

## 2. Theoretical relevance

Having identified the research objectives, required to meet the challenges of the design and use of formal MCS in BSRs in practice, relevance of the research project must now be assessed from a theoretical point of view. This can be done in four steps. First, the theoretical starting position needs to be clarified by identifying relevant research streams (chapter 2.1) and research gaps within these areas (chapter 2.2). Then, research questions can be developed and implications for the theoretical relevance can be derived (chapter 2.3).

### 2.1. Relevant research fields

To get a holistic overview of relevant literature streams contributing to the topic, research fields need to be considered simultaneously addressing performance control-related issues and inter-firm relationships. This includes various scientific disciplines, such as *marketing* (e.g. Day, 2000; Hunt, 1983), *management accounting* (e.g. Dekker, 2004; Free, 2008) and *SCM*<sup>12</sup> (e.g. Humphreys et al., 2003; Klein et al., 2007). As the theoretical considerations in the previous chapters revealed, especially the latter two are of importance and will be central to the following discussion

#### *Relevant research fields within the discipline of supply chain management*

SCM consists of various sub-disciplines and can be classified in almost unlimited ways. Several recent, very thorough reviews on SCM literature give an impression of various possible subject categories (e.g. Burgess et al., 2006; Giunipero et al., 2008; Kouvelis et al., 2006; Sachan and Datta, 2005). Burgess et al. (2006: 710), for instance, define SCM disciplines as territories of activity and identify eight relevant areas, including logistics, purchasing, strategy, information and operations management. When it comes to assessing the relevance of SCM research for this thesis, two aspects are of particular importance: a direct connection to performance control (1<sup>st</sup> research criterion) must be given and the contribution must either directly

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<sup>12</sup> For a differentiated discussion on BSRs in the context of SCM see 3.2.

be related or adaptable to BSRs (2<sup>nd</sup> research criterion). Thus, simultaneously addressing these two aspects can be considered the decisive search criteria.

There are only a few research fields directly addressing the issue of performance control (1<sup>st</sup> research criterion). Basically aiming to support the strategic configuration of corporate networks and the governance of inter-organizational processes (Westhaus, 2007: 46), supply chain control can be considered as one of them. Covering a very broad field of activities, related articles are only suitable to this research project to a limited extent as more control-specific input is required. Another discipline of interest can be found in the field of supply chain performance management. Focusing on the improvement of efficiency and effectiveness of inter-organizational processes, control-related activities such as design and maintenance of integrated measurement systems are discussed in an inter-organizational context (e.g. Karrer, 2006: 211; Stölzle, 2002: 15). However, supply chain performance management also encompasses aspects such as strategy implementation and alignment which are out of scope in this doctoral thesis. In consequence, only contributions directly addressing performance control-related issues in BSRs will be taken into account, independently from the specific sub-discipline of SCM (i.e. supply chain control or supply chain performance management) they refer to.

The need for taking a cross-sectional perspective also applies when assessing SCM research from a BSR perspective (2<sup>nd</sup> research criterion). Reviews (e.g. Giunipero et al., 2008; Sachan and Datta, 2005) show that BSRs cannot be clearly assigned to specific SCM sub-disciplines as well, as they play an essential role in almost all of them. All classification schemes and conceptual frameworks consist primarily of categories addressing relational issues at the interface between affiliated companies. These issues are either discussed in a direct way (e.g. supplier development and relationship management), or indirectly through categories, influenced by both parties involved and based on contractual cooperation (e.g. strategy and information sharing). In consequence, the same simplifications that apply to the 1<sup>st</sup> criterion, also apply to the 2<sup>nd</sup> one, as BSRs can be 'cut free' from the SCM-specific context for this research project.

However, in order to also cover relevant contributions to the field from other literature streams which are, strictly spoken, not part of SCM as they are addressing BSRs only from one side of the dyad, the focus will be extended as follows: on the supply side, in particular the domains of demand planning and customer relationship management are expected to contribute to the discussion. On the buy side, areas that focus on supply planning-related topics such as supply management and purchasing will be included as they meet the scope of this thesis. As such, they will be subsumed under the term 'SCM' and performance-related studies encompassing BSR-related topics from these areas will also be considered in the discussion on SCM in chapter 2.2.

#### *Relevant research fields within the discipline of management accounting*

In terms of relevant management accounting, the research stream of management control can be considered as crucial to the topic of performance control in BSRs. However, basic limitations can be made here as well by narrowing down the scope to the sub-discipline of management control in inter-firm settings. Besides supply chain relationships, these kind of inter-organizational relationships also cover outsourcing activities and horizontal integration (Caglio and Ditillo, 2008: 866), which do not need to be considered. Moreover, restrictions have to be made regarding the nature of the control mechanisms under investigation as only formal MCSs are of relevance.

#### *Summary*

It can be concluded that there is not a single literature stream, which covers performance control in BSRs in a comprehensive manner, as relevant contributions to the field are embedded in various *SCM* disciplines. As a result, a cross-sectional viewpoint must be taken and both disciplines have to be searched with a narrow focus on the relevance for the underlying research scope. In terms of management accounting literature, the focus can be clearly narrowed down to the stream of *management control in inter-firm-relationships*. Findings of both areas then need to be combined and research gaps have to be pointed out. The following chapter will give an overview of the current state of research in these fields.

## 2.2. State of research and research gaps

A main feature of the research approach to analyzing and improving formal performance control activities in BSRs lies in systematically connecting relationship-specific capabilities and contingencies to control processes of formal MCS, by embedding the main control processes in an inter-organizational context. Thus, the following review<sup>13</sup> of *SCM literature* focuses on how these capabilities and contingencies were analyzed and in which way they were linked to performance. This also includes the role of perspective on the buyer-supplier dyad. Moreover, *management control literature* is reviewed through a BSR-lens and existing frameworks for analyzing dyadic control systems will be assessed in terms of their suitability for the use in BSRs.

### *Dyadic performance control in buyer-supplier relationships – State of the art in supply chain management literature*

In supply chain performance literature,<sup>14</sup> various scientific contributions exist, analyzing causal interdependencies between interface-related aspects and performance outcomes. Eng (2006) for instance, inquires about interdependencies of information-sharing, mutual trust and other organizational norms with cross-functional coordination, supply chain responsiveness and firm-performance. Lambert and Pohlen (2001) take a similar route by analyzing effects of supplier relationship management on economic value added, whereas Fynes et al. (2005) concentrate on causal relationships between cross-company communication, trust, adaption and cooperation and firm-specific performance dimensions such as quality and cost. Stressing the role of cross-company capabilities, Kim (2006) investigates the effect of interaction between corporate competition capability and supply chain operational capability on firm-performance. Hsu et al. (2008), in turn, look at the influence of information

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<sup>13</sup> A more deep analysis of recent contribution from SCM and management accounting literature can be found in paper A (annex A). The paper also includes a structured review of performance related articles in supply chain management literature.

<sup>14</sup> As mentioned in chapter 2.1, this also covers research areas that are relevant to performance management in an inter-organizational context even though they cannot be assigned to the discipline supply chain performance management from a strict point of view.

sharing capability on BSRs and firm-performance. In addition, numerous additional contributions on related topics exist (e.g. Curcovic et al., 2000; Daugherty et al., 2003; Defee and Stank, 2005; Ordanini and Rubera, 2008; Stevenson and Spring, 2009). Analyzing these contributions showed that there is a broad consensus about the basic interdependencies between relationship capabilities and their limiting impact on the companies' performance. The performance-determining role of contingencies can be considered valid as well, and the decisive role of managing performance at the buyer-supplier interface to improve overall performance and competitiveness of the two interacting companies has been widely accepted. However, causal relationships between capabilities, contingencies and performance have not been systemized in an adequate manner as a comprehensive meta-analysis of relevant influence factors still seems to be missing. In order to enable significant implications for the effectiveness of MCSs in BSRs, such an investigation has to provide a holistic overview by consolidating the specific contingencies and capabilities resulting from the specific research setting of the respective contributions. These findings are in line with Terpend's et al. (2008) extensive content analysis of contributions to BSRs from 1986 to 2005. Stating that publications addressing performance improvements highly increased, the authors concluded that researcher are ought to consider more contextual variables moderating the relationships. In their opinion, especially "the effects of many buyer, supplier and market characteristics, as well as product characteristics have yet to be explored" (Terpend et al., 2008: 43). Future research, for instance, should try to find out under which market conditions information sharing and trust is beneficial to the involved companies, or how practitioners can detect under which contextual conditions coordination activities are effective (Terpend et al., 2008: 43).

In terms of the perspective adopted in the respective publications, recent meta-studies on SCM literature show, that basically all possible views on dyads have been adopted. However, conducting a content analysis on 442 SCM articles from 1999 to 2003, Sachan and Datta's (2005: 667) found out that only 18% analyzed BSR-specific issues from a dyadic perspective. Going into more detail regarding the dyadic relationships, Ross et al. (2009: 38) also emphasize the lack of analyzing the buyer-supplier interface from an unbiased point of view, also stating that most scientific studies on BSRs in

manufacturing and logistics literature have either adopted a buyer or supplier firm view. Terpend et al. (2008: 41) also stressed the increasing importance of investigations of buyer-supplier mutual efforts as these have drastically increased within the second decade. But the authors also conclude that this development will have to continue to overcome the limitations of single perspective-based publications.

In summary, it can be said that the assumed interdependencies between relationship capabilities and their limiting impact on the companies' performance as well as the performance-determining role of contingencies are widely supported in the scientific community. In line with this, an urgent need for appropriate control mechanisms and techniques meeting the specific requirements of BSRs has been expressed in SCM. Reviewing this literature led to the assumption that three particular aspects are considered as underdeveloped from an inter-company perspective. First, evidence that interface processes and activities impact both buyer's and supplier's firm-performance has not been adequately credited. With only few exceptions, analysis of BSRs in supply chains has focused on performance of either the buying or the supplying company. This differs with an opinion widely held in the SCM community, purporting that inter-company competitiveness is today's most important challenge. In reality, the need to analyze interface-performance in supply chains from an unbiased point of view is a current issue. Second, a systematic identification and classification of capabilities and contingencies is still missing and analysis of causal relationships between these factors and performance still seems to be under-developed. Third, no contribution was found that explicitly examined the actual influence and usefulness of formal control activities, to systematically enhance performance of transactional processes in BSRs.

#### *Dyadic performance control in buyer-supplier relationships – State of the art in management control literature*

The second literature stream of essential importance is the one of management control research. In order to get a holistic overview of recent contributions to the field, recent reviews of field literature have been analyzed. Focusing on performance control in inter-firm settings as a superset of supply chain relationships, two relevant meta-

studies were identified. The first one was conducted by Meira et al. (2010), who analyzed MCSs in inter-organizational relationships depending on the nature of the relationship, namely 'supply chain relations', 'outsourcing' and 'others' including joint ventures and further unspecified relationships. The second one, carried out by Caglio and Distillio (2008), was selected as formal management control mechanisms were directly addressed. Combining the two review led to additional useful contributions (e.g. Coletti et al., 2005; Dekker, 2004; Free, 2008; Mahama, 2006)

Analyzing these contributions and the two meta-studies in terms of performance control in BSRs through a supply chain lens showed that the same issues still seemed to be underdeveloped in management control research. Although several of the papers address trust-related issues, Caglio and Dittillo (2008: 876) conclude that the impact of variables such as uncertainty and trust on inter-firm control mechanisms have been only partially investigated. They also state that almost all of the papers are limited to the analysis of only one variable at a time without considering the interaction amongst them. Additionally, the authors recognized a heavy predominance of a purchasing perspective on the dyads and therefore stress the need for analysis from an unbiased point of view. Some of these gaps have already been identified within the examined papers. Mahama (2006: 317), for instance, states that the link between MCSs and cooperation in general remains underdeveloped, and Free (2008: 629) identifies a strong need for further investigations of the relationships between accounting, trust and trustworthiness.

Beside contributions to performance control in specific inter-firm settings, no framework specifically designed to analyze control systems in such an inter-organizational environment could be found, even though there are conceptual frameworks for the analysis of MCSs in general existing, such as Simons' (1995) levers of control framework and Ferreira and Otley's (2009) framework for analyzing performance. However, especially the latter seems potentially suitable to be elaborated to the specific needs of formal MCSs in BSRs, systematically connecting formal control processes (performance measurement, performance assessment and implementation of corrective action) to BSR-specific performance capabilities and contingencies.

Regarding management control literature, it can be concluded that the potential role of formal MCSs in inter-firm relationships has been recognized and various scientific contributions to the debate of management control directly addressing BSRs in supply chains have been made. But despite all this discussion, the configuration of formal MCSs in supply chains seems to have been neglected in prior research. A systematic and comprehensive analysis of relevant influence factors on performance, for instance, still is missing as interdependencies between these performance-determining factors and control processes in BSR-specific MCSs have been only marginally explored. Also a framework for analyzing such systems could not be identified because existing approaches did not fully consider specific BSRs characteristics.

Based on the review of these selected contributions to control mechanisms in inter-firm relationships it can thus be concluded that de facto no research exists, helping to implement new and to systematically assess formal MCSs in supply chain BSRs. In consequence, the lack of systematic research tools for analysis has to be considered a major research gap.

### **2.3. Research questions and scientific contribution of the research project**

After having discussed recent contributions to the topic of formal performance control in supply chain BSRs, it can be summarized that there is still a lack of knowledge about how to systematically overcome the challenges today's companies face in managing performance of their BSRs. Furthermore, empirical evidence needs to be strengthened. This could be reached by analyzing the expected interdependencies on a quantitative basis. As an example, statistical analysis of causal relationships between performance and its determinants, such as contingencies and control mechanisms, can help to assess the effectiveness of control activities depending on the inter-organizational context. Accordingly, the impact on the design and use of MCSs in BSRs, resulting from a different view on the dyad, needs to be investigated further as well. Also, there appears to be a lack of knowledge about the mediating role of dyadic

control activities for performance in BSRs. This demand leads to the following primary research question:

*RQ: How can effective formal performance control in BSRs be enabled and control-related coordination problems systematically overcome?*

In order to sufficiently address the specific research objectives identified in chapter 1.2, further distinctions need to be made and a set of secondary, more detailed questions has to be developed.

As described, successful control mechanisms have to fulfill specific requirements of cross-company considerations for each of the three sub-processes to overcome coordination problems. Efficiency and effectiveness of cross-company activities has to be made measurable and measurement results comparable, because quality of the reference values determines the suitability of the performance evaluation processes. Also, performance drivers at the BSR-interface have to be correctly identified, as effectiveness of corrective action results from the extent to which these drivers are addressed. Accordingly, the following secondary questions need to be answered:

*RQ<sub>a</sub> How can key elements of performance control in BSRs (capabilities, contingencies and performance indicators) be classified and how do they interact with formal control processes?*

*RQ<sub>b</sub> What are the relevant performance variables in terms of formal performance control in BSRs?*

*RQ<sub>c</sub> What are the relevant performance contingencies in terms of formal performance control in BSRs and how do they influence comparability of measurement values?*

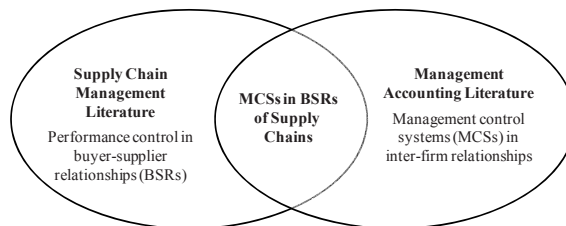
*RQ<sub>d</sub> What are the relevant performance capabilities in terms of formal performance control in BSRs and how do they influence the effectiveness of corrective actions taken?*

To enable successful formal performance control in BSRs (in form of formal MCSs), appropriate conditions to execute control-related coordination must be given. This requires control capabilities, which are, in turn, determined by the level of cooperation between the two companies. Thus, it must be known under which conditions control can be executed effectively and the following questions must be answered:

*RQ<sub>e</sub> What are the relevant control capabilities in terms of formal performance control in BSRs and how do they influence the effectiveness of control activities?*

*Implications for the scientific contribution of this doctoral thesis*

From a scientific perspective, answering these questions addresses two aspects of current research: formal MCSs in inter-firm relationships, which are basically part of management accounting research, and performance management in BSRs, which has mainly received attention within the SCM discussion. However, it appears that there is a general shortage of studies on the use of formal MCSs in SCM, while BSR-specific examinations seem to be neglected in management accounting. As a result, contributions, comprehensively addressing formal MCSs in BSRs, are to be considered underrepresented in both areas. Combining both aspects, the work at hand can thus contribute to science by harmonizing existing knowledge from both fields and by putting forward the discussion about the design and use of formal MCSs in BSRs (figure 4).



*Figure 4: Integration of literature streams for harmonizing knowledge about the design and use of formal MCS in BSRs*

Performance Control in Buyer-Supplier Relationships  
The Design and Use of Formal Management Control  
Systems

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