements to suppliers. These go beyond classical evaluation criteria such as quality, price, or reliability (Walker et al. 2008), and also beyond existent environmental laws and regulations. Lists of potential criteria have been proposed, e.g. by Handfield et al. (2002) for the environmental aspects. Walker et al. (2008) reviewed the literature on drivers and barriers to environmental supply chain management. They broadly distinguished internal (organizational) and external (regulatory, customer, competition, society, and suppliers) drivers, and internal (cost, training, lack of legitimacy) and external (regulation, poor supplier commitment, industry specific) barriers.

For the food sector, Walker and Brammer (2009) found that retailers engaging in green procurement were able to implement these strategies rather easily due to their power position. Other studies dealt with local organic food networks and the role of ecological citizenship (Seyfang 2006), the environmental effects of local food shopping (Coley et al. 2009; Mundler and Rumpus 2012), information systems employed to create transparency (Wognum et al. 2011), and with opportunities for reducing greenhouse gas emissions (Garnet 2011). Studies on drivers and barriers for implementing green procurement in the food sector (Walker et al. 2008), however, are rare.

Rankin et al. (2011) developed a framework to "establish levels of sustainability in agribusiness companies in terms of sustainability views, actions, and performance measures" (Rankin et al. 2011, 4). Their goal is to categorize companies into different levels of sustainability. The sample of their study consists of managers of agribusiness firms along the whole supply chain, with a focus on input and production companies. However, the sustainability actions taken into account

in this paper are broad and only comprise one general action “Sustainable Supply Chain Management”.

The contribution of the study is threefold. First, the approach of Rankin et al. (2011) will be modified by explicitly connecting sustainability views, drivers, and barriers to concrete procurement practices for sustainability in the food service industry (FSI). Second, product-specific differences in the perceived importance and level of implementation of sustainable sourcing will be explicitly regarded. Third, this research focusses on the FSI, which is an economically important part of the food sector, but has been rather neglected by researchers so far (Baldwin et al. 2011). It consists of a diverse group of public and private organizations from restaurants to company and school canteens and hospitals and nursing homes. Little research has been conducted on the specific sustainability challenges of caterers (Mikkola 2009; Rimmington et al. 2006), and none of these have focused on Germany.

This study aims to specifically answer these research questions:

- Which views on sustainability prevail in the German food service industry?
- Which actions of sustainability management do companies in the food service industry use both internally and with respect to procurement?
- How are companies’ practices connected to the stated views of the participants on sustainability?
- Which are the drivers and barriers companies face in their attempts “to green” their procurement

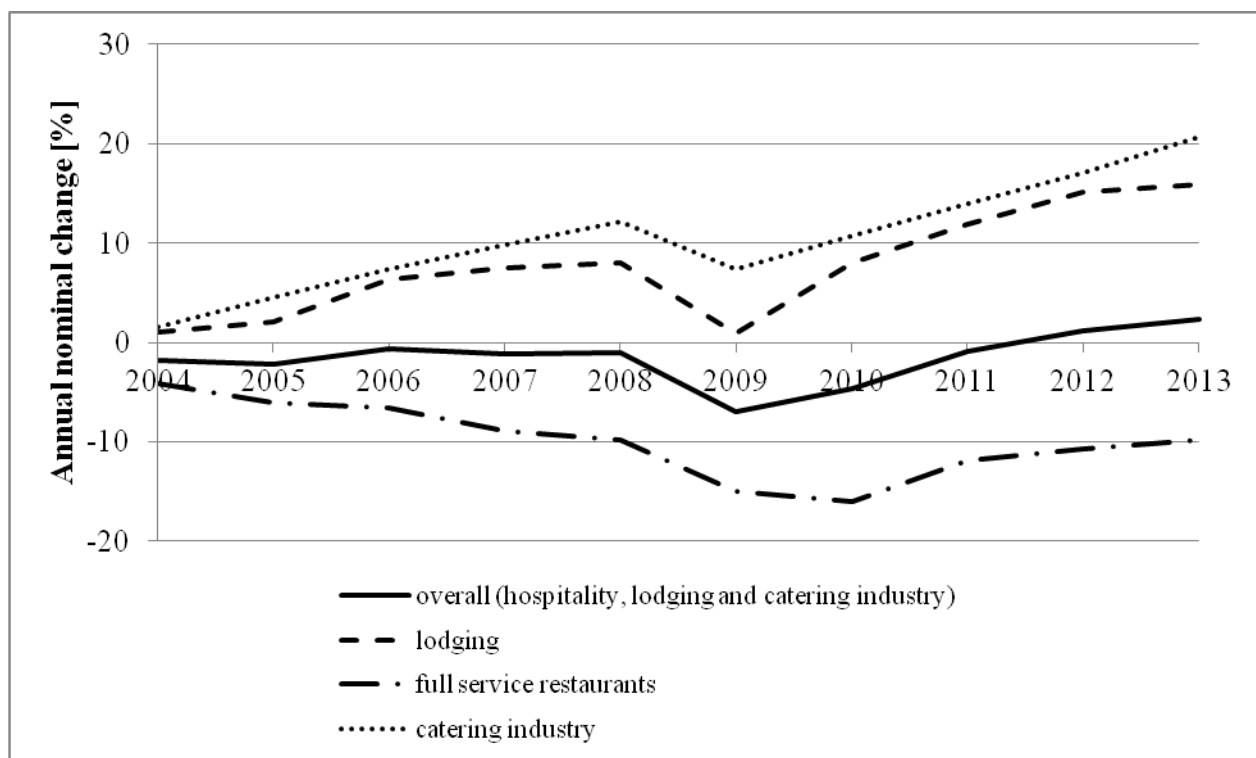
Given the small amount of available information on this sector, qualitative as well as quantitative methods were used in this study. The measurement instruments for sustainability views for both external and internal influences were taken from Rankin et al. (2011). The potential green procurement practices in the FSI were derived from qualitative interviews with eight decision makers from different food service organizations, from principles developed by Rimmington et al. (2006), and from the Green Seal Standard for Restaurants (Baldwin et al. 2011).

The remainder of this paper is organized as follows: First, the German food service sector and the increasing relevance of eating out in Germany are briefly introduced. Secondly, the main issues with respect to sustainability in the German FSI are described. Then, an overview of the literature on Sustainable Supply Chain Management (SSCM) is provided. A special focus of this section lies on green procurement as well as on general drivers and barriers to sustainability management which can be assumed to affect procurement. The research is positioned in the Strategic Management literature, more specifically the dynamic capabilities approach put forward by Teece et al. (1997). It is based on the assumption that the capability of a company to quickly adapt to societal requirements such as sustainability issues in food chains, contributes to its competitiveness. The dynamic capabilities approach will be briefly sketched in the third section as well. The fourth section presents the data and methodology, followed by the fifth section presenting results and discussion of theoretical and practical implications. The paper finishes with a brief conclusion and considerations for future research.

## The German Food Service Industry

The food service industry is defined as “encompassing all providers of fresh prepared meals, including food sections of grocery deli” (Friddle et al. 2001, 4). It includes a very heterogeneous group of company types, “from full service restaurants to school cafeterias & prisons” (ibid.) and includes both public and private organizations. Rogge and Becker (2008) present a comprehensive overview of further distinctions between businesses in the sector.

The German Hotel and Catering Association (DEHOGA) analyzes and publishes the annual economic developments in the German FSI, which can be divided into the hospitality and catering industry, system gastronomy, and communal catering. Hospitality and caterings' annual net turnover rose from 63.6 bn Euro in 2010 to 66.1 bn Euro in 2011. This increasing trend persisted with nominal growth rates of 2.1 % in 2012 and 1.2% in 2013, leading to an annual net turnover of 68 bn Euro in 2013. Separating this industry, 44.3 bn Euros of annual net turnover were due to full service restaurants and the catering industry, while lodging generated 23.7 bn Euro in 2013 (DEHOGA 2013). The annual percentage changes are shown in figure 1. System gastronomy including large restaurant chains like McDonalds, Burger King or Nordsee reached a net turnover of 11.5 bn Euros in 2012 which equals a growth rate of 3.3 compared to 2011 (Lebensmittelzeitung 2013). The area of communal catering generated an estimated turnover of 18 bn Euros in 2011, where the biggest share of 48.5 % is due to business canteens. Hospitals generated 21.4 % of this turnover, nursing homes 16.7 % and canteens of schools and universities 5.1 % (DEHOGA 2012).



**Figure 1.** Nominal changes in annual turnover (hospitality, lodging and catering industry)

Source. Own illustration according to DEHOGA 2013.

The FSI is supplied mainly by different types of distributors. In this case, wholesalers, including cash & carry markets and specialized delivery services, are more important than direct suppliers of food manufacturers (compare the supply chain for the US as depicted by Friddle et al. (2001, 21)). Nevertheless, Unilever, e.g., as one of the most important food manufacturers in the world, also has its own food service division (UFS 2013) which approaches food service businesses directly to establish customer loyalty to their products using specific offers to different types of consumers.

As in the US (ERS 2012), the food service industry in Germany has gained economic importance in recent years, with almost one third of all meals being consumed away from home among the 16-69 year olds. Splitting this percentage up into smaller intervals, it becomes clear that the percentage is even higher in younger generations. Nearly 40 % of the 20-24 year olds eat their meals away from home (GfK Panel Services 2009). Employed singles and unmated retirees also show higher percentages for out of home food consumption (DGE 2004a).

The increase in FSI companies' turnover is caused by an increase in consumer expenditures<sup>1</sup> and consumption per visit rather than by an increase in the number of visits (BVE 2013; npdgroup 2011). The demand for food consumed outside the home will rise even more, as more children are attending day care, schools increasingly offer catered lunches, the number of hospital stays increases, and more people live in nursing homes. Due to the German age distribution, the Federal Statistical Office (2010) predicts a duplication of the care-dependent elderly from 2.2 million people in 2011 to 4.5 million in 2050. Consequently, catering for elderly people will also play an important role in the German food service industry.

Given the strong sustainability trend among consumers (Leiserowitz et al. 2006) this raises questions about how businesses in the FSI can respond to this trend, and if they do so, in which way they are currently responding to it (Brindley and Oxborrow 2013; Rimmington et al. 2006; Walker and Brammer 2009). Sustainability issues which have been discussed with respect to the food service industry include food wastage (Parfitt et al. 2010), health issues (Young and Nestle 2002; Mentzer Morrison et al. 2011), as well as environmental issues related to transportation ("Food Miles", Davies and Konisky 2000; Mundler and Rumpus 2012). Several other developments, such as food scandals, ethical problems regarding animal welfare, external effects of food production and loss of trust in labeling, lead to novel requirements on the demand side. These, for instance, are transparency about product origin and production methods, product safety, and trust. On the other hand, consumers' information seeking behavior regarding food provenience and production methods seems to differ from their behavior when shopping for food at retailers. Rogge and Becker (2008) found that the majority of consumers were hardly interested in the origin of meat when eating out. In the same line, Mentzer Morrison et al. (2011) show that less attention is paid to the nutritional value of the food that is consumed away from home.

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<sup>1</sup> This includes consumer expenditures for full service restaurants, quick service restaurants, leisure gastronomy, business canteens and canteens of schools and universities (BVE 2013).

Against the background of these developments, this research focusses on the sustainability-orientation of procurement strategies in food service businesses. Additionally, drivers and barriers for the adoption of green strategies are identified.

## **Sustainable Supply Chain Management and Green Procurement Strategies**

Today it is commonly understood that sustainability management has to be extended beyond a single enterprise to the whole supply chain (Brindley and Oxborrow 2013; Crespín-Mazet and Döntenwill 2012; Seuring and Mueller 2008). Close cooperation between all companies along the supply chain (manufacturers, retailers and consumers) and involved organizations (NGO's, governmental and agricultural organizations) are necessary to attain the goals of sustainability. These include environmental quality, social justice, and economic prosperity (Elkington 1994). Walker and Jones define SSCM as "the pursuit of sustainability objectives through the purchasing and supply process, incorporating social, economic and environmental elements" (Walker and Jones 2011, 15).

### *Green Procurement Strategies: State of Knowledge*

As a key department of any company, procurement management is responsible for improving the companies' overall sustainability. Since the procurement management department selects the company's suppliers, it has relevant impact on external environmental and social effects as well as on economic sustainability (Schaltegger et al. 2007).

Additionally, globalization is a main driver for the increased relevance of social issues in procurement strategies (Herzig and Schaltegger 2009). Global purchasing strategies require companies to consider human rights and acceptability of working conditions in developing countries, too (Schaltegger et al. 2007). A number of studies have tackled the question how to integrate suppliers into corporate sustainability activities using "green procurement strategies" (Baden et al. 2011; Ciliberti et al. 2008; Wognum et al. 2011). These are often translated into additional requirements to suppliers, which go beyond classical evaluation criteria such as quality, price, or reliability and also beyond extant environmental laws and regulations. Seuring and Mueller (2008) found that in the literature, two different approaches towards Sustainable Supply Chain Management can mainly be identified. These are supplier evaluation for risk and performance and supply chain management for sustainable products. Lists of potential criteria for environmental aspects have been proposed, e.g., by Handfield et al. (2002).

Walker et al. (2008) conducted a literature review on drivers and barriers for environmental supply chain management. They broadly distinguish internal (organizational) and external (regulatory, customer, competition, society, and suppliers) drivers, as well as internal (cost, training, lack of legitimacy) and external (regulation, poor supplier commitment, industry specific) barriers. Their qualitative study among seven large private and public organizations revealed that the organizations face very diverse internal and external barriers. The drivers, on the contrary, seemed to be more homogeneous, with regulatory compliance being mentioned by all seven organizations. Such heterogeneity is also identified by Walker and Brammer's (2009) quantitative study on sustainable public procurement in the United Kingdom. Here, Likert scales were employed to measure the degree of implementation of different sustainable procurement

practices, and open questions were used to measure facilitators and barriers. Their conclusion is that financial barriers seem to be the most important inhibitor to sustainable procurement.

### *Green Procurement in the Food Service Industry*

Rimmington et al. (2006) developed procurement principles for British catering services “to green” the company in general and their procurement specifically. Based on a literature review and an expert panel, nine sustainable principles were determined. Only five of them were considered to be feasible for the participating experts of the companies. The five principles include (1) “selecting food products from the country in which they are to be offered”, (2) “providing appropriate menu information and food offerings”, (3) “controlling the production to respect human health and the environment”, (4) “working with other companies to support smaller local and regional suppliers” and (5) “ensuring resource efficient food productions” (Rimmington et al. 2006, 828f). Experts were not yet prepared to implement the remaining four principles to their companies. These were/are: (6) “fuel/energy efficient transport systems”, (7) “sourcing animal-based food products from livestock producers who comply with national and international standards and principles regarding animal welfare and health”, (8) “using the minimum amount of additives and improving information regarding additives” and (9) “working towards the adoption of a corporate code of practice” (Rimmington et al. 2006, 829). As the experts explained, principle 6 describes an issue which is not under their control, meaning that obviously, this criterion so far is not taken into account in supplier selection. Principles 7 and 9 should, according to respondents, be considered and developed in purchasing policies and regulations rather than in the procurement process. Finally, the experts considered principle 8 as a matter of health issues rather than an aspect in the field of sustainable food.

In the US, the Green Seal Standard for Restaurants and Food Services (Green Seal 2013) also provides recommendations for actions that procurement departments could take in order to increase the sustainability of FSI businesses. The requirements comprise defined shares of “organic or environmentally preferable” food purchases, “antibiotic-free” animal-based food purchases, and coffee from “organic, or environmentally, or socially preferable” sources, as well as avoidance of fish purchases from endangered stocks.

### *Drivers and Barriers of Sustainability Management and Green Procurement Strategies*

Drivers and barriers of sustainability management were discussed in several studies, which will be briefly summarized in the following. External drivers for sustainable activities within a company are political circumstances (Otsuki 2011), preservation and support of the local identity and cultural values (Morgan and Sonnino 2007), competitiveness, competitive or public pressure for sustainable activities (Marcus and Fremeth 2009), and, following Herzig and Schaltegger (2009) and Smith (2008), expectations of consumers. Increasing profit based on product differentiation, increasing productivity or filling a market gap (Marcus and Fremeth 2009), improvement of reputation or moral aspects (Herzig and Schaltegger 2009; Morgan and Sonnino 2007) could be identified as internal drivers. Further, Rankin et al. (2011) and Walker and Brammer (2009) pointed out that the attitude and support of companies’ top management plays an essential role for sustainable activities to be included in the businesses’ objectives.



Seuring and Mueller (2008) focused their literature review more specifically on SSCM. From a total of 191 scientific papers, they identified general pressures and incentives, supporting factors, and barriers. General pressures or incentives for SSCM comprise legal and customer demands, stakeholder claims, competitive advantage, and the prevention of reputation loss. Concrete supporting factors were found more specifically in the technical and human resources domain. In the literature reviewed by Seuring and Mueller (2008) the supporting factors mentioned the most were company-overlapping communication, management systems and monitoring schemes, but also training of procurement staff and the integration of sustainability into the corporate policy. Their list of barriers is shorter and refers to elevated costs, complexity of coordination and related efforts, and insufficient or missing communication in the supply chain. With respect to FSI, Conner et al. (2012) analyze the potential for increased sustainability of school foods in the USA from a transaction cost perspective based on a qualitative study among supply chain actors. They point at barriers such as cost and quality concerns.

### *Green Procurement as a Strategic Capability*

As shown above, sustainable procurement strategies are not (only) driven by moral aspects, but triggered by the expectation of direct financial benefits or competitive advantages. This is in line with Porter and Kramer (2006), who posit that companies should strive for environmentally or socially desirable activities if and only if there is a direct impact on the economic viability of the company. Here, the companies' ability to exploit new opportunities becomes crucial, as postulates the dynamic capability approach by Teece, et al. (1997), who "define dynamic capabilities as the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Dynamic capabilities thus reflect an organizations' ability to achieve new and innovative forms of competitive advantage [...]" (Teece et al. 1997, 516). Taking up this idea of strategic management, a potential explanation for increased sustainable sourcing activities at least among some of the FSI companies could be their attempt to achieve first mover competitive advantage. Dynamic environments increasingly put into question the validity of Barney's (1991) Resource Based View and the postulate of carefully sticking to core resources and competencies of the company for a long time. Rather, the ability to learn and change, become more important. In the case of sustainability management, companies may have expectations that the societal awareness for these issues may be a short-lived trend, which may be over before measures have been implemented. As has been shown above for procurement, a change towards more sustainable suppliers may be both costly both in terms of time and money. Boehlje et al. (2011) put forward the difficulty of deciding in how far a company can take into account challenges along its whole supply chain and share information about potential ways to mitigate them. Since food supply chains still tend to be long and broad, creating shorter supply chains with stable relationships might be one source of competitive advantage in the future, since it might enable companies to quickly inform the whole chain about changes and trigger respective adaptations.

Having outlined the potential avenues as well as the strategic relevance of sustainability management and sustainable procurement in the FSI, the following section will now introduce the empirical procedures.

## Methodology

### *Survey Design*

The empirical approach consists of both qualitative and quantitative research. In an initial step, eight expert interviews with head chefs or owners of different companies in the food service sector were conducted. Aim of the interviews was to get insights into their reasoning on sustainability in general and on sustainable sourcing more specifically. Based on these interviews, a questionnaire that was distributed among decision makers from the food service industry was established. Survey instruments of Rankin et al. (2011) and Rimmington et al. (2006) were used during the development of the survey. An overview of the sections and questions is added in table form in the appendix (Table A-I).

The questionnaire was divided into five sections. The first section dealt with the general understanding of sustainability and sustainability management. An open question asked for spontaneous associations of respondents with the word “sustainability”. A second question asked for the importance their company places on sustainability in general. To elicit the sustainability views, 16 items developed by Rankin et al. (2011), which could be rated on a five-point Likert-scale were employed. These were extended by five items based on the results of the qualitative interviews. The first section ended with a rating of different measures for internal sustainability management. The measures include water and energy saving, waste reduction, renouncing on offering packaged foods (e.g., for breakfast), renouncing on convenience products, and an increased offer of vegetarian meals. They were derived from the literature, as well as from the qualitative interviews and correspond with the Green Seal Standard for Restaurants (Baldwin et al. 2011). The rating was performed on a scale from 1 = not useful at all to 5 = very useful for improving sustainability.

The next section dealt with the company’s sustainability orientation in procurement. First, respondents should indicate the importance their company places on sustainability in food sourcing. To account for possible trade-offs in sourcing decisions, a ranking had to be performed among five sourcing criteria, namely quality, availability, price, sustainability, and reliability of suppliers. Then, the usefulness of different procurement-related measures to achieve sustainability had to be rated in the same way as the question on internal measures. Additionally, respondents should indicate the relevance of sustainable sourcing activities in seven product categories and whether their company already employed the specific measures in these product categories. The next set of questions in this section asked for the requirements the businesses demand of their suppliers, including use of water and energy saving technologies in production and transportation, information transparency with respect to production processes, ingredients and additives, origin of products, own sustainability activities, and the sustainability activities of the suppliers’ suppliers.

The third section of the survey gathers information on drivers and barriers of sustainable procurement actions. The items were again adopted from Rankin et al. (2011), Seuring and Mueller (2008), and from the qualitative interviews. Further, respondents were asked about their knowledge and the actual implementation of different sustainability programs and standards, ranging from Fair Trade, ISO 14000 and EMAS to the Roundtable on Sustainable Palm Oil and the MSC label. To check the relevance of such standards as compared to “traditional” quality standards, such as IFS, BRC, QS, Global Gap and Organic, the respondents had to indicate

whether they supposed these standards to be of “much greater”, “greater”, “neither greater nor smaller”, “smaller” or “much smaller” relevance. Additionally, they had to state whether the respective standard was currently applied (single checkbox).

To conclude the sustainability related questions, the fourth section asked respondents to rate the level of sustainability of their company on a five-point Likert scale ranging from 5 = “very much sustainability oriented” to 1 = “not sustainability oriented at all”. Additionally, they had to rate the performance of their company in comparison to other companies. Further, the future relevance of being a sustainable company had to be rated both for the overall FSI as well as for their own company on a Likert scale from 5 = very important” to 1 = “not important”. Also, respondents were asked to state whether they were ready to pay an extra surcharge for “sustainable products”, with answer categories 1 = no mark-up, 2 = less than 10%, 3 = 10-20%, 4 = 20-30% and 5 = more than 30%. A last section of the questionnaire asked for company characteristics including the company’s main activity (catering, hotel, restaurant, canteen, etc.), the turnover, the number of sites, as well as types of suppliers (farmers, manufacturer, distributors, or caterers). The current position of the respondent had to be filled out as well.

The interviews were conducted at two fairs in Northern and Eastern Germany which were held for customers of a large wholesaler specialized in supplying the FSI. The sample contains datasets of 122 companies of different sizes and types, from small restaurants to large canteens and caterers. Table 1 exhibits the characteristics of respondents and the companies they represent.

**Table 1.** Characteristics of participating companies and respondents

|  |   |
|--|---|
| <b>Company type<sup>2</sup></b>            | Public canteens (59.0 %),<br>Catering firms (24.6 %),<br>Quick service restaurants (4.9 %),<br>Full service restaurants (32.8 %),<br>Lodging (17.2 %) |
| <b>Number of sites<sup>3</sup></b>         | 1 site (51.6 %),<br>between 2 and 10 sites (13.9 %),<br>more than 10 sites (9.8 %)  |
| <b>Number of suppliers<sup>4</sup></b>     | Less than 5 suppliers (33.6 %),<br>between 5 and 10 suppliers (45.1 %),<br>more than 10 suppliers (14.8 %)  |
| <b>Position of respondents<sup>4</sup></b> | Owner/GM (14.0 %),<br>Purchasing manager (14.8 %),<br>Head chef (38.5 %),<br>Department manager (11.5 %),<br>Employee (10.7 %),<br>Other (4.9 %)      |

N = 122

Source. Own data

<sup>2</sup> Respondents were allowed to group themselves into several categories; the shares thus do not sum up to 100%.

<sup>3</sup> The difference between the sum of shares and 100 is the share of missing values per category.

Statistical analyses are carried out using SPSS. Principal component analysis (PCA) with Varimax rotation was employed to reduce the complexity in different parts of the survey (see below). From the answers concerning the use of different measures in procurement, company-specific adoption rates were calculated action-wise across all product categories and for each product category across all actions. Finally, a stepwise cluster analysis using the Single-Linkage method to eliminate outliers and the Ward method to define the number of clusters was performed based on the sustainability views of the firms, and the clusters are described using analysis of variance (ANOVA).

## Results and Discussion

This section is structured according to the above-mentioned research questions. Thus, first the results concerning sustainability views are presented, then we turn to the sustainability actions undertaken in internal processes and supply management as well as to the drivers and barriers. The results of the cluster analysis on the sustainability views are presented at the end of the section, comparing the clusters with respect to adoption of sustainability actions, drivers and barriers, as well as firm characteristics.

### *Companies' Sustainability Orientation and Sustainability Views*

Overall, respondents who took part in the survey are well aware of the issue of sustainability and indicate the issue to be important to their company. Furthermore, the future relevance of sustainability issues to the FSI as well as to the own company is estimated to be rather high, as can be seen in Table 2, which reports the means, standard deviations (SD), and factor loadings. A PCA was carried out to obtain a measure of the companies' "Level of sustainability". Five questions concerning the current and future importance of sustainability in the company and the perceived sustainability orientation of the own company as compared to competitors were included in the analysis, yielding a single factor which was sufficiently reliable with a Cronbach's Alpha (CA)<sup>4</sup> of .83. The Kaiser-Mayer-Olkin (KMO) criterion also shows a good value of .81 (Backhaus et al. 2011), indicating that the sample is adequate for PCA.

**Table 2.** Principal component analysis on degree of "sustainability orientation"

| Item   | Mean | Standard deviation | Factor loading |
|--|------|--------------------|----------------|
| Sustainability orientation                         | 3.53 | .952               | .838           |
| Sustainability orientation compared to competitors | 3.29 | .843               | .796           |
| Future relevance of sustainability in the company  | 4.19 | .787               | .776           |
| Relevance of sustainability in procurement         | 3.64 | .971               | .760           |
| Relevance of sustainability in the company         | 3.90 | .760               | .687           |

Scale from 1 = not important at all to 5 = very important

KMO = .807; Eigenvalue: 2.987; Variance explained: 59.7%

Source. Own data

<sup>4</sup> Cronbach's Alpha is a coefficient for internal consistency and contains the level of which several items are related to each other. CA-values above 0.6 show reliable factors (Nunnally 1978).

As can be seen from Table 2, respondents rated sustainability in procurement as slightly less important (mean=3.64) than overall sustainability management (3.90). The median value was 4 for both items in the total sample, which indicates a rather high relevance of sustainability for both the whole company as well as for procurement. However, a Wilcoxon signed-rank test shows that the median value of the differences between the answers of the two variables is not equal to 0 at a significance level of .01. This difference may be explained by the often-reported situation that companies mostly focus on their internal processes and then proceed to embrace their suppliers (Herzig and Schaltegger 2007).

For sustainability views, four factors were initially identified. Three of these showed sufficiently high CA values above .6. The factors were labeled as “Rational View”, “Value Related View”, and “Societal View”. A fourth, not sufficiently reliable factor included the views of sustainability as “A source of competitive advantage”, and “A way to strengthen image” and therefore could have been called a “Market Oriented View”. Given the too low CA, these items were deleted from the final analysis. The initial solution also contained two items which did not show factor loadings above .5 for any factor. These items, namely “A value integrated into the business” and “An integral part of the core business”, were also excluded from the final PCA. Table 3 reports the item means and standard deviations as well as factor loadings and respective CA values for the final solution.

**Table 3.** Results of the PCA on sustainability views

| Items:<br>“Sustainability is...”                                    | Mean | SD    | Factor 1<br>“Rational<br>View” | Factor 2<br>“Value<br>Related<br>View” | Factor 3<br>“Societal<br>View” |
|---|------|-------|--------------------------------|--|--------------------------------|
| A strategy for cost savings   | 3.23 | 1.061 | <b>.764</b>                    | -.143                                  | .099                           |
| An opportunity for new revenue                                      | 3.42 | 1.051 | <b>.758</b>                    | .090                                   | .093                           |
| A way to impact employee satisfaction                               | 3.16 | 1.074 | <b>.717</b>                    | .318                                   | -.083                          |
| Complying with laws and standards                                   | 3.47 | .936  | <b>.693</b>                    | .363                                   | .013                           |
| A function of aligning values                                       | 3.58 | .952  | .084                           | <b>.884</b>                            | .071                           |
| A function of management belief                                     | 3.89 | .948  | .034                           | <b>.721</b>                            | .182                           |
| Dedication to long-run development                                  | 4.00 | .856  | .139                           | <b>.572</b>                            | .420                           |
| A method of risk management   | 3.00 | .982  | .317                           | <b>.556</b>                            | .089                           |
| Addressing hunger and societal welfare                              | 3.51 | 1.211 | .021                           | .149                                   | <b>.869</b>                    |
| Reducing impact on the environment to<br>preserve it for the future | 4.09 | .978  | -.171                          | .238                                   | <b>.793</b>                    |
| Collaboration with other groups                                     | 3.56 | .886  | .276                           | -.096                                  | <b>.584</b>                    |
| Eigenvalue  |      |       | 3.563                          | 1.963                                  | 1.148                          |
| Alpha   |      |       | .75                            | .72                                    | .70                            |

Total N = 113 observations

Scale from 1 = Strongly disagree to 5 = Strongly agree

**Source.** Own data

The results of the PCA differ from those found by Rankin et al. (2011), who found a single item factor “regulatory compliance” and another factor including the “profit driven” and the “innovative sustainability” levels 2 and 3. Here, the first factor reflects compliance issues and cost and revenue, and therefore would be attributed to the levels 1 and 2 of sustainability (regulatory compliance and profit-driven sustainability). Our second factor contains three items which are included in Rankin et al.’s “Innovative” view, as well as an item reflecting an understanding of sustainability as a method for risk management. Given the items’ content we decided to label this factor as “Value-Related” sustainability view. Our third factor again deviates from the factor “organizational and societal sustainability” found by Rankin et al. (2011), since it only contains altruistic items. It is therefore called the “Societal view” Before turning to the results of the cluster analysis, the relevance of sustainability in sourcing decisions and sustainable actions which companies do already undertake are reported.

### *Relevance of Sustainability in Sourcing Decisions*

The results of the ranking of sourcing criteria support previous findings related to the role of sustainability in the sourcing process: Table 4 shows that sustainability as a sourcing criterion mainly ranks behind price, quality and delivery reliability of suppliers. This is in line with Seuring and Mueller (2008) and Brindley and Oxborrow (2009, 2011), who found that such criteria are often used as order qualifiers, while order winners are price, quality, and other, delivery-related criteria such as availability and reliability. Nevertheless, roughly 13 percent of the respondents ranked sustainability as the most or second-most important criterion.

**Table 4.** Rating of sourcing criteria in percentage per rank

|                         | Mean (SD)    | Rank 1       | Rank 2       | Rank 3       | Rank 4       | Rank 5       |
|-------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Quality                 | 1.66 (.880)  | <b>54.12</b> | 31.76        | 9.41         | 3.53         | 1.18         |
| Price                   | 2.29 (1.242) | 30.59        | <b>36.47</b> | 14.12        | 10.59        | 8.24         |
| Reliability of supplier | 3.41 (1.188) | 7.06         | 15.29        | <b>28.24</b> | 28.24        | 21.18        |
| Supply availability     | 3.79 (1.025) | 2.35         | 9.41         | 22.35        | <b>38.82</b> | 27.06        |
| Sustainability          | 3.86 (1.197) | 4.71         | 8.24         | 25.88        | 18.82        | <b>42.35</b> |

N=85 observations

Source. Own data

### *Sustainable Actions: Internal Measures and Sourcing Practices*

The ratings of internal and external sustainability measures in terms of usefulness were found to build four components. Two of these comprise internal measures, and two supplier related (external) measures. Three of the components were sufficiently reliable based on Cronbach’s Alpha values. Detailed results are reported in Table A-II in the appendix.

A first important finding is that all of the measures are rated as (rather) useful, with no mean lying below 3. Organic and Fair Trade purchases are rated with the lowest means of 3.3 and 3.9 among the purchasing principles. As internal measures, offering more vegetarian meals and not

using convenience products were rated “least useful”, with 3.5 and 3.6 respectively, and thus still with a positive tendency.

In the qualitative interviews indicated that there could be product specific differences in sustainability strategies. The respondents were therefore asked to rate the relevance of sustainable sourcing in different product categories, and to indicate which sustainable actions their company undertakes in food procurement in these categories (Table 5). The latter answers were transformed into adoption rates, representing the share of adopted measures over the total number of potential measures in the product category.

**Table 5.** Relevance of sustainability in different product categories

|                      | <b>Average Adoption of Sustainable Actions<sup>1</sup></b> | <b>Relevance of Sustainability<sup>2</sup></b> | <b>Correlation-coefficients<sup>3</sup></b> |
|----------------------|--|--|---|
| Meat                 | 47.8 % (27.333)  | 4.1 (.940)                                     | .4159***                                    |
| Fruit and Vegetables | 46.8 % (26.346)  | 4.2 (.870)                                     | .1554*                                      |
| Fish                 | 37.2 % (24.366)  | 4.3 (.895)                                     | .3898***                                    |
| Meat products        | 30.4 % (23.581)  | 3.6 (.921)                                     | .3106***                                    |
| Dairy Products       | 28.6 % (23.024)  | 4.0 (.887)                                     | .3064**                                     |
| Frozen Food          | 16.2 % (18.289)  | 3.5 (1.002)                                    | .2507**                                     |
| Coffee               | 14.2 % (16.805)  | 3.5 (1.076)                                    | .2455*                                      |

\*p<.10 \*\*p<.05 \*\*\*p<.01;

<sup>1</sup> Share of implemented sustainable actions in total number of potential sustainability actions: Mean (Standard deviation)

<sup>2</sup> “How important is sustainability in different product groups for your company?” Scale from 1 = not relevant at all to 5 = very relevant: Mean (Standard deviation)

<sup>3</sup> Pearson correlations between adoption rates and relevance of sustainability in the respective product category

**Source.** Own data

Correlation coefficients between the share of implemented actions and the general relevance of sustainability in the specific product categories support impressions from the descriptive results: The average adoption of green purchasing activities shows higher levels for product groups with higher relevance of sustainability, which are basically fresh, unprocessed products.

These results are in line with Smith (2008) who assumes that higher adoption rates could be caused by easier implementation of green strategies for unprocessed food products like meat, fish, fruit, and vegetables. Results from the expert interviews also show that fish, meat, fruit, and vegetables are more in the focus of sustainable strategies than other products. As one interviewee confirmed, “Sustainable strategies for fresh products (fish, meat, fruit and vegetables) are feasible in 90 % even for large companies of the food service industry”.

The analysis of relevance of specific sustainable procurement activities in the different product categories is documented in detail in Tables A-III and A-IV in the appendix. While animal welfare and local production seem to be important for meat, for buying fish, protection of species and sustainable-labeled fish products are relevant from participants’ perspective. Using local suppliers and buying seasonal products are, one the other hand, the main sustainability measures for fruit and vegetables (see Table A-IV).

Qualitative results support these impressions from the survey, as one interviewee stated: “Sourcing criteria are different regarding the product groups. When buying fish products, the freshness and especially the size are relevant for the protection of the species. Appropriate animal husbandry is an important criterion for meat procurement decisions, while domestic products are decisive for vegetables”. And another one stated: “While local and domestic meat, fish, fruit and vegetables are preferred in procurement decisions, prices are decisive for dairy products”.

Respondents were furthermore asked to indicate their additional willingness to pay (WTP) for sustainable products. Here, 23.3% of respondents answered that they are not willing to pay any mark-up for sustainable products. Another 47.4 % stated to be willing to pay up to 10 % more for sustainable products. 25.9 % indicated an additional WTP between 10 and 20 %, while 2.6 % would be ready to pay 20-30 % mark-ups, and one respondent indicated a willingness to pay more than 30 % for sustainable products. This rather strong reluctance to pay more leads us to investigate the drivers and especially the barriers which companies face.

#### *Drivers and Barriers of Sustainability Management and Sustainable Sourcing*

The results of the PCA on the eight potential drivers of sustainability revealed three components with Eigenvalues greater than one.<sup>5</sup> Only one component – the internal drivers - had a sufficiently large Cronbach’s Alpha value of .77.<sup>6</sup> Results of the PCA are reported in the appendix in Table A-V, including means and standard deviations for single items.

For participants of this study, the most important reasons to implement sustainability management in the companies were internal drivers, i.e., the engagement of the top-management (mean=3.80) and the staff (3.73), followed by consumer expectations (3.59) and moral considerations (3.56). The relevance of NGOs and other societal organizations on average is esteemed to play a less important role (2.96). A possible explanation is the smaller scale of the companies in this sample and in the sector in general, as compared, for example, to the manufacturing sector. This may reduce the public awareness of the potential impact of this sector on sustainable development (Revell and Blackburn 2007). The results, however, are not in line with Mikkola (2009), who investigated the relevance of sustainability among Finnish caterers. She found that as long as there were no regulations, this topic would not be taken into account.

Concerning the barriers to sustainable sourcing in the FSI, the PCA yielded three components with Eigenvalues greater than 1 and sufficiently large Cronbach’s Alpha values. Due to its high loadings above .5 on factors 1 and 2, the variable “Too little information of the producer” was excluded from the final analysis. Means and standard deviations as well as factor loadings are presented in Table A-VI in the Appendix.

The three factors were labelled as “availability and information problems”, “insufficient network” and “price barrier”. The items included in the latter were, on average, rated as the

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<sup>5</sup> The variable “Consumer expectations” had to be excluded from the factor analysis due to its low factor loading below .5.

<sup>6</sup> For cluster comparisons in the next sections, we therefore used the single items of the non-reliable factors.



strongest problems. The items included in “insufficient network” were rated as less severe, although the means are slightly above 3.

These results again are consistent with the descriptive analysis of measure implementation and relevance as reported in Table A-III: The three measures relating to local sourcing yield the highest ratings in terms of relevance, while they are less frequently implemented than other measures that are easier to implement. This also supports the findings from the qualitative interviews: The problem mentioned most often about sustainable procurement strategies by the eight experts of the FSI is the availability of local and domestic food products. Especially large-scale FSI companies, which demand high quantities of products, stated to encounter this problem. Associated with problems of availability, experts meet difficulties in local logistics and procurement strategies. This includes the integration of many small suppliers in existing procurement processes. Moreover, it is problematic that locally-produced products often have higher prices, due to a smaller and thus less efficient production structures.

Customers were perceived to show a low WTP for sustainable food products and not to be interested in products’ origin, which is in line with the literature. The interviewed experts are criticizing German consumers’ mentality and attitude towards sustainable behavior vis-à-vis food products. One possible cause for this attitude is the fact that the consumers are not directly affected by the potential consequences of not buying sustainable products. Experts propose that changes in individual buying behavior are necessary in order to increase the overall offer of more sustainable products in the FSI into more sustainable products and “living sustainability principles” in the company.

#### *Cluster Analysis on Sustainability Views*

The cluster analysis was based on the three components of “sustainability views”, and yielded four clusters, which make up 31% (Cluster 1), 22% (Clusters 2 and 3 each), and 25% of the sample, respectively. In the following, the four clusters will be described based on Oneway ANOVAs (Table 6). Using the Levene test, we found homogeneity of variance for most of the variables. In these cases the Scheffé procedure was applied to identify significant differences between the clusters. For the other cases, Tamhane-T2 was applied (Tamhane 1979).

As can be seen from Table 6, Clusters 1 and 4 reveal rather high mean values, around 4, for both the Value Related and the Societal View on sustainability. They differ significantly, however, with respect to the Rational View, which reflects the economic and compliance levels of sustainability (Rankin et al. 2011). Here, only Cluster 1 shows a high mean value, while members of Cluster 4 on average rejected the items included in this factor. This difference leads us to interpret Cluster 1 as “Sustainability Strategists” (in the following, simply called Strategists), while Cluster 4 is labelled as “Sustainability Idealists” (Idealists).

**Table 6.** Results of the Cluster Analysis

| Cluster<br>Factor/ Item (Mean/SD)  | A<br>Sustainability<br>Strategists                         | B<br>Sustainability<br>Rationalists            | C<br>Sustainability<br>Laggards                              | D<br>Sustainability<br>Idealists                            | F-Value              |
|--|--|--|--|---|----------------------|
| <b>Index</b> Rational Sustainability View  | <b>4.04</b><br>(.515) <sup>*(B)***</sup> (C,D)             | <b>3.71</b><br>(.388) <sup>*(A)***</sup> (C,D) | <b>2.61</b> (.494) <sup>**</sup> (A,B)                       | <b>2.81</b> (.474) <sup>**</sup> (A,B)                      | 59.34 <sup>***</sup> |
| <b>Index</b> Value-related Sustainability View <sup>T</sup>                                    | <b>3.96</b><br>(.519) <sup>**</sup> (B)*** <sup>*(C)</sup> | <b>3.44</b><br>(.660) <sup>**</sup> (A,C,D)    | <b>2.98</b><br>(.472) <sup>***</sup> (A,D) <sup>**</sup> (B) | <b>3.98</b><br>(.419) <sup>**</sup> (B)*** <sup>*(C)</sup>  | 22.46 <sup>***</sup> |
| <b>Index</b> Societal Sustainability View <sup>T</sup>   | <b>4.19</b><br>(.500) <sup>***</sup> (B,C)                 | <b>2.74</b><br>(.471) <sup>***</sup> (A,C,D)   | <b>3.57</b><br>(.476) <sup>***</sup> (A,B) <sup>**</sup> (D) | <b>4.12</b><br>(.771) <sup>***</sup> (B)*** <sup>*(C)</sup> | 36.34 <sup>***</sup> |
| <b>Cluster descriptive variables: Usefulness of sustainability measures and adoption rates</b> |  |  |  |   |                      |
| <b>Index</b> Sustainability orientation  | <b>3.86</b><br>(.642) <sup>**</sup> (C)                    | 3.56<br>(.656)                                 | <b>3.18</b><br>(.626) <sup>**</sup> (A)*** <sup>*(D)</sup>   | <b>3.95</b> (.560) <sup>***</sup> (C)                       | 7.16 <sup>***</sup>  |
| <b>Index</b> Usefulness of purchasing labelled products <sup>T</sup>                           | <b>4.27</b> (.586) <sup>*(B)***</sup> (C)                  | <b>3.59</b><br>(1.043) <sup>*(A)</sup>         | <b>3.46</b><br>(.770) <sup>***</sup> (A)*** <sup>*(D)</sup>  | <b>4.05</b><br>(.658) <sup>**</sup> (C)                     | 6.49 <sup>***</sup>  |
| <b>Index</b> Usefulness of internal measures: meal composition and packaging                   | <b>4.14</b><br>(.655) <sup>**</sup> (B)                    | <b>3.43</b><br>(.845) <sup>**</sup> (A)        | 3.74<br>(.729)   | 3.74<br>(.813)  | 3.8 <sup>**</sup>    |
| <b>Adoption rate</b> <sup>1</sup><br>Sustainability measures for <u>meat</u>                   | <b>50.2%</b><br>(20.9) <sup>*(C)</sup>                     | 49.0%<br>(28.4)                                | <b>31.9%</b> (27.3) <sup>*(A)</sup>                          | 59.7%<br>(28.8)   | 4.77 <sup>**</sup>   |
| <b>Adoption rate</b> <sup>1</sup><br>Sustainability measures for <u>fish</u> <sup>T</sup>      | 36.5%<br>(16.0)  | 40.5%<br>(27.7)                                | <b>25.2%</b> (25.6) <sup>*(D)</sup>                          | <b>46.3%</b><br>(26.3) <sup>*(C)</sup>                      | 3.40 <sup>**</sup>   |
| <b>Adoption rate</b> <sup>1</sup><br>Protection of species <sup>T</sup>                        | <b>43.9%</b><br>(32.0) <sup>**</sup> (C)                   | 34.5%<br>(30.4)                                | <b>16.5%</b><br>(22.3) <sup>**</sup> (A,D)                   | <b>41.5%</b> (29.8) <sup>**</sup> (C)                       | 4.48 <sup>**</sup>   |
| <b>Supplier requirements<sup>a</sup></b>   |  |  |  |   |                      |
| <b>Index</b> Sustainable process requirements  | <b>4.54</b> (.549) <sup>**</sup> (C) <sup>*(D)</sup>       | 4.15<br>(.726)                                 | <b>3.86</b><br>(.913) <sup>**</sup> (A)                      | <b>4.04</b><br>(.678) <sup>*(A)</sup>                       | 4.29 <sup>**</sup>   |
| <b>Index</b> Sustainable product requirements <sup>T</sup>                                     | <b>4.7</b><br>(.502) <sup>*(C)</sup>                       | 4.32<br>(.716)                                 | <b>4.28</b><br>(.671) <sup>*(A)</sup>                        | 4.52<br>(.560)  | 2.63 <sup>*</sup>    |
| <b>Drivers of sustainability management<sup>b</sup></b>  |  |  |  |   |                      |
| Public pressure (stakeholder, NGOs)  | <b>3.55</b><br>(.685) <sup>*(C)</sup>                      | 3.08<br>(.845)                                 | <b>2.83</b><br>(1.164) <sup>*(A)</sup>                       | 3.00<br>(.949)  | 3.00 <sup>**</sup>   |
| <b>Barriers to sustainable procurement</b>   |  |  |  |   |                      |
| <b>Index</b> Availability and information problems   | <b>3.50</b><br>(.923) <sup>*(C)</sup>                      | 2.89<br>(1.132)                                | <b>2.70</b><br>(1.259) <sup>*(A)</sup>                       | 2.81<br>(1.167)   | 2.75 <sup>**</sup>   |

Mean = arithmetic mean; SD = Standard deviation; \*\*\* = significance level  $p = .01$ ; \*\* =  $p < .05$ ; \* =  $p < .1$ ; Capital letters in brackets indicate significant differences between individual clusters.

Index: Unweighted average of the scores for the single items included in the factor.

<sup>1</sup> Adoption rates were calculated by dividing the number of adopted measures by the total number of available measures in the respective product category.

<sup>T</sup> The Levene-Statistic indicated variances to be not homogeneous variance at least at the 10%-level of significance. Therefore, the Posthoc-test is based on Tamhane-T2 (Tamhane 1979).

<sup>a</sup> Item: "Which requirements do your suppliers have to fulfill with respect to sustainability?" Scale from 1 = not necessary to 5 = absolutely necessary.

<sup>b</sup> Item: "How important are the following drivers for sustainability management in your company?" Scale from 1 = does not play a role at all to 5 = plays a very important role.

**Source.** Own data

Clusters 2 and 3 both represent 22% of the sample and are characterized by significant differences in all cluster building variables. While members of Cluster 2 rather agree to the Rational View and the Value-related View on sustainability, and rather reject the societal view, Cluster 3 rejects the Rational View, rather agrees to the Societal View, and takes a neutral position on the Value-related View. In combination with the findings about self-assessed sustainability orientation and adoption rates of sustainability measures in procurement, Cluster 3 is labeled Cluster 3 as “Sustainability Laggards”, and Cluster 2 as “Sustainability Rationalists”:

The Laggards assess their own sustainability orientation lowest among all clusters, significantly different from Strategists and Idealists, while the Rationalists do not differ significantly from any of the clusters. The same holds for the adoption rates of sustainability measures: the Laggards, having the lowest average adoption rates, differ significantly from Strategists with respect to meat, from Idealists with respect to fish, and from both with respect to protection of species, while the Rationalist do not differ from any of the clusters, taking again a middle-position.

There are also some significant differences between the Strategists and Laggards with respect to supplier requirements for sustainable actions, drivers and barriers. For detailed information with respect to the factor analysis of the supplier requirements see Table A-VII in the appendix. Although the Strategists seem to put stronger requirements upon their suppliers regarding a sustainable process and a sustainable product itself, all clusters rather strongly agreed to the respective items with mean values around 4. Concerning drivers and barriers, Strategists seem to be most affected by availability and information problems and most driven by public pressure as compared to the Laggards.

Furthermore, the four clusters differ significantly ( $\chi^2$ -test) with respect to the stated willingness to pay a mark-up for “sustainable products”. Since only four respondents indicated a WTP for more than 20% of mark-up, these were grouped together with the 27 respondents willing to pay a mark-up of 10-20%. As can be seen from Table 7, the company types do not show strong differences between the four clusters. The different companies are almost distributed equally between the clusters. There might be a slight tendency from catering companies to settle in the cluster of Rationalists and Idealists, while full service restaurants can be found more often within the Rationalists and Laggards. Purchasing managers tend to be a little more often in the group of Rationalists and Idealists, while employees are the Rationalists. Due to the unequal distribution of the company type and position of respondent within the sample, these results are slight tendencies which need to be proved statistically by a larger sample.

Because of fewer statements of company’s revenue, the number of sites is used as a proxy (Pearson Correlation with revenue =.426\*\*). Regional differences could not be identified.

**Table 7.** Comparison of clusters in terms of additional WTP for sustainable products and company characteristics

| <b>Cluster</b>                                | <b>Strategists<br/>(N=31)</b> | <b>Rationalists<br/>(N=23)</b> | <b>Laggards<br/>(N=24)</b> | <b>Idealists<br/>(N=26)</b> |
|---|-------------------------------|--------------------------------|----------------------------|-----------------------------|
| <b>Willingness-to-pay<sup>1</sup></b>         |                               |                                |                            |                             |
| No mark-up                                    | 16.1%                         | 34.8%                          | 29.2%                      | 19.2%                       |
| Up to 10% mark-up                             | 51.6%                         | 52.2%                          | 62.5%                      | 26.9%                       |
| More than 10% mark-up                         | 32.3%                         | 13.0%                          | 8.3%                       | 53.8%                       |
| <b>Company size<sup>2</sup></b>               | <b>(N=26)</b>                 | <b>(N=19)</b>                  | <b>(N=19)</b>              | <b>(N=20)</b>               |
| 1 site  | 53.8%                         | 84.2%                          | 68.4%                      | 75.0%                       |
| Up to 10 sites                                | 30.8%                         | 10.5%                          | 21.1%                      | 0.0%                        |
| More than 10 sites                            | 15.4%                         | 5.3%                           | 10.5%                      | 25.0%                       |
| <b>Company type<sup>3</sup></b>               | <b>(N=31)</b>                 | <b>(N=23)</b>                  | <b>(N=23)</b>              | <b>(N=27)</b>               |
| Communal catering                             | 71.0%                         | 47.8%                          | 60.9%                      | 59.3%                       |
| Event catering and other catering             | 12.9%                         | 39.1%                          | 17.4%                      | 37.0%                       |
| System gastronomy                             | 3.2%                          | 4.3%                           | 4.3%                       | 3.7%                        |
| Full service restaurants                      | 25.8%                         | 47.8%                          | 47.8%                      | 22.2%                       |
| Lodging                                       | 9.7%                          | 17.4%                          | 17.4%                      | 22.2%                       |
| <b>Position of the respondent<sup>3</sup></b> | <b>(N=33)</b>                 | <b>(N=22)</b>                  | <b>(N=22)</b>              | <b>(N=28)</b>               |
| Business manager                              | 3.0%                          | 4.5%                           | 9.1%                       | 10.7%                       |
| Purchasing manager                            | 12.1%                         | 31.8%                          | 18.2%                      | 28.6%                       |
| Head chef                                     | 57.6%                         | 45.5%                          | 63.6%                      | 50.0%                       |
| Department manager                            | 24.2%                         | 31.8%                          | 27.3%                      | 17.9%                       |
| Employee                                      | 15.2%                         | 36.4%                          | 13.6%                      | 10.7%                       |

Cluster size is slightly lower here, because not all respondents indicated an additional WTP and the number of sites.

<sup>1</sup>  $\chi^2$ -value: 17.647,  $p < .05^{**}$

<sup>2</sup>  $\chi^2$ -value: 11.591,  $p < .1^*$

<sup>3</sup> Multiple answers were possible regarding the company type and position in the company; row percentages can thus be > 100.

## Conclusion

This study provides insights into the sustainability views of decision makers in FSI companies and reveals how different views on sustainability correspond to actions taken in the area of procurement. Moreover, drivers and barriers faced by companies in the food service industry concerning vertical sustainability management are investigated.

The results show that companies in the FSI are well aware of the meaning of sustainability issues, as well as of its internal and societal relevance. Sustainable procurement practices are rated as slightly less important for the companies' overall strategies. In terms of actions, resources-saving activities are most positively rated for internal sustainability. Across all product categories, local sourcing is most-often implemented as a sustainable sourcing principle which corresponds to a high rating of this measure in terms of achieving sustainability goals. Interestingly, classical B2C sustainability-related labels such as organic or fair trade are rated as less useful for sustainable sourcing decisions than the aforementioned measures. This may

indicate an underlying distrust in such labels, which was mentioned by most of the interviewees in the qualitative study.

The strong focus of FSI actors on local sourcing is not strictly in line with the findings on environmental impact, since today there are still deficiencies in short logistics chains (Mundler and Rumpus 2012). It may be assumed, based on the high rating of the driver “customer expectations”, that this trend is rather driven by customers’ positive associations with regional foods than by the wish to increase sustainability. A further explanation may be the wish to support local communities, which was stated in some qualitative interviews and has been reported for certain consumer segments for example by Schuldt and Hannahan (2013).

There are, however, some problems of availability and, more importantly, of customer willingness-to-pay, which represent major obstacles to increasing sustainable sourcing. This contradiction of consumer expectations as drivers and consumer WTP as barrier has been often discussed for food retailing (Vermeir and Verbeke 2006; Zander et al. 2013).

This research could not replicate the results of Rankin et al. (2011), neither in terms of sustainability levels nor in terms of clusters. Reasons may lie in the specific sector, but also in the different positions of the respondents compared to those in Rankin et al.’s study.

Taken together, we find two clusters comprising companies which have developed a rather comprehensive view of sustainability and also have translated this partially into measures of sustainable procurement. On the other hand, there are two clusters which represent companies rather reluctant in embracing the concept of sustainability. Broadly, one could thus distinguish Sustainability Leaders and Followers. The detailed cluster analysis shows that within the two broad groups, the views and motives do differ slightly. E.g., among the Leaders, one cluster of companies stresses the possibility of saving costs and creating competitive advantage (Strategists), while the other cluster (Idealists) explicitly rejects this view, focusing more on values and societal inclusion.

As already reflected by the lower overall importance attached to sustainability criteria in sourcing, all groups are rather reluctant towards the actual implementation of sustainable procurement strategies. Only few differences could be revealed in adoption rates of sustainable procurement measures for meat (Strategists vs. Laggards) and fish (Idealists vs. Laggards), and the perception of barriers is the same in most groups.

## **Implications and Future Research**

The study provides implications both for FSI companies and their suppliers. There may be room for differentiation if distributors can offer specific ranges of sustainable products, potentially with price premiums up to 10 %. This applies even more strongly if they are able to establish efficient local supply chains which link producers achieving certain sustainability criteria in production to the nearest possible buyers. Only if the two conditions – sustainable production and environmentally-efficient transportation – are fulfilled, an improvement of the overall sustainability of food provision via the FSI can be achieved.

Besides the improvement of overall sustainability, suppliers may gain competitive advantages. Based on the resource dependency theory (RDT) by Pfeffer and Salancik (1978) the availability and dependency of external resources affect firms’ behavior. Consequently, suppliers are

assigned to a powerful market position and this becomes a highly relevant competitive factor. Suppliers who implement and meet the aforementioned recommendations may not only improve overall sustainability of the FSI, but may also benefit themselves by gaining competitive advantages compared to their competitors. Assuming to be the first supplier offering and supporting sustainable principles, Liebermann and Montgomery (1988) emphasized the advantage of increased performance (First-mover advantage). Further research should also address the reasons why regional or local sourcing are highly preferred by FSI decision makers, given the so-far unclear contribution to sustainability.

A theoretical approach to explain the adoption of regional and local sourcing (and sustainable procurement strategies in general) could be the theory of dynamic capabilities by Teece et al. (1997), demonstrating that the ability of companies to react to environmental change leads to competitive advantages. From a strategic point of view, regional or local sourcing may be more highly valued by consumers, meaning that these measures are expected to provide some competitive advantage. Since the clusters almost do not differ with respect to the perception of barriers, one could conclude that this hints at a potential market failure. This could indicate a need for more research into the functioning and impact of short, local or regional supply chains. In order to overcome the probably most challenging barriers regarding consumers (un)willingness to pay more for sustainable products, more research is needed to identify appropriate ways of communication and of measures to address people's awareness and effects on consumption behaviors, e.g. through nudging (Thaler and Sunstein 2008). Suppliers and companies of the FSI should work together in conducting market research for the promotion of their sustainable principles. Trying to improve supply chain transparency using communication strategies can both help to further collaborate certain sustainability measures and to reduce consumer's suspiciousness and skepticism towards the sustainability of food products.

This also means focusing on those issues which allow for win-win-situations (Porter and Kramer 2006). The low margins achieved in the FSI sector (Friddle et al. 2001), competitive pressures as well as the price orientation of a huge proportion of its customers do not allow any sacrifices by the companies and seem to leave little room for maneuver so far.

A final point and barrier may also be a lack of knowledge, rather negative attitudes or a problematic calculation of the benefit towards difficult-to-grasp trends such as "sustainability" among decision makers, which keeps them from considering more environmental issues in their sourcing choices.

Taking into account the relevance of professionalism as one reason for isomorph firm strategies (DiMaggio and Powell 1983), one could consider introducing sustainability issues more strongly in the curricula of professional education as a useful means for changing decision makers' minds and to at least overcome internal firm barriers.

Sustainability management, of course, is only one challenge that FSI companies are facing. To derive general success factors in the sector, a general approach could be to study the internal processes of learning and problem-solving which is the foundation of dynamic capabilities (Helfat et al. 2007).

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## Appendix

**Table A-I:** Overview of the sections and questions in the questionnaire

|   |   |  |
|---|---|--|
| <b>Section 1: Questions regarding the general understanding of sustainability</b>               |   |  |
| 1.  | Please mention at least three words/ideas which you are spontaneously connecting with sustainability.                       | Open question  |
| 2.  | How important is sustainability for your company?   | Scale from 1 = not important to 5 = very important                                       |
| 3.  | To what extent do the following statements apply to your understanding of sustainability?                                   | Scale from 1 = does not apply at all to 5 = totally apply                                |
| 4.  | How important are the following measures in order to improve sustainable strategies?"                                       | Scale from 1 = not useful at all to 5 = very useful                                      |
| <b>Section 2: Questions regarding sustainability issues in the procurement management</b>       |   |  |
| 1.  | How important is sustainability for your procurement management?  | Scale from 1 = not important to 5 = very important                                       |
| 2.  | Please rank the following sourcing criteria.  | Rank from 1 = most important to 5 = less important                                       |
| 3.  | How important are the following measures in order to improve sustainable procurement strategies?"                           | Scale from 1 = non-relevant to 5 = relevant  |
| 4.  | How important is sustainability in different product groups for your company?   | Scale from 1 = not important to 5 = very important                                       |
| 5.  | Which of the following green strategies are adopted and used in your procurement management (divided per product category)? | Binary outcome (yes/no)  |
| 6.  | Which requirements do your suppliers have to fulfill with respect to sustainability?  | Scale from 1 = not necessary to 5 = absolutely necessary                                 |
| <b>Section 3: Questions regarding the adoption of sustainable strategies within the company</b> |   |  |
| 1.  | How important are the following barriers for sustainability management in your company?"                                    | Scale from 1 = does not play a role at all to 5 = plays a very important role            |
| 2.  | How important are the following drivers for sustainability management in your company?"                                     | Scale from 1 = does not play a role at all to 5 = plays a very important role            |
| 3.  | Are you familiar with the following sustainable programs and standards?   | Binary outcome (yes/no)  |
| 4.  | How relevant are the following traditional quality management systems in comparison to sustainable standards?               | Scale from 1 = much smaller relevance to 5 = much greater relevance                      |
| <b>Section 4: Final questions</b>   |   |  |
| 1.  | Please evaluate the level of sustainability for your company.   | Scale from 1 = no sustainable orientation at all to 5 = strong sustainable orientation   |
| 2.  | In comparison to other companies: please evaluate the level of sustainability for your company.                             | Scale from 1 = less sustainable orientation to 5 = stronger sustainable orientation      |
| 3.  | How important will the sustainability topic be in the future for a) the food service industry and b) your company?          | Scale from 1 = not important to 5 = very important                                       |
| 4.  | Please indicate your willingness to pay an additional charge for sustainable products.                                      | 1 = no additional charge, 2 = less than 10 %, 3 = 10-20%, 4 = 20-30 %, 5 = more than 30% |
| <b>Section 5: General Information concerning the company</b>                                    |   |  |
| 5.  | Which position do you hold in your company?   | Different binary outcomes (yes/no)   |
| 6.  | Which type of company of the FSI do you own/work for?   | Different binary outcomes (yes/no)   |
| 7.  | How many sites does your company have?  | Open question  |
| 8.  | Please indicate the last annual turnover of your company in Mio €.  | Less than 2, less than 10, less than 50, more than 50,                                   |
| 9.  | Please indicate the number of food supplier (average per site)  | Less than 5, 5 to 10, 10 to 15, more than 15   |

**Table A-II.** Results of PCA on usefulness of actions for sustainability management

| Measures  | Mean | SD    | Factor 1<br>“SSCM:<br>regional,<br>seasonal and<br>animal-<br>friendly<br>purchasing” | Factor 2<br>“Internal<br>measure:<br>resource<br>saving and<br>waste<br>reduction” | Factor 3<br>“SSCM:<br>Purchasing<br>labelled<br>products” | Factor 4<br>“Internal<br>measure:<br>meal<br>composition<br>and<br>packaging” |
|---|------|-------|---|--|---|---|
| Purchasing regional products                                  | 4.57 | .618  | <b>.802</b>   | .184   | .199  | .161  |
| Purchasing from local and regional suppliers                  | 4.57 | .618  | <b>.751</b>   | .066   | .085  | .137  |
| Short transportation  | 4.54 | .650  | <b>.736</b>   | .058   | .004  | .171  |
| Purchasing seasonal products                                  | 4.60 | .596  | <b>.718</b>   | .217   | .224  | -.010   |
| Purchasing from animal-friendly husbandry                     | 4.41 | .753  | <b>.701</b>   | .198   | .262  | -.020   |
| Energy saving   | 4.68 | .655  | .113  | <b>.912</b>  | .043  | .115  |
| Water saving  | 4.64 | .758  | .127  | <b>.869</b>  | .164  | .032  |
| Waste reduction   | 4.73 | .489  | .390  | <b>.771</b>  | -.064   | .169  |
| Purchasing fish with sustainability standards (e.g. MSC/QSFP) | 4.37 | .832  | .153  | .248   | <b>.794</b>   | -.091   |
| Purchasing Fair Trade   | 3.93 | 1.044 | .204  | .057   | <b>.768</b>   | .375  |
| Purchasing organic  | 3.31 | 1.133 | .227  | -.195  | <b>.679</b>   | .334  |
| Caring for protection of species                              | 4.59 | .582  | .349  | .355   | .368  | -.334   |
| Increased offer of vegetarian meals                           | 3.53 | 1.097 | .087  | .028   | -.016   | <b>.716</b>   |
| Minimal use of convenience                                    | 3.64 | 1.123 | .125  | .136   | .089  | <b>.704</b>   |
| Renouncement on single packaged food items                    | 4.25 | 1.022 | .079  | .066   | .258  | <b>.602</b>   |
| Eigenvalue  |      |       | 4.967   | 1.978  | 1.498   | 1.274   |
| Cronbach's Alpha  |      |       | .857  | .897   | .737  | .567  |

Source. Own data

**Table A-III.** Adopted sustainable actions

|                                   | <b>Average Adoption of Sustainable Actions<sup>1</sup></b> | <b>Relevance for Sustainability<sup>2</sup></b> | <b>Correlation-coefficients<sup>3</sup></b> |
|-----------------------------------|--|---|---|
| Reduction of suppliers            | 43.0 % (35.484)  | 3.9 (1.046)                                     | .143  |
| Package waste avoidance           | 42.5 % (44.432)  | 4.3 (.999)                                      | .178*                                       |
| Sustainable fish products         | 38.1 % (32.919)  | 4.4 (.812)                                      | .246**                                      |
| Avoidance of convenience products | 37.5 % (33.595)  | 3.7 (1.106)                                     | .132*                                       |
| Protection of species             | 35.6 % (30.675)  | 4.6 (.636)                                      | .156  |
| Short transport distances         | 34.5 % (29.803)  | 4.5 (.689)                                      | .271***                                     |
| Local producer and suppliers      | 33.4 % (26.768)  | 4.5 (.687)                                      | .292***                                     |
| Animal welfare                    | 33.8 % (33.920)  | 4.4 (.789)                                      | .255***                                     |
| Local and regional products       | 31.6 % (28.791)  | 4.6 (.648)                                      | -.037                                       |
| Fair Trade products               | 27.4 % (35.350)  | 3.9 (1.056)                                     | .348***                                     |
| Seasonal products                 | 21.6 % (22.597)  | 4.6 (.585)                                      | .157*                                       |
| Organic products                  | 13.3 % (21.574)  | 3.3 (1.163)                                     | .344***                                     |

\*p&lt;.10 \*\*p&lt;.05 \*\*\*p&lt;.01;

<sup>1</sup> Share of implemented sustainable actions in total number of potential sustainability actions: Mean (Standard deviation)<sup>2</sup> “How important are the following measures in order to improve sustainable procurement strategies?” Scale from 1 = nonrelevant to 5 = relevant: Mean (Standard deviation)<sup>3</sup> Correlation between adoption rates and relevance of sustainability

Source. Own data

**Table A-IV.** Overview of the adoption of green strategies in different product categories

| <b>Sustainable Strategy</b>           | <b>Meat</b> | <b>Fish</b> | <b>Fruit and Vegetables</b> | <b>Dairy Products</b> | <b>Processed Meat</b> | <b>Coffee</b> | <b>Frozen Food</b> |
|---------------------------------------|-------------|-------------|-----------------------------|-----------------------|-----------------------|---------------|--------------------|
| Reduction of Suppliers                | 59.2%       | 37.2%       | 47.8%                       | 45.1%                 | 39.8%                 | 31.0%         | 38.9%              |
| Local Suppliers                       | 53.1%       | 28.3%       | 62.8%                       | 33.6%                 | 36.3%                 | 6.2%          | 13.3%              |
| Short Way of Transportation           | 54.0%       | 36.3%       | 47.8%                       | 38.9%                 | 34.5%                 | 10.6%         | 19.5%              |
| Organic Products                      | 23.0%       | 7.1%        | 26.5%                       | 9.7%                  | 10.6%                 | 8.8%          | 7.1%               |
| Local Products                        | 54.0%       | 29.2%       | 56.4%                       | 31.9%                 | 35.4%                 | 6.2%          | 8.0%               |
| Seasonal Products                     | 28.3%       | 26.5%       | 65.5%                       | 8.8%                  | 12.4%                 | 3.5%          | 6.2%               |
| Avoidance of convenience products     | 53.1%       | 42.5%       | 45.1%                       | 25.7%                 | 31.0%                 | -             | 27.4%              |
| Animal Welfare                        | 55.8%       | 38.1%       | -                           | 27.4%                 | 34.5%                 | -             | 13.3%              |
| Protection of Species                 | 49.6%       | 66.4%       | -                           | 24.8%                 | 24.8%                 | -             | 12.4%              |
| Package waste avoidance               | -           | -           | -                           | 42.5%                 | 45.1%                 | -             | -                  |
| Sustainable (certified) fish products | -           | 60.2%       | -                           | -                     | -                     | -             | 15.9%              |
| Fair Trade-products                   | -           | -           | 22.1%                       | -                     | -                     | 32.7%         | -                  |

Source. Own data

**Table A-V.** Results of PCA on drivers of sustainability management

| Measures                             | Mean | SD    | Factor 1<br>“Internal<br>drivers” | Factor 2<br>“Market<br>drivers” <sup>x</sup> | Factor 3<br>“Societal<br>drivers” <sup>x</sup> |
|--------------------------------------|------|-------|-----------------------------------|--|--|
| Efforts of employees                 | 3.73 | 1.151 | <b>.860</b>                       | -.010  | .009   |
| Exchange of ideas within the company | 3.50 | 1.079 | <b>.807</b>                       | .196   | .233   |
| Top Management support               | 3.80 | 1.101 | <b>.725</b>                       | .241   | .171   |
| Public pressure (stakeholder, NGOs)  | 2.96 | 1.174 | .029                              | <b>.863</b>                                  | .051   |
| Competitive pressure                 | 3.29 | 1.058 | .380                              | <b>.711</b>                                  | .114   |
| Moral considerations                 | 3.56 | 1.060 | .357                              | -.151  | <b>.805</b>                                    |
| Political regulations or initiatives | 3.21 | 1.058 | -.018                             | .400   | <b>.802</b>                                    |
| Consumer expectations*               | 3.59 | 1.094 | -                                 | -  | -  |
| Eigenvalue                           |      |       | 2.891                             | 1.218  | 1.001  |
| Cronbach's Alpha                     |      |       | 0.776                             | 0.577  | 0.561  |

Total N = 104 observations

Scale from 1 = Strongly disagree to 5 = Strongly agree

\*The item “consumer expectations” was excluded from the factor analysis due to its loading above .5 on both the first and the third factor.

<sup>x</sup> Factors 2 and 3 were not retained for further analyses due to the too low CA values.

**Source.** Own data

**Table A-VI.** Results of PCA on barriers of actions for sustainability management

| Measures  | Mean | SD    | Factor 1<br>“Availability/<br>information<br>problems” | Factor 2<br>“Insufficient<br>network” | Factor 3<br>“Price<br>barrier” |
|---|------|-------|--|---------------------------------------|--------------------------------|
| Complicated logistics/procurement of local products     | 3.58 | .945  | <b>.797</b>  | -.198                                 | .201                           |
| Unavailability of sustainable products                  | 3.45 | .987  | <b>.793</b>  | -.231                                 | .197                           |
| No guarantee of required products                       | 3.43 | 1.125 | <b>.733</b>  | .181                                  | .097                           |
| Too little product information                          | 3.65 | .967  | <b>.588</b>  | .417                                  | -.014                          |
| Little interest of other companies in the same industry | 3.34 | 1.034 | .033   | <b>.783</b>                           | -.176                          |
| Missing sustainability of producer                      | 3.33 | .984  | .260   | <b>.759</b>                           | -.026                          |
| Missing support of politics                             | 3.59 | 1.070 | .010   | <b>.674</b>                           | .228                           |
| Little support of wholesaler                            | 3.40 | 1.088 | .456   | <b>.568</b>                           | -.100                          |
| Higher prices for sustainable products                  | 4.24 | .785  | .037   | .015                                  | <b>.851</b>                    |
| Consumers low willingness-to-pay                        | 3.94 | .988  | .209   | .192                                  | <b>.744</b>                    |
| Financial or organizational barrier                     | 3.92 | .825  | .111   | -.241                                 | <b>.675</b>                    |
| Too little information of the producer*                 | 3.44 | 1.100 | -  | -                                     | -                              |
| Eigenvalue  |      |       | 3.438  | 2.109                                 | 1.212                          |
| Cronbach's Alpha  |      |       | .747   | .720                                  | .663                           |

Total N = 103 observations

Scale from 1 = Strongly disagree to 5 = Strongly agree

\*The item “Too little information of the producer” was excluded from the factor analysis due to its loading above .5 on both the first and the second factor.

**Source.** Own data



**Table A-VII.** Results of PCA on supplier requirements

| Measures   | Mean | SD    | Factor 1<br>“Sustainable<br>process<br>requirements” | Factor 2<br>“Sustainable<br>product<br>requirements” |
|--|------|-------|--|--|
| Use of resource saving technologies  | 4.16 | .992  | <b>.888</b>  | -.020  |
| Energy-efficient transport system  | 4.17 | 1.023 | <b>.880</b>  | .024   |
| Information on the sustainability of the products                                    | 4.24 | .922  | <b>.766</b>  | .311   |
| Information on the production process (environmental pollution and social standards) | 4.07 | .900  | <b>.677</b>  | .281   |
| Information on ingredients and additives   | 4.55 | .659  | .065   | <b>.893</b>  |
| Information on provenience of the products   | 4.44 | .713  | .184   | <b>.875</b>  |
| Information on sustainable measures*   | 4.15 | .873  | -  | -  |
| Information on sustainable measures of all suppliers along the chain*                | 4.09 | .923  | -  | -  |
| Eigenvalue   |      |       | 2.986  | 1.400  |
| Cronbach's Alpha   |      |       | .836   | .762   |

Total N = 109 observations

Scale from 1 = Strongly disagree to 5 = Strongly agree

\*The items “Information on sustainable measures” and “Information on sustainable measures of all suppliers along the chain” were excluded from the factor analysis due to its loading above .5 on both factors.

**Source.** Own data