Chapter 4

EFFECTS OF GOVERNANCE STRUCTURES ON SUSTAINABILITY-ORIENTED SUPPLIER BEHAVIOR: ANALYSIS OF NATIONAL ACTION PLANS AND THEIR EFFECTS IN PUBLIC PROCUREMENT

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I. INTRODUCTION

In times of environmental pollution and climate change, there is the need to improve the ability to do business in a more sustainable manner (Hahn, Pinske, Preuss & Figge, 2015; Metcalf & Benn, 2013; Borland, Ambrosini, Lindgreen & Vanhamme, 2014). Institutions' implementation of sustainability standards is flourishing and numerous companies have incorporated sustainability governance into their business models (Huber & Hirsch, 2017; Rotter, Airike & Merk-Herbert, 2014). However, most research efforts on sustainable supply chains focus on implementing sustainability within an individual company (Golicic & Smith, 2013). Only few studies specifically addressed sustainability governance across organizational borders in a supply chain context (Fiorini & Bhan, 2014; Brockhaus, Kersten & Knemeyer, 2013; Preuss & Walker, 2011). It is also noted that most of the papers with a focus on sustainable supply chain management (SSCM) (65%) do not explicitly use a theoretical perspective (Touboulic & Walker, 2015). This article addresses that gap and examines the implementation of SSCM by means of an overarching, supra-organizational structure.

Governance, as the central construct, is close to regulation, which usually means the imposition of rules on individuals and organizations by the government (Khemani & Shapiro, 1993; Rotter, Airike & Merk-Herbert, 2014). But governance focuses more on the

adoption of informal authority on a voluntary basis (Brandsen, Boogers, & Tops, 2006). “Governance comprises structures and processes guiding administrative activity that create constraints and controls (both ex-ante and ex-post) and that confer or allow autonomy and discretion on the part of administrative actors, all toward fulfilling the purposes of the enacting coalition” (Lynn, Heinrich & Hill, 2000, p. 239). According to Williamson (2002) governance explains how independent institutions cooperatively adapt and that a specific mode of governance structure has distinctive strengths and weaknesses. The adoption of actors in a supply chain to governance structures is of particular interest in this paper, as governance structures are increasingly used instead of legally binding regulation. This calls for further research on governance in the supply chain context (Fiorini & Bhan, 2014).

However, practice in sustainability governance seems far ahead of theory in SSCM (Wahl & Bull, 2014). This is astonishing given that while sustainable development has been extensively discussed on the political level (e.g., at the United Nations Framework Convention on Climate Change, 2013) only limited success has been registered in implementing governance structures (Schnittfeld & Busch, 2016). That is why there is critique of current public-political initiatives (“promise-performance-gap”) (Sethi & Schepers, 2013; Rasche & Waddock, 2014). The question of how authorities implement sustainability in governance and how they involve other organizations in their sustainability efforts is still not sufficiently answered. This contribution analyses this aspect. The guiding research question is; how sustainable governance influences the supply market?

For this purpose, the chapter assesses the example of European national action plans considering sustainability requirements in public tenders in order to investigate how institutions implement sustainability practices. This follows the proposition of Touboulic and Walker (2015) who recommend leaving the beaten tracks of approaches applied on the SSCM topic, which is in line with previous calls for application of a wider range of theories (Carter & Easton, 2011; Sarkis, Zhu & Lai, 2011).The remainder of this chapter is structured as follows. In the next section the theoretical underpinnings from public governance are presented. Next, testing of hypotheses through regression and discriminant analyses is done. This is followed by a discussion of the results. Finally, the paper concludes with limitations and an outlook for future research.

III. THEORETICAL UNDERPINNINGS

This investigation involves two distinct themes. The first is SSCM and the attempt to get supply chains to be more sustainable (Pagell & Shevchenko, 2014). The second theme is Governance, which serves as a concept for understanding the instruments public authorities can use to achieve policy goals (Matai & Drumasu, 2015).

Sustainability integrates economic, social, and ecological perspectives (Elkington, 1998, Brockhaus, Kersten & Knemeyer, 2013; Carter & Rogers, 2008) and means for supply chains, the ability of one or more entities, either individually or collectively, to exist and flourish for lengthy timeframes, in such a manner that the existence and flourishing of other collectivities of entities is permitted at related levels and in related systems" (Starik & Rands, 1995, p. 909). Sustainability received increased awareness during the last decades (Vermeulen, 2015; Foerstl, Azadegan, Leppelt & Hartmann, 2015; Ashby, Leat & Hudson-Smith, 2012). Companies are encouraged to make their production more sustainable (Zhu, Qu, Geng & Fujita, 2017; Brockhaus, Kersten & Knemeyer, 2013; Ortas, Moneva & Alvarez, 2014; Rotter, Airike & Merk-Herbert, 2014). But the implementation of the sustainability approach is not limited to single institutions (Winter & Knemeyer, 2013); rather, it has a strong influence on whole supply chains with all involved institutions (Brandenburg, Govindan, Sarkis & Seuring, 2013). In particular, public institutions should be considered, as they act in several important roles. Bell (2002) mentioned the "vision/goal setter", "leader by example", "facilitator", or "green fiscal authority". The World Bank uses four roles of the public sector to implement corporate social responsibility, i.e., "mandating", "facilitating", "partnering", and "endorsing" (Fox, Ward & Howard, 2002; Ward, 2002). In this study, the following aspects and roles are highlighted: (1) sustainability policy maker and legislator; (2) sustainability leader and pioneer; (3) sustainability sensitive consumer.

First, governments set the policy framework for their nations and for the sustainability topic as well (Sajjad, Eweje & Tappin, 2015). The legal framework is the tangible governance while policy goals or guidelines are intangible governance structures. Overall, public governance promotes sustainability implementation in public and private supply chains (Preuss & Walker, 2011; Sajjad, Eweje & Tappin, 2015).

Second, public administration itself should behave according to sustainability governance, but it also should act as a pioneer in implementing sustainable strategies (Palmujoki, Parikka-Alhola & Ekroos, 2010). By doing so, public administration gives itself tighter sustainability governance as demanded, and is therefore in a leader function for other institutions (UNEP, 2012).

Third, the public sector is an important consumer of services and goods. In the European Union, the public purchase of goods and services has been estimated to account for 16% (€2,230 billion) of the Gross Domestic Product (EC, 2015). Public procurement thus has a major influence in supporting a sustainable supply strategy. For example, companies are incentivized to behave more sustainably because peculiar sustainability criteria are included in public tender award schemes (Amann, Roehrich, Eßig & Harland, 2014).

Overall, public institutions are able to support good sustainability practices on different levels. However, it is not only a debate over how sustainability should be implemented but also about controversies on what to implement. Vermeulen and Seuring (2009) discuss the development of SSCM in three stages. The first stage whereby individual firms implement sustainability practices on their own. The results have been different individual governance patterns in terms of sustainability policies for the company (Blome, Paulraj & Schuetz, 2014; Vermeulen & Seuring, 2009). The second stage considers implementation across company boundaries (Vermeulen, 2015; Seuring & Müller, 2008). Main governance structures of that phase are eco-labelling, as well as all forms of environmental standards. The main triggers for governance implementation have been the state, environmental organizations or the market (Foerstl et al., 2015; Christmann & Taylor, 2002). It has to be mentioned that those rules have been limited to specific aspects like pollution. (Sarkis, Zhu & Lai, 2011). This changed in subsequent years; during which a comprehensive understanding of sustainability was developed and the necessity to distribute responsibilities for sustainable action along the supply chain has become widely accepted (Vermeulen & Seuring, 2009). Finally, the third phase concentrates on supply chain initiatives with the aim of harmonizing governance standards. The cooperation of several players in a supply chain is generally established in the form of voluntary sustainability initiatives (Peters, 2010). The aim is to create a comprehensive approach of

sustainability along the supply chain (Stuart, Parker & Henry, 2012; Seuring, Sarkis, Müller & Rao, 2008).

In sum, all three stages of SSCM implement sustainability governance structures (Seuring & Müller, 2008; Wu, Ellram & Schuchard, 2014). As sustainability scandals lead to substantial loss of image and subsequently for the performance of entire supply chains (Schaltegger & Burritt, 2014; Ehrgott, Reiman, Kaufmann & Carter, 2013; Nyilasy, Gangadharbatla & Paladino, 2014; Peters, Hofstetter & Hoffmann, 2011), it is necessary to implement effective SSCM governance structures across institutional boundaries (Winter & Knemeyer, 2013; Wong, 2013).

In summary, therefore, the necessity of implementing the sustainability concept on the supply chain level is accepted. The importance of governance structures is discussed (e.g. Christmann & Taylor, 2002; Escrig-Olmedo, Muñoz-Torres & Fernández-Izquierdo, 2017), but is often perceived as a contingent factor rather than the driver of sustainability implementation. However, the question whether the coordination mechanism is to develop sustainability within a supply chain has still not been adequately addressed.

III. HYPOTHESIS DEVELOPMENT

The public sector has gained considerable attention in recent years in terms of the sustainability of its procurement operations. For example, the Green Paper on Integrated Product Policy (IPP) aimed at reducing the environmental impact of products throughout their life-cycle. According to IPP, public authorities must act as 'leaders' in the process of changing patterns toward greener products (Palmujoki, Parikka-Alhola & Ekroos, 2010). Besides, the public sector is characterized by its numerous administrative and legal regulations, which sets a strict supra-supply chain regulation framework for all companies that apply for public tenders.

The setting is as follows. The European Union includes sustainable public procurement objectives in a number of significant strategy documents, and has also introduced specific regulations for certain sectors likeinformation technology and transport. In 2003, the European Commission (EC) encouraged member states to draw up publicly available National Action Plans (NAPs). NAP can be characterized as a strategic approach to make public supply chains

green (Steurer & Martinuzzi, 2005; Meadowcroft, 2007). In the context of this work, NAPs are understood as governance instruments.

Assuming that institutions implement sustainability practices if they can adopt to externally given governance, their efforts to implement sustainability practices are limited if the relation to sustainability governance is loose. In the EU context, the supra-national sustainability strategies can be perceived as the overarching polity, while nations that implement NAPs are linked more closely to this polity than nations without NAPs. Therefore, suppliers are expected to behave more sustainable for a public supply chain with NAP than without it. This implies that suppliers are better prepared for the delivery of more sustainable goods and services when sustainability governance structures are in place.

Drawing from the above background, the following, six specific hypotheses on the effects of the procurement of products and services by public institutions using sustainable requirements within or without national action plans are operationalized. If national action plans are in place, then:

Hypothesis 1: the number of incoming offers increases.
Hypothesis 2: the procurement costs decrease.
Hypothesis 3: the procurement time consumption decreases.
Hypothesis 4: the procurement risk decreases.
Hypothesis 5: the complexity decreases.
Hypothesis 6: the overall goal achievement increases.

In other words, if suppliers are able to hand in more offers, at lower costs, in more rapid time, at lower risks, with lower complexity and higher overall goal achievement, then it indicates that suppliers can more easily respond to the tender and thus are better prepared for the delivery of more sustainable goods and services.

IV. METHODOLOGY

This study tested six hypotheses relating to the effects of NAPs and sustainable governance. Data were collected on behalf of the European Commission (EC) and descriptive results were published in the commission report (EC, 2011). The public entities examined in this study were institutions at each level of government in the European Union (EU). Size of population of public purchasing

institutions in the European Union or within the individual European member states was unknown and consequently representative sampling procedures were hardly possible. The only reliable source which provides data from European public contracting institutions was the tender electronic daily (TED) database. Publishing a tender in TED was mandatory above specific threshold values according to European procurement law. TED only included data of public procurement institutions that place tenders above the value threshold. Focusing on this data, TED provided contact data for representative samples of public procurement institutions, of course, under an assumption that many of the EU contracting institutions published a tender in TED at least once a year.

In TED, the tenders were uniquely identified by a contract notice. This notice contained the basic contact data needed for the survey including name of contracting institution, tender identification number and email address. The contract notices for a period from October 2009 to October 2010 containing 166,245 entries were analyzed. The survey was intended to obtain information about the way a contracting authority operated in general and no questions would be asked about specific tenders. It was decided that each contracting authority would be invited to respond only once. All duplicate contracting authorities were removed from the dataset. As a result, the contact dataset contained information about 36,578 European contracting authorities that were invited through an individual e-mail to participate in the online survey. In total, 4,008 purchasing authorities responded, which represents a total response rate of almost 11%. The specific units of analysis were public contracting authorities using sustainable requirements in tender documents, which corresponded to 923 of the 4,008 responding entities. The sample represented authorities from the central government (12.1%), regional government (region) (9.7%), local government (municipalities) (35.8%) and other (semi-) public entities (42.4%).

Lastly, measures to assess the hypotheses were adapted from the literature and refined to fit to the present study. One question was set to allow the researchers to divide the sample into two groups according to whether a NAP on sustainability aspects existed or not.

V. RESULTS

The descriptive statistics are presented in Table 1. The additional one-way analysis of variance (ANOVA) for all variables identified that the two examined groups differ significantly from each other regarding the items (1) number of incoming offers, (2) costs, (3) time consumption and (6) goal achievement.

TABLE 1
ANOVA and Descriptive Results

Item	Mean	Standard deviation	F	Significance
(1) Number of incoming offers	1.91	0.881	20.859	0.000
(2) Costs	2.30	1.167	11.059	0.001
(3) Time consumption	1.99	1.001	4.539	0.033
(4) Risk	2.29	0.958	0.921	0.337
(5) Complexity	1.79	0.977	0.051	0.822
(6) Goal achievement	2.08	0.643	27.009	0.000

Discriminant analysis was conducted to clarify the identified variations. The Wilks' lambda criterion was accordingly used within the analysis (Klecka, 1980). The analysis is based on one discriminant function. The discriminant function is statistically highly significant (Table 2).

TABLE 2
Significance of Discriminant Function

Wilks' lambda	Chi-square	Df	Significance
0.940	56.548	6	0.000

Due to the limitation regarding reliance on standardized discriminant coefficients for the investigation of discriminating variables (Klecka, 1980) the total structure coefficients for the discriminating function were analyzed. This helps to understand the amplitudes of the standardized discriminant coefficients. Total structure coefficients are able to identify the relationship between a single variable and the discriminating function because a bivariate correlation cannot be affected by interactions with other variables. Again, (6) goal achievement and (1) the number of incoming offers

are the most important items of the discriminant function, which classifies these variables as major structure coefficients. Interestingly, for both items Table 3 reports stronger total structure coefficients related to the discriminant coefficients. Consequently, H1 and H6 are supported through the analysis.

The standardized discriminant coefficients and their corresponding total structure coefficients for (2) costs and (3) time consumption range from moderate to moderately high. The combination of standardized discriminant coefficients with the results of the total structure matrix suggests that these variables are less influential than H1 and H6, but both significance levels indicate support for H2 and H3. A different picture arises for the items (4) risk and (5) complexity. Neither the standardized discriminant coefficients nor the total structure coefficients attest to the importance of these variables. This leads to the assumption that H4 and H5 are not supported.

TABLE 3
Standardized Discriminant Coefficients and Total Structure Coefficients

Item	Standardized Canonical Discriminant Function Coefficients	Total Structure Coefficients
(1) Number Of Incoming Offers	0.498	0.579
(2) Costs	0.444	0.435
(3) Time Consumption	-0.369	-0.279
(4) Risk	-0.059	-0.125
(5) Complexity	0.147	-0.029
(6) Goal Achievement	0.594	0.679

VI. DISCUSSION AND IMPLICATIONS

According to the results, the supply market is better prepared to sustainability requirements (more offers), when NAPs are in place (support for H1). This may be caused by the fact that companies are threatened by lost competitiveness when they do not adapt the governance structures. Furthermore, the effect of sustainability efforts in the offers and, consequently, in purchased products and services contributes highly to the achievement of overall policy goals (support for H6). It is implied that public institutions better meet

sustainability targets in prepared supply markets resulting from public governance. Additionally, costs and the required time consumption improve when NAPs are in place (support for H2 and H3). Companies adapt their production processes according to governance sustainability initiatives that directly influence the procurement procedure of public institutions. Overall, it can be stated that public governance structures support the implementation of sustainability practices.

Golicic and Smith (2013) explain that a significant positive connection is provable between sustainability, in particular ecological sustainability, and company performance. This connection can also be derived by public governance, as public governance positively influences the sustainability efforts of suppliers. Foerstl et al. (2015) and Wu, Ellram and Schuchard (2014) support this notion with their findings about stakeholder pressure on sustainability efforts.

The results support the proposition that NAP stimulate suppliers to implement sustainability practices if they can adopt to supra-institutional governance (NAPs). This seems plausible when considering the very content of the sustainability concept. Sustainability tries to simultaneously achieve economic, social, and ecological objectives (Elkington, 1998), while balancing needs of the present with the ability of future generations and their needs (WCED, 1987). Sustainability is at least an ambiguous concept and it is challenging to translate the concept into tangible actions (van der Heijden, Cramer & Driessen, 2012; Touboulic & Walker, 2015). The need to solve goal conflicts and to balance future risks with current needs is likely to overstrain companies' management abilities, in particular considering small and medium sized organizations. Additionally, risk-averse managers might overestimate current economic needs to the disadvantage of future sustainability requirements (Carballo-Penela & Castromán-Diz, 2015). The often claimed lip service toward sustainability is an indicator that at least some companies do not work hard enough on SSCM practices (Preuss & Walker, 2011; Walker & Brammer, 2009). This supports the notion that governance-based sustainability implementation seems to be a prospective way of reducing complexity and maximizing institutions' SSCM efforts.

Furthermore, most suppliers operate in complex business networks and have relations to several supply chains (Gold et al.,

2009). If each supply chain enforces SSCM with individual initiatives, suppliers would face different expectations. The findings presented in this chapter showed that a supra-supply chain and governance-based implementation of SSCM might reduce coordination costs between institutions.

VI. CONCLUSION

This chapter discussed the idea that institutions behave according to external sustainability governance and presented new insights to the research area of sustainable practices in public sector procurement. First, the statistical analysis supports that institutions develop according to external supra-supply chain rules rather than to enhance sustainability primarily from within. Thus, the effect of public governance to motivate isomorphic behavior of suppliers provides the theoretical implication to re-focus on governance-based ways of implementing SSCM practices. Second, the submission supports the assumption that public procurers will receive more sustainable offers when NAPs are in place. Potential bidders seem to be guided by the existing governance structures. Finally the chapter shows, that governance structures support sustainable public procurement on different levels in the public sector.

VII. AREAS FOR FURTHER RESEARCH

This study has some limitations, which could motivate additional research in the future. First, it has a limited focus on governance structures. The connection between governance structure and more sustainable activities are discussed, but it is not sufficiently answered how (good) governance emerges in that context. Further research should address this question. Furthermore, this study only considered the buying perspective of public procurement authorities and does not consider the bidder's perspective. In order to be able to take a holistic view of the implementation of sustainability practice in public sector procurement, the questioning of affected bidders should be accelerated in the future. Further, our work presented just a snapshot of NAP and sustainable tender behavior. A longitudinal study of the sustainable tender behavior in the examined countries should shed more light into connection between governance structures and more sustainable results in public sector procurement.

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