

# A Conceptual Model and Analytical Framework for Studying Purchasing & Supply Management within SMEs

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**Abstract:** The central objective of this conceptual paper is to gain a better understanding under what circumstances purchasing and supply activities within Small & Medium-sized Enterprises (SMEs) are managed.

Purchasing & Supply Management (PS Management) within SMEs differs from that in large enterprises. SMEs have different organisational settings and are not small versions of large enterprises. Whilst there is abundant literature on SMEs as well as on PSM, there is only little literature on PSM within SMEs. PSM research within SMEs must consider specific characteristics such as informal organisation, less specialization in business functions and less available resources. SME management will focus more on the overall operations and less on specific business functions. The approach of SME management to inward-bound purchasing and supply activities is often holistic; its approach to outward-bound purchasing and supply activities is characterized by a relative dependent position in supply chains. This paper proposes a *conceptual model* to explain the relationship between the governance of purchasing and supply activities and their purchasing and supply performance. The paper adopted the Transaction Cost Theory (TCT) with levels of integration to describe five governance types. To explain the relation between these governance types and performance, the paper includes the TCT-related moderating variables *general uncertainty* (macro and meso environment) and *asset specificity* (meso environment). It also introduces the moderating variables *SME characteristics and management characteristics* and *business model*. From this conceptual model the paper then develops an *analytical framework* which describes the five governance types and the circumstances under which they are ideal-typically sustained.

The conceptual model and analytical framework combine different domains of literature to enhance the understanding of the different forms of purchasing and supply activities within an SME context. Combining these different domains gives beneficial insights that cannot be found in the separate literature domains. The applying model and framework in empirical research will enable the design of management instruments. Hence this paper is a starting point into purchasing and supply management research within SMEs aimed at supporting SMEs in their performance.

**Key words:** Conceptual; Small and Medium-sized Enterprises (SMEs); procurement; Purchasing and Supply (PS; PSM); PS governance; PS activities; Transaction Cost Theory.

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## 1 Introduction

This article proposes a conceptual model and analytical framework to gain a better understanding in Purchasing and Supply Management (PSM) and its performance within Small and Medium-Sized Enterprises (SMEs). Whilst there is abundant academic literature on SMEs and on PSM separately, there is only little research on PSM as conducted within SMEs. Literature uses various terms to describe and define PSM (*procurement, purchasing, sourcing, supply, supply chain, buying, ordering, expediting*) and various terms to describe and define SMEs (*small firms, micro firms, small companies, entrepreneurs, small company owners, ventures, enterprises, small business*) with varying amounts of employees and turnover. This article uses the term *Purchasing and Supply Management (PSM)*, which encompasses both the function of sourcing/buying goods and services and the (somewhat broader) function of procurement of taking the customer and the supplier into account (for discussions on definitions see Callender et al., 2013; Van Weele, 2010). The paper uses the phrase *Small and Medium-Sized Enterprises (SMEs)* with 10-250 employees and an annual turnover of 2-50 million euros (European Commission, 2013). The word *company* is used as a synonym for SME. The phrase *SME owner (SMO)* indicates the owner or top management of an SME. (For details on SMEs, see section 3).

Literature on PS performance in larger enterprises (LEs) showed that increasing the PS maturity (Foerstl et al. 2013; Hartmann & Kerkfeld, 2012; Schiele, 2007) will increase the overall company performance. SMEs form an important contribution to national economies as they contribute substantially to GDPs, are innovative and are important employers (OECD, 2010). Some research showed (Adams, 2005; Paik, 2009a, 2009b) that improving PSM within SMEs will also improve the overall SME performance. There are however striking differences between SMEs and LEs in general, and specifically for PSM. This paper posits that what is applicable for improving PSM within LEs, *need not* be applicable for SMEs.

When analysing extant research on improving PSM within SMEs the conclusion can be drawn that results contribute to relevant insights but remain too general and abstract. The fairly complete overview of Morrissey & Knight (2011) showed nine extant quantitative research studies (but missing: Adams; 2005; Paik, 2009, 2011) which have produced helpful *general insights* on PSM within SMEs. Those studies however did not allow for the variance of SMEs and for the variance of PSM activities. Morrissey & Knight (ibid) also mentioned another ten case studies and five mixed-mode research studies (but missing: James et al., 2010, 2011) which have resulted in an *increase in the understanding of several aspects* of PSM. This more qualitative work however only gives managerial insight or advice on an abstract level. We hence agree with Ellegaard (2006) and Morrissey & Knight (ibid) that PSM within SMEs has not been adequately studied to determine its latitude. Moreover, Ellegaard (ibid, p. 279) signalled that different research worlds do not always find or appreciate each other's research findings "as cross-referencing has been limited".

Several authors gave diverse recommendations for future research in this area. SMEs need a set of *best-practices* in procurement (James et al., ibid) in order to increase their competitive position. Morrissey & Knight (ibid) concluded that future research in this area should focus on owner *motives, purchasing practices, and performance*. They proposed to use a better SME segmentation in *context, sector, motives and size*. Paik (2011) concluded his four papers with stating that many variables will impact PSM development. All saw a need for case studies.

To conclude this introduction: The manners *how* governance of PS activities can contribute to the overall SME performance must still be clarified which makes new research relevant to academics and business. Our basic approach is to map the PSM activities as they occur in daily SME practice. The central objective of this paper is to develop a conceptual model to gain a better understanding under what circumstances the purchasing and supply activities are managed within SMEs and to what performance this leads. We furthermore want to develop an analytical framework that enables us to analyse governance of PSM within the company, the supply chain and the general environment.

The paper is structured as follows. Section 2 briefly discusses the literature review; section 3 discusses extant research on PSM and SMEs in general terms and from a management perspective. Section 4 forms the heart of this paper. It introduces the perspective of the Transaction Cost Theory (TCT) and specific PSM literature to build a conceptual model. This conceptual model relates five Governance Types to PS performance and identifies several moderating constructs, each construct having several variables. Following the theoretical perspective of TCT, section 5 presents an amended and operationalised conceptual model with the most dominant variables. This section furthermore gives the a priori analytical framework, describing how the variables could appear with certain governance types. Sections 6 and 7 discuss the quality of the framework and how it can be used.

## **2 Method literature review**

The paper is based on an iterative literature study carried out with Web of Science and with Google Scholar between December 2013 and June 2014. Using the search terms *procurement* or *purchasing* combined with *small business*, *small firms*, *small companies*, *small organisations* or *SMEs* in title, keyword or abstract revealed a relevant body of research in Web of Science. In subsequent reference and citation searches via Google Scholar the main focus was on literature from 2000 onwards. Furthermore references and citations were reviewed of relevant IPSERA papers from 2009 onwards and of a PhD study (Adams, 2005). In their overview Morrissey & Knight (ibid) discussed 24 relevant publications (from a reference list of 75 publications). The Adams study contains a reference list of 120 publications. Our literature review in all found 300+ publications and in detail assessed circa 40 publications relevant to this paper. (See appendix A for a categorisation of the literature used).

## **3 Perspectives from literature on PSM within SMEs**

This section discusses findings from literature from different knowledge domains i.e. literature on SME, PSM, organisational theory.

### **3.1 PSM Activities – holistic interwoven, hidden**

This article posits that PS activities is an integral part of SMEs and not a separate (distinct) business function. The SMO when dealing with his/her organisation and possible changes within that organisation (see e.g. Burns, 2001; Gadde & Håkansson, 2001) takes an integral perspective. He is not interested in optimizing the PS function per se but primarily in optimizing his offerings to customers, and possibly in optimizing PSM within the context of

his company. Moreover, PSM is not always in the limelight of a SME manager's attention. A Dutch study (Overweel & Van der Zeijden, 2007) found that the importance of PSM for SMEs grows with their company size and with the spend ratio, and that the SMO has an important role in both the initial buys and the repeat buys. Overweel and Van der Zeijden (ibid) found that especially smaller companies often purchase in a trust relationship and that 85% of Dutch SMEs do *not* have purchasing departments.

In general SMEs have fairly integral (Meijaard et al., 2005) and organic (Verreynne, 2011) organisations which can be characterized by the SMOs' large influence. SMEs have short and relatively informal lines and relationships between different parties and functions. This positively or negatively affects the performance of SMEs (see e.g. Adams, 2012, p. 22; Quayle, 2002; Verreynne, ibid). From this integral perspective this paper analyses the circumstances surrounding the PSM function to understand what the contribution of PSM is to overall SME objectives.

### **3.2 PS performance within SMEs**

Literature and practitioners traditionally conclude that the PS performance of SMEs is at a lower level (see e.g. Boodie, 2002; and also Walhof & Versendaal, 2011). Moreover PS knowledge, skills and capacity in SMEs seem to be less developed (e.g. Morrissey & Pittaway, 2006). Pressey (2009) however concluded that a lack of formalized PS function does *not* necessarily indicate bad PS skills and Ellegaard (2006, 2009) found that SMOs are "effective" in their PS practices. Furthermore, SMEs seem to be resilient and flexible but run higher operational and financial PS risks than larger companies do (OECD, 2010; Paik, et al., 2011, p. 10). Some research found that SMOs recognize the importance of (strengthening) the PS function to increase overall SME performance (Dollinger and Kolchin, 1986; Ellegaard, 2006; Pressey 2009; Quayle 2002; Walhof ibid). Others, e.g. Morrissey & Knight (2011), Quayle (2002) and Ramsey (2001) found that the SMO has limited resources and buying power and that his focus is often on his limited customer groups and on the daily hassle in his company. Hence PSM is *not always seen* as an enabler for long-term success or a contributor to companies' bottom-lines (see also Quayle, 2002; Morrissey & Pittaway, 2006). In her PhD study Ritvanen (2008) concluded that Finnish SMOs realised the importance of PS capabilities but have not concentrated on making PS strategies.

This contrasts with a large body of research and practitioners reports on LEs where relevance of PSM to "the top and bottom line" (Hartmann & Kerkfeld, 2012) stands without much further discussion. In other words over the last decades PS has been unable to convincingly prove to contribute to the SME performance (w.r.t. profit, quality, secure supplies, and trustworthy suppliers).

### **3.3 Variety within SMEs and in research design**

There exists a wide variety of research outcomes on PSM within SMEs. Research showed (Burns, 2001; Paik et al., 2009, 2011; Ramsey, 2007) that SMEs are not miniature-versions of large companies, and models and insights cannot always be transposed easily. Furthermore we need to be aware that outcomes of PS research in SMEs are based on different research methodologies (e.g. case studies, surveys) and on different types of SMEs (see Morrissey & Knight 2011 for a partial overview). Whereas for example Ellegaard (2006) focussed his research on Danish small company owners (10-20 employees), Paik et al. (2009a, 2009b) investigated North American small-sized (20-99 employees) and medium-sized enterprises with 100-500 employees). Australian and New Zealand research (Verreynne, 2011) on SMEs

normally focuses on companies with less than 100 employees. Quayle (2003) and Morrissey & Pittaway (2006) conducted research in a specific type of manufacturing UK companies, whereas Paik included several branches. Moreover Burns (2001), Morrissey & Knight (2011) and Pressey (2009) saw major differences in the behaviour of SMEs depending on the characteristics of the owner. Our research (Staal & Walhof, 2014) revealed strong differences between seemingly similar SMEs with e.g. different focus on their PS activities. Differences within the SME population need to be taken into consideration.

### **3.4 Unit of analysis and PS activities**

The unit of analysis is a methodological feature and denotes the key phenomenon that will be the object of study. In exploring the PS function within SMEs this paper proposes to take PS activities as the unit of analysis. Earlier we stated that an SMO takes a holistic view on his company. This means that although there are different business functions (PS, finance, production, logistics, marketing/sales, HR) within SMEs, the SMO will take the overall flow of goods, information and resources as a starting point.

Management of supply connects the internal organization to the external resources (Van Weele, 2002). This implies that we should study the *interactions* between the different activities instigated from several business functions and their interrelationships. The assumption is that those activities are to a certain extent aligned. This is an *internal fit*. The accompanying *external fit* supports the company to deal with company-external pressures like industry and economic pressures. In the case of the PS function the external fit centres around the relationship to the supplier base (see Van der Stouwe et al. for a comparable reasoning on strategic purchasing management). This paper hence posits that PS activities are units of analysis which enables us to discern Governance Types in PS activities. Earlier this paper mentioned that PS activities vary considerably among SME and also within similar SMEs. Taking these PS activities within SMEs as units of analysis is a methodological way to deal with these variances.

## **4 Theory – conceptual model and research questions**

This section presents the outline of the conceptual model and its starting points. As mentioned in the previous section, supply management connects the internal organisation to the external resources. Following Malone & Crownston (1994) a manager's key tasks are: (1) align activities within organisations and between organisations, and (2) ensure that this alignment is executed with a certain objective. Aligning activities within and between organisations implies establishing internal and external relationships.

Depending on the circumstances companies will choose for vertical integration or for market exchange (see Lintukangas et al, 2009). The Transaction Cost Theory (TCT) is based on work of Williamson (1985). TCT posits that companies will use efficient organisational forms or governance structures (Noordewier et al., 1990; p. 80), but also that humans do not always act rationally and that "some are prone to opportunism" (Luzzini et al., 2012; p. 1022). The core of TCT is the relationship between the *degree of alignment* or *vertical integration* and the related *transaction costs*. Transaction costs are the supportive information, negotiation and monitoring costs necessary for conducting transactions between companies (Luzzini, *ibid*). The degree of alignment varies in a continuum from several independent companies operating in a spot-market versus one fully vertically integrated company. The two central attributes that influence the choice of governance structure are *asset specificity* and

*uncertainty* (Williamson, 1985; for an adoption to PS see Adams, 2005; Hoffmann et al., 2011; Noordewier, *ibid*).

In this context the attribute of *asset specificity* means the degree to which a SME using an asset (e.g. time, method, experience, relationship) that supports a specific transaction can re-deploy this asset for supporting other (future) transactions without losing value. When a (supplier) relationship ends the SMEs' specific investments in that relationship hence will lead to sunk costs if it cannot re-deploy these investments.

The attribute of *uncertainty* relates to the degree into which future changes can be predicted and consists of environmental uncertainty and behavioural uncertainty.

Environmental uncertainty refers to unanticipated changes in the environment where the transactions take place. Behavioural uncertainty is related to the monitoring problem: the difficulty of verifying compliance with agreements of exchange partners (Williamson, 1985). Following Hoffmann et al. (2011; see also Chicksand et al., 2012) in their statements that TCT is not widely used in the field of supply chain management, in choosing this theoretical perspective we also hope to contribute to the adoption of TCT to the field of PS.

#### **4.1 Conceptual model for building the analytical framework**

As stated above, TCT is a major contributor to the conceptual model. TCT enables to give insight in governance types by the level of (internal and external) integration and by adding the attributes uncertainty and asset specificity. Besides these two variables, SME and SMO characteristics and the business model are added to explain ultimately the outcome variable, the PS performance. The conceptual model consists of six constructs and is developed from two assumptions (Figure 1).

The *first assumption* concerns the relation between the governance of PS activities (combining construct 1 and 2) and the performance of PS (construct 6). The type of alignment between internal (construct 2) and external integration (construct 1) of PS activities will impact the PS performance. In this paper the combination of internal and external integration is called PS governance. The first two constructs (1, 2) acknowledge the boundary-spanning PS activities encompassing inward and outward bound activities which from a managerial perspective need internal and external integration. This includes that we will study governance on the level of the supply chain: company internal and - external integration (See e.g. Foerstl et al., 2012).

The *second assumption* concerns several moderating constructs on the relation between governance of PS activities and the PS performance. Inclusion of moderating constructs is in line with adopting TCT not as a *normative* model (which it basically is) but as an *analytical* model to understand under which conditions certain Governance Types can be chosen (see Noordewier et al., 1990). These moderating constructs imply that the direct relation between PS governance and PS performance is affected by certain prevailing conditions.

The paper initially identifies three moderating constructs. The Meso & Macro Environment (construct 3) follows from the perspective of the TCT: the asset specificity and uncertainty are introduced on the meso level (i.e. the supply chain level) in which the focal SME is functioning, and on a macro level (i.e. socio-economic circumstances). An economic crisis (macro) would e.g. weaken the relation between Governance and PS performance.

This paper also includes the *SME & Owners Characteristics* (construct 4) and *Business Model* (construct 5). This addition to the TCT originates from the holistic perspective of SMEs (PS as interwoven in the overall SME) and from the specific circumstances in comparison to LEs in which PS activities are executed. These specific circumstances can impact the relation

between governance and performance. A higher level of task specialisation or a higher level of education (SME characteristics) or an aligned Business Model (e.g. product innovation aligns with intensely coordinated interaction between suppliers and internal parties), can strengthen the relation between PS governance and PS performance. This PS performance (construct 6) has a direct effect on the overall SME performance (construct 7). In this paper this construct 7 is out of scope and hence grey in Figure 1.

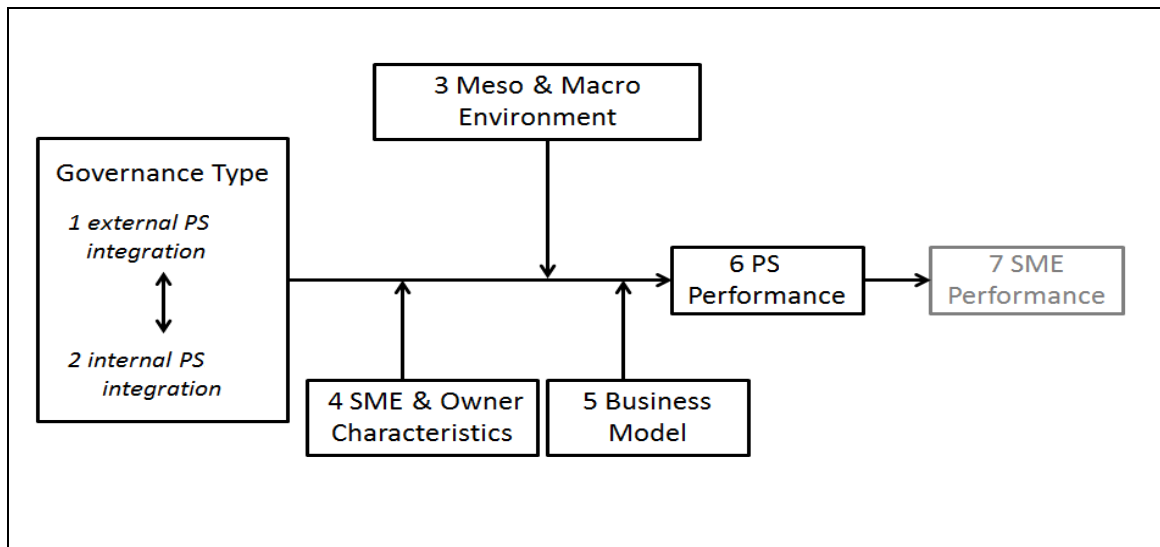


Figure 1: The initial conceptual model (see Figure 3 for the final conceptual model)

This conceptual model acknowledges the heterogeneity of PS activities, hence starts from the various modes of governance of PS activities, acknowledges the variety of the SME's position in the supply chain (meso and macro environment), and its general internal organisational characteristics (SME & Owner Characteristics, and Business Model). This research starts with identifying PS activities in business practice, has a systems' approach (considering constructs 3, 4 and 5), and has an inductive and exploring approach (identifying patterns in PS activities). This systems' level perspective is new in that it tries to relate the PS performance (as outcome of the PS governance) to several moderating variables.

The *central objective* of this paper is to develop a conceptual model and an analytical framework to gain a better understanding under what circumstances PS activities are managed within SMEs and to what PS performance this leads.

The following eight research questions (RQ) will be answered in building the model and framework.

1. What *Governance Types* can be identified based on internal and external PS oriented *integration mechanisms* (1, 2) within SMEs? (¶4.2)
2. How does the *Meso & Macro Environment* (3) moderate the *PS performance* (6) generated by a *Governance Type*? (¶4.3)
3. How do the *SME & Owner Characteristics* (4) moderate the *PS performance* (6) generated by a *Governance Type*? (¶4.4)
4. How do the *Business Model & Strategy* (5) moderate the *PS performance* (6) generated by a *Governance Type*? (¶4.5)
5. What *measures* are suitable to assess the *PS performance* (6) of SMEs? (¶4.6)

6. What *dominant moderating variables* affect the PS performance (6) under a *Governance Type*? (¶15)
7. What *internal and external PS activities* can be observed with *Governance Types*? (¶15)
8. What *internal and external PS activities* can be observed per *dominant moderating variable* with *Governance Types*? (¶15).

#### 4.2 Construct 1, 2 - internal & external integration of PS activities

Extant research showed that traditional segmentations of SMEs like on *size, age, or industry* alone will insufficiently help in understanding the relationship between PS activities and their contribution to the PS performance. This paper therefore has as a starting point that PS is boundary-spanning: PS activities means buying for an internal client from an external supplier. Managerial-directed PS activities are thus inward-bound and outward-bound (see e.g. Day et al., 2006; Foerst et al., 2013). The differentiation between inward and outward bound PS activities matches a distinction within PS practices. The PS practices, i.e. groups of logically comparable activities, (see Day et al., 2007, based on Narasimhan and Das, 2001) are divided as follows.

The *first* aspect is the distinction between externally-focussed PS practices and internally-focussed PS practices. The *external* PS practices are divided into supplier performance evaluation and buyer-supplier relationship. The *internal* PS practices reflect the organisational Practices that concern the internal management of PS activities (Day & Lichtenstein, 2007). This aspect follows the reasoning of Hillebrand & Biemans (2004). The *second* aspect holds that the different PS practices and hence the including PS activities must be integrated for achieving a certain objective. Integration in the daily practice of SMEs is understood here as an emerging phenomenon instead of a strict set of rationally-directed managerial actions. Thus, managing PS will be interpreted as a level of *integration* of activities. Hillebrand & Biemans cited Kahn (1996) who saw *integration* as identical to cooperation and collaboration. Hillebrand & Biemans (ibid, p. 115) saw the degree of integration as "referring to a combination of the frequency, intensity and quality" of integration. This paper adheres to the TCT and therefore uses the word integration. From PS-focused research it appears (Andersen & Rask, 2003; Cousins & Spekman, 2003; Narasimhan & Das, 2001) that organisational integration between the PS function and other business functions is one of the most critical determinants of PS performance, and also of overall SME performance. Empirical research that specifically focuses on the relationship between organisational integration of PS and performance was done e.g. by Day (2007), on strategic PS by Foerstl et al. (2013), and on internal organisation by Ellegaard (2012). Literature on early supplier involvement, customer intimacy, best value procurement (Kashawagi, 2010) signified the attention for the level of external integration of PS activities and its influence on the PS performance of the company.

Further to this empirical argumentation, literature identifies maturity models in which internal and external organisational integration is a leading dimension in identifying stages of maturity<sup>1</sup>. The various stages of maturity can be identified as a combination of increasing internal and external integration. In these maturity models the phases of internal integration and of external integration are generally seen as the higher levels of PS maturity.

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<sup>1</sup> This paper distinguishes PS Maturity (also called PS Development) where SME owners will pursue PS activities and practices, and the resultant PS performance. For a recent general overview on PS maturity see Van Poucke et al., 2014; for PS maturity in SMEs see Adams, 2005; Batenburg, 2007; or Paik et al., 2009.



From this literature this paper derives the relevance of distinguishing between two dimensions of integration: (i) Internal organisational PS integration and (ii) External PS (chain) integration. In the extant literature especially the internal integration is related to PS performance. Following TCT the amount of external integration depends on several factors. The *internal* perspective stresses the contribution of PS to the organisation itself. The *external* perspective stresses the contribution of PS to the success of the PS chain (or to partners within the PS chain) or to the success of the own company. This paper argues that considering the combination of both dimensions of integration is necessary to fully appreciate the complexity of the development of PS performance. It therefore proposes to combine the two bodies of knowledge and define the combination of these two dimensions of integration as types of PS governance. In this context *Governance* (Williamson, 2002) means ensuring consistency and transparency in management and oversight of an organisation, to ensure an efficient and effective achievement of corporate objectives. We propose a PS governance concept that starts from the need to differentiate SMEs in the way they manage their PS activities. Using the two dimensions of integration leads to five ideal types of PS governance (see Figure 2). The term *ideal type* here means an abstract hypothetical concept of a phenomenon as coined by Weber. Thus, empirical research could not expect to find PS governance Types in their purest forms.

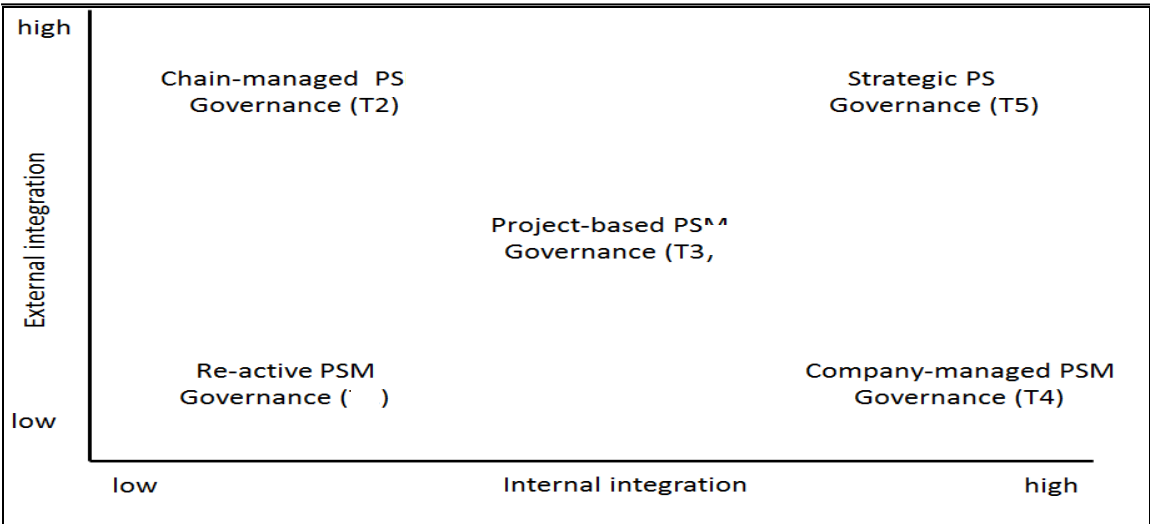


Figure 2: Types of PS governance related to their internal and external level of integration

The vertical axis is the external PS chain integration and represents a high integration (hierarchically-governed *chain* in which the PS chain acts as one company) versus a low integration (a fragmented PS chain in which exchanges between members in the chain are driven by market forces). Note that this 'high integration' of companies differs from the original definition of Williamson (ibid) of one fully integrated firm. The horizontal axis is the internal integration and represents a high integration (hierarchical relationships between PS activities including activities initiated from other functions of a company) versus a low integration (with isolated pockets where PS activities are initiated from a PS stand-alone position and act upon limited PS tasks). It must be noted that a Governance Type holds true for *one* dominant or strategic type of commodities (goods or services) that PS will acquire for an SME. Following portfolio thinking (see e.g. Gelderman, 2003) within one SME Governance Types will differ for various types of commodities.

The particular PS governance Type (see Table 1) indicates the type of management of the PS activities. This helps to: (1) identify characteristics of each PS governance Types in institutional & organisational capabilities, and outcomes; (2) explain under which conditions a certain PS performance can be sustained; (3) indicate the focus of the management efforts. (See also the examples in Section 6.1).

Table 1: Explanation of five types of PS governance

T1	Re-active	A chain driven by market forces and a stand-alone position for PS. The buyer (requisitioner) receives purchase orders (from internal customers) and puts them on the market. (e.g. <i>commodity vendors</i> )
T2	Chain-managed	Central steering from the chain but not within the company. PS has a stand-alone position: dominant partners pose demands on specification & selection. (e.g. <i>capacity contractors</i> )
T3	Project-based	A PS constellation with PS co-operation between partners in the chain and within a company. The cooperation is unique to explore a for the company innovation (product or process oriented). This is a short-term approach and PS plays a bridging role between the chain and its internal customers.
T4	Company-managed	A chain driven by market forces but with an internally strategically aligned PS. The company has certain targets (e.g. cost reduction) and it tries to realize these targets via the market. (e.g. <i>specialist contractors</i> )
T5	Strategic	Central steering both from the chain and within a company. Partners in the chain are strategically aligned to develop and sustain a seamless chain. (e.g. automotive integrated 2nd or 3rd tier suppliers)

This is a general model on PS governance that can be applied on SMEs. It is *not* implied a priori that one PS governance Type yields a better PS performance in SMEs than another type. Nevertheless, literature generally suggests that higher internal integration (the horizontal axis in Figure 2) is related to better PS performance (see e.g. Ellegaard, 2012; Foerstl et al., 2013; Hillebrand & Biemans, 2004). Strictly following TCT and the dependant position of the SME, the degree of external integration (the vertical axis in Figure 2) is not related to performance, although SME supply chain literature (e.g. Thakkar et al., 2008; Hong, 2006; Brau et al., 2007; but not Arend & Wisner, 2005; Ramsey, 2007) see a positive relationship. Within SMEs this could vary with company size, type of production system or industry, as suggested by Lopes de Sousa Jabbour et al. (2011).

Our future research will focus on improving the PS performance within a certain type, or on the change to a different type.

This sub-section gives an answer to RQ1: *What Governance Types can be identified based on internal and external PS-oriented integration mechanisms (1, 2) within SMEs?*

### 4.3 Construct 3 - Meso & Macro Environment

The construct Meso & Macro Environment will be operationalized in line with the TCT attributes of asset specificity and environment & economic uncertainty. This distinguishes between uncertainty and asset specificity related attributes located in the supply chain (meso) and in the wider business environment (macro). The attribute of *uncertainty* relates to the stability of the supplier and customer base (meso), and to economy, politics/regulation (macro). The level of stability refers to predictability of changes in the environment. The attribute of *asset specificity* relates to the amount of investments from the side of the SME into transactions with his customers and suppliers. In this it refers to the level of complexity (the special efforts and investments a focal company has to do) of the

supplier and customer base of and in the relation to the focal company. In line with TCT Adams (2012; p. 37) e.g. found that SMEs are “conservative” in investing in relationships even when suppliers increase their commitments.

In the PS specific literature review (see section 1, Introduction) confirmation was found for the identification of variables in line with the TCT approach of this research, which are marked with an X in Table 2 This holds true for both the supplier side and the customer side. On a macro level we choose (in line with TCT’s *uncertainty*) to have the economic situation as a supporting variable.

Table 2: Matching Meso & Macro Environment variables

1.	Complexity supplier network	Adams (2004); Paik (2011)	X
2.	Complexity customer network	Adams (2004)	X
3.	Stability supplier network (upstream)	Verreyne (2011; p. 331)	X
4.	Stability customer network (downstream)	Verreyne (2011; p. 331)	X
5.	Negotiation power in industry	(Paik calls this dependency) (Porter, five forces; Kraljics; Carter) Pressey (2009, p 221: competition in the market)	
6.	Industry (sector) differences	Morrissey (2011) Park (2001, p. 267)	
7.	Economic situation (boom / bust)	James (2011), Gronum (2012, p. 264)	X
8.	Country or cultural differences	Paik (2011)	
9.	Governmental Regulation	Manley (2008); Porter (1985)	

The moderating variables supplier base stability, - complexity, customer base stability, - complexity and economic uncertainty will in varying degrees impact the relation between PS activities and PS performance within SMEs.

This sub-section gives an answer to RQ2: *How does the Meso & Macro Environment (3) moderate the PS performance (6) of a Governance Type?*

#### 4.4 Construct 4 - SME & Owner Characteristics

This sub-section describes variables related to the internal characteristics of a SME and of an SME owner. The PS specific literature review revealed 12 variables (Table 3) that can be captured by SME and Owner characteristics.

SME characteristics will be brought together under the label of *organic organisation*. The holistic nature of the SME means (Meijaard et al., 2005) few hierarchical layers and a large influence of employees working both on an operational and strategic level. Employees have a low degree of specialisation and conduct several tasks. They manage (control) their own work and work informally. Ellegaard (2006) and Pressey (2009) hold that this can lead to adequate performance. Overall however the lack of expert PS resources (James, 2011) and PS experience (Park and Krishan, 2001) will have a negative impact on PS performance. The SMO characteristics relate to the dominant role of the SMO and hence his *PS orientation* will have a large impact on the PS performance. In his research Pressey (2009; p. 220) found that SMOs require different capabilities SMEs from their suppliers: holistic buying behaviour versus a more traditional buying behaviour (on process or logistics). Morrissey & Knight (2011; p. 1150) saw differences in SMOs’ motives and distinguished SMOs in: entrepreneur

Table 3: Selected SME & Owner Characteristics variables

1.	Age of SME/SMO	Start-up or mature: Verreyne; 2011, p 331) See also (variable 5) experience SMO (Park)	
2.	Size (spend) of SME	Paik (2009); Gronum (2012, p 265)	
3.	SME Structure Organic versus mechanistic structure	Meijaard (2005) Verreyne (2011, p. 331)	X
4.	Purchasing department (specialisation)	Pressey (2009); James (2011); Morrissey (2006)	X
5.	Skills needed by employees involved in PS Education and experience of SMO	Paik (2011; p. 14) Park (2001)	X
6.	Learning and improvement capabilities	James (2011)	
7.	Multi-criteria supplier selection	Paik (2011, p. 14)	
8.	Purchasing spend versus turnover Importance of NPR versus BOM Service or manufacturing company	Overweel (2007); others Ozmen (2011, p. 50) James (2011); others	X
9.	PS objective is TCO versus lowest cost	Paik, (2011; p. 14)	
10.	Purchasing perceived as important (strategic) or not	Quayle (2002); Paik (2011, p. 14); James (2011); Pressey 2009)	X
11.	Suppliers are considered an important resource	Paik (2011, p. 14)	X
12.	Long-term partnerships for critical commodities	Paik (2011, p.14)	

type (seeks growth and increased profits), lifestyle type (wants a secure level of income and e.g. independence) and the survivor type (wants to remain in business).

The SME characteristics will be elaborated in the construct *level of holistic organisation*. The SMO characteristic will be labelled as *purchasing orientation*. (Again, the most dominant variables are marked with an X).

This sub-section gives an answer to RQ3: *How do the SME & Owner Characteristics (4) moderate the PS performance (6) within a Governance Type?*

#### 4.5 Construct 5 - Business Model

This sub-section discusses variables related to the Business Model. In Verreyne's research on SMEs (2007) she found that strategy-making of SMEs differs from the more rational approaches commonly found in larger companies. She stated that the absence of rational strategy-making within *smaller* SMEs does not imply they do not work on strategy or their strategy would be less effective. This is in line with observation by Pressey, (2009) on strategic PS activities. To address strategy and strategy implementation this paper proposes to include the construct *Business Model*. Mason et al. (2011, p. 1038) described a business model as a framing device for influencing and shaping collective and individual action. More specifically, Wikstöm et al. (2010, p. 834) defined business models on how resources are combined and transformed in order to generate value for customers and for other stakeholders, and how a value-generating company will in return be rewarded by its exchange partners. Two aspects of the construct of Business Models are used in the framework: (1) relating collective to individual actions, and (2) the value proposition. This means that we distinguish between the support from SME employees (ad 1) and the intended performance (ad 2).

*Ad 1: relating collective to individual level; support.* A business model consists of four components: strategic choices, value creation, value network and value capture. In each of

these components three levels can be distinguished (Shafer et al., 2005, p. 202; Wikström et al. 2010, p. 834):

The SMO characteristics relate to the dominant role of the SMO and hence his *PS orientation* will have a large impact on the PS performance. In his research Pressey (2009; p. 220) found that SMOs require different capabilities SMEs from their suppliers: holistic buying behaviour versus a more traditional buying behaviour (on process or logistics). Morrissey & Knight (2011; p. 1150) saw differences in SMOs' motives and distinguished SMOs in: entrepreneur type (seeks growth and increased profits), lifestyle type (wants a secure level of income and e.g. independence) and the survivor type (wants to remain in business).

The SME characteristics will be elaborated in the construct *level of holistic organisation*. The SMO characteristic will be labelled as *purchasing orientation*. This sub-section gives an answer to RQ3: *How do the SME & Owner Characteristics (4) moderate the PS performance (6) within a Governance Type?*

- Strategic level where individuals share ideas about what the organisation should achieve,
- Operational level where different actors realize the organisational objectives,
- Interpersonal level of individual transactions and economic exchange.

The business model consists of subsequent activities ranging from defining company strategy to the way in which discrete transactions are shaped, in this case related to PS transactions (Mason, *ibid*). The Business Model construct in this framework therefore shows the *support of SME employees for strategic choices*. The assumption is that less support of strategic choices amongst employees has a negative influence on the management of PS activities in relation to the PS performance.

*Ad 2: the value proposition; the intended performance.* The overall company objectives are often derived from growth strategies (Ansoff, 2007), from competitor strategies (Porter 1985) or from customer strategies (Treacy and Wiersema, 1997). In line with supply chain thinking Treacy and Wiersema (T&W) developed three generic strategies (value propositions) from the perspective of the market i.e. the value requested by the customers:

- *Product Leadership* (PL) focuses on providing customers with the best product or service available on the market. Keywords: innovation and shorten time to market.
- *Operational Excellence* (OE) is directed at achieving reliable and competitively priced products or services for the customer. Keywords: product portfolio, minimizing costs.
- *Customer Intimacy* (CI) focuses on the deepest needs of the customer and to meet these needs. Keyword: optimizing life-time value for the customer.

Our research uses this basic set of strategies as they recognize the external relationships that can be included in PS activities and the internal organisational consequences. The value proposition influences the relation between management of PS activities and the PS performance and gives this relation a strategic direction. In the PS-specific literature review (Table 4) we found literature to strengthen our operationalization of the *Business Model*.

Table 4: Business Model variables

1.	Formulated PS strategies	(Intended performance) James (2011)	
2.	Emerging or rationally based T&W strategies	(Intended performance) Treacy & Wiersema (1997)	X
3.	Involvement (alignment) of employees in strategic issues	(Support from employees) Mason (2011, p. 1038)	X
4.	SMO objectives and hence SME orientation Entrepreneur, lifestyle, survivor	(Intended performance) Burns (2001); Morrissey (2011); OECD (2010) (Pressey on holistic versus traditional PS)	X

The variables *support for strategic choices* and *value proposition* are depicted as the operationalization of the construct Business Model.

This section gives an answer to RQ4: *How does the Business Model (5) moderate the PS performance (6) within a Governance Type?*

#### 4.6 Construct 6 - PS performance

Leenders (2006) and Gonzalez-Benito (2007) give overviews of different types of PS performance, which Adams (2004, p. 39) and later Paik, (2011, p. 12-13) operationalized for their research. In his PhD thesis Adams used four relative (subjective) variables, e.g. “return on investment *exceeds expectation* and is better than *similar* organisations”. (Italics added). Paik uses six objective variables (see Table 5). This paper follows Paik’s broad definition of PS performance varying from cost reduction, better logistics, to increased sales or customer satisfaction, or to a contribution to innovation. These six PS performance variables cover efficiency and effectiveness (Foerstl, 2013). The choice for this broad definition is because of its relation to T&W strategies i.e. business models (see section 4.5) as indicated in the table below.

Table 5: PS performance variables impacting SME performance (with possible T&W strategies)

1	Profit as a percentage of sales (Paik)	All
2	Net income before tax (Paik)	All
3	Return on investment (Paik)	All
4	Purchased material price reductions (Paik)	OE
5	Order processing time reductions (Paik)	OE (or All)
6	Operating cost reductions (Paik)	OE
7	Innovation performance (Hartmann)	PL, (also CI)
8	Quality performance (Hartmann)	CI; PL

This paper adds (relative) PS variables 7 and 8 on the contribution to innovation and quality as described by Hartmann & Kerkfeld (2012). All eight PS variables have a direct or indirect impact on overall SME performance. Variables 1-3 will relate to all three strategies of Treacy & Wiersema; variables 4-8 will probably be more important to one or two of these strategies.

This section gives an answer to RQ5: *What measures are suitable to assess the PS performance (6) of SMEs?*

### 5 Results - a conceptual model and an analytical framework

The discussion in section 4 leads to an amended conceptual model (Figure 3). Starting again from Governance Types, this amended model shows the dominant sustaining moderating variables impacting the PS performance. As we focus on the PS performance measures, the construct of the SME performance is left out of this amended model.

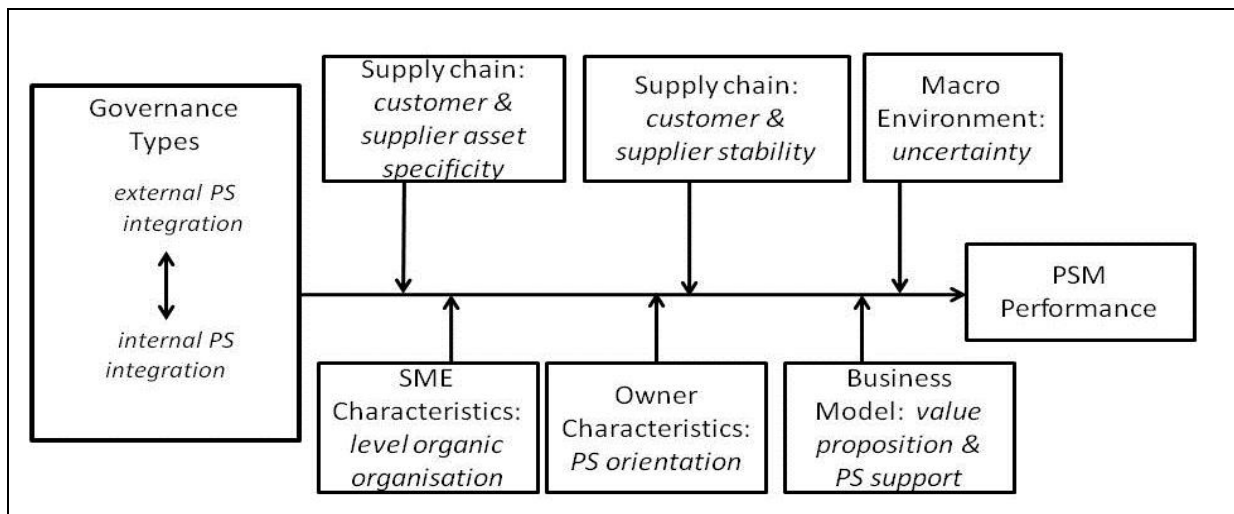


Figure 3: Amended conceptual model (derived from the initial conceptual model of Figure 1)

As mentioned earlier (section 4.1), we will adopt the TCT not as a *normative* model (which it basically is) but as an *analytical* model to understand under which conditions certain Governance Types can be sustained (see Noordewier et al., 1990). This leads to Table 6, which describes the PS activities under the varying degrees of internal and external integration of the five Governance Types.

Table 6: PS activities and internal and external integration of the Governance types

<b>Governance</b> <b>Variables</b>	<b>Re-active Governance (T1)</b>	<b>Chain-managed Governance (T2)</b>	<b>Project-based governance (T3)</b>	<b>Company-managed Governance (T4)</b>	<b>Strategic governance (T5)</b>
<b>PS activities: level of external / chain PS integration</b>	no chain integration: buyer orders unplanned (ad hoc) with suppliers	Logistic-oriented chain integration: buyer aligns company-internal specs (passed-on to him) with suppliers for optimal delivery	Project-based chain integration: : buyer internally and externally aligns project-based specs	No chain integration: buyer matches company-internal demand (OE or PL) with supply on the market	Continuous chain integration: buyer passes on current developments with partners into the company and vice versa
<b>PS activities: level of PS internal integration</b>	No company-internal integration: internal customer passes specs on to buyer	Indecisive company-internal integration: internal customer passes specs on to buyer	Project-based internal integration of project-based specs by the buyer	Company-internal integration by buyer of specs aimed at OE or PL company objectives	Continuous chain integration: buyer passes on current developments with internal customers to partners and vice versa

Combining the dominant variables from the conceptual model (Figure 3) with the PS activities under the Governance Types (Table 6) leads to an analytical framework (Table 7).

This framework posits that each type of PS governance is sustained under certain conditions to be able to achieve a certain PS performance. This means that we assume that governance of PS activities will perform positively if the moderating variables are aligned. The analytical framework of Table 7 hence uses the dominant variables as selected in the previous section and as shown in Figure 3.

This analytical framework can both be seen as a governance *positioning* model, and as governance *strategy* model as it gives an insight in the current PS activities of a SME (Table 6), and gives an insight in what should be adapted (Table 7) when wanting to improve performance within a Governance Type or change to another Governance Type<sup>2</sup>.

Table 7: Governance types and PS activities with the dominant variables

<b>Governance</b> <b>Variables</b>	<b>Re-active Governance (T1)</b>	<b>Chain managed Governance (T2)</b>	<b>Project- based governance (T3)</b>	<b>Company- managed Governance (T4)</b>	<b>Strategic governance (T5)</b>
<b>Business Model: value proposition</b>	Basic continuity, inconsistent and ad hoc reacting on current circumstances	Chain-based OE: cost reductions in the chain	Single improvements with chain partners in either OE, CI, or OE.	Company-based OE or PL: improvements based on company strengths	Dedicated, continuous improvement with chain partners in either OE, PL or CI.
<b>Business Model: support from PS</b>	Serves company continuity: ensures timely and correct delivery to prevent disruptions in business processes	Aligns e.g. lean management with suppliers based on internal company-specs	For the duration of the project aligns internal organisation and suppliers, with specs aligned to project objectives.	Aligns specs based on market analysis with internal customer and then puts specs on market.	Continuously aligns company-internal demands and possibilities with chain partners, with specs being aligned for company objectives.
<b>SME: characteristics : level of organic organisation</b>	Interlinked tasks and functions: on employee level; decision making low in organisation	Interlinked tasks and functions: decision-making high in organisation for external alignment	Specialist tasks and functions: joint decision-making in organisation.	Specialization or procedures give high degree of alignment: decision-making high in organisation for coordination.	Specialist tasks and functions and alignment through procedures: joint decision-making in organisation
<b>Supply chain: Customer &amp; Supplier asset specificity</b>	No specific investment in other companies	Investments in logistic alignment with suppliers.	Project-specific investments in partners	No specific investments in other companies	Upstream and downstream specific investments in partners
<b>Supply chain: Customer &amp; supplier stability</b>	Stability no issue: company acts according to circumstances	Stability based on (long term) agreements with suppliers	Stability based on agreements for duration of project	Stability organized per transaction	Long term Stability cooperation based on preferred suppliers and customers

<sup>2</sup> We do not conceive this framework as a maturity model. A priori we do not consider one Governance Type as being inherently better (in profitability for the company and chain) than the others. (See section 4.2).



Governance Variables	Re-active Governance (T1)	Chain managed Governance (T2)	Project- based governance (T3)	Company- managed Governance (T4)	Strategic governance (T5)
<b>SMO characteristics : PS orientation</b>	No PS orientation: PS is self-evident	Strong and focused external PS orientation; equal to logistic orientation	Strong PS orientation: PS acts as a bridge between project partners	Strong internal focused PS orientation: aimed at alignment and defining specs, conditions, and prices.	Strong PS orientation: is an integral part of chain strategy.
<b>Macro Environment: uncertainty</b>	General uncertainty	Uncertainty due to sub-optimal logistic chain alignment	Uncertainty due to missing opportunities with customers or with chain partners	General uncertainty: internal uncertainty due to mistakes in internal company processes	Uncertainty due to rare specialist knowledge about the development of customer demands and its impact on the chain

This section presented the conceptual model which leads to research in which the relation between PS governance and its performance within the context of SMEs is central. The analytical framework supports this research because it enables the researcher to plot the PS activities and the sustaining conditions to the governance types.

This section gives answers to:

RQ6: What *dominant moderating variables* affect PS performance for a *Governance Type*?

RQ7: What *internal and external PS activities* can be observed with *Governance Types*?

RQ8: What *internal and external PS activities* can be observed per *dominant moderating variable* with *Governance Types*?

## 6 Discussion – do the model and framework work?

This section discusses rigour, future validity and usability of the conceptual model and analytical framework and tries to clarify the framework with five simplified examples.

### 6.1 On rigour, on future validity and on usability of model and framework

*On conceptual and methodological rigour:* We have built our conceptual model and the pursuant framework step-by-step. We based both on the established Transaction Cost Theory and selected a number of moderating variables from recognised empirical research. Note that these variables need further testing and are *contingent* and *only potentially relevant* to the success of the PS activities within a specific SME.

The heart of the conceptual model consists of the Governance Types, which although derived from established literature, is novel and not yet empirically tested. Table 8 shows a brief validity test on the Governance Types following the Hunt classification (2002). The analytical framework builds on the conceptual model using the TCT as a theoretical lens to determine the most dominant variables. The PS activities described in the framework must be tested in empirical research.

Table 8: Testing the Governance Types

1	Adequately specified phenomena to be classified	Yes, see Table 1 and the five examples above.
2	Adequate specified properties for classifying	The two axes have clear bi-polar definitions.
3	Categories mutually exclusive	Yes and the ideal types in reality will appear on a continuum scale
4	Categories collectively exhaustive	Yes, although the basic-type could be superfluous
5	Is the scheme useful (purpose stated; empirical value, applicable)	Yet to be tested.

*On the future internal validity:* when interviewing SMOs we hope not to have the functionaries' bias as Paik experienced (and initially ignored; 2009, 2011) in his studies. Moreover, finding (typical) cases is time-consuming (James, 2010) and at the same time important (Swanborn, 2013, p. 71-125).

*On the future external validity:* the empirical research is context-bound and there will be limitations to generalise finding to PS activities of SMEs in general. However, the present research design helps to compare with other research for triangulation and replication purposes (Van Weele and Van Raaij, 2014, p. 21).

*On the usability:* the framework will be used in a Delphi study and in case study research within informal organisations and hence it must (a) help to develop interview questions and (b) be comprehensible to researchers, SMOs and employees. This must be tested.

## 6.2 Examples of applying the analytical framework

Five *simplified* examples from our recent Dutch research should help in understanding how the framework could be applied to actual companies.

*T1 Re-active Governance:* A family-owned SME with 50 employees in the metal industry in which sales and production work closely together. The purchasing spend is almost 50%. The company has a PS department but this department has a stand-alone position within the company. The planning of PS results in defects in on-time delivery and sub-optimal prices for the raw material delivered by major suppliers.

*T2 Chain-managed Governance:* An SME in the printing industry with 80 employees. The company has a few large (multinational) B2B customers. For one of these customers the company produces consumer product labels. The customer prescribes the lay-out of the label and also the 2<sup>nd</sup> tier suppliers where the glue and the labelling paper must be purchased. The printing company prints the quantity ordered at the lowest cost; the PS department manages logistical and operational aspects with their supplier.

*T3 Project-based Governance:* An SME in office furniture. This company explores the possibilities to construct an environmentally-friendly office chair. For this R&D, production and the environmental management department work closely together. The PS department acts as the liaison for the contact and new demands for the suppliers.

*T4 Company-managed Governance:* An SME company in construction of commercial kitchens. The sales department of the company designs kitchen lay-outs on the basis of standard elements in consultation with the customer. The overall design of the kitchen is discussed with the buyer on price and delivery. The buyer decides which supplier is selected and orders the required elements.

*T5 Strategic Governance:* A machines manufacturing SME with 100 employees has as a

business model of product leadership to satisfy customers' needs. PS plays a major role to manage the supply of strategic and valuable parts for the manufacturing of their machinery. The PS department manages delivery which enables direct assembly without inventory. PS and R&D jointly coordinate developments with suppliers.

## 7 Conclusions and further research directions

This research starts from the TCT perspective in combination with SME and PS specific literature. In doing so the literature review builds on conclusions of James et al. (2012), Morrissey & Knight (2011) and Paik et al. (2011). The conceptual model and the analytical framework presented in this paper recognise and stress the heterogeneity of PS practices within SMEs and investigate how for a specific PS governance Type several moderating variables can affect the PS performance within SMEs. This systems' approach in this paper differs from extant research on PS within SMEs. It is applied research and starts from internal and external PS practices and internal and external factors that influence the PS governance's performance.

Knowing and understanding the heterogenic internal and external PS practices can lead to a more context-bound design of PS management instruments for improving the PS activities within a Governance Type or for changing to another Governance Type, and consequently (but indirectly) for improving PS performance.

In a next phase of multiple case study research and Delphi study this analytical framework helps to:

- determine external and organisational *variables* in which PS integration occurs;
- discover *patterns* in critical PS activities in the PS integration;
- *induce* context-based management instruments to improve the governance;
- test and *validate* these management instruments in further research.

Although this paper discusses SMEs in general terms and the PS governance Types also imply this, the research will focus on a limited number of Dutch SMEs. Hence results may not be generalizable to SMEs types not investigated in adequate detail. The research will entail some methodological challenges.

In conclusion, the model and framework combine different domains of literature to enable a better understanding of the different forms that PS activities can take within a SME context. By combining the different domains we develop beneficial insights that cannot be found in the separate literature domains alone. When designing management instruments to support PS activities and thus improving PS performance, one should take into account the different possible PS governance types. Apparently in each governance type other PS activities and actors are represented, with changing forms of relations and they serve different PS objectives. The model and framework is a start to systematic research into PS activities within SMEs and for supporting SMEs in their performance.

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## Appendix A: categorization of literature

### *PS and SMEs in general*

Research focus	Key references	Findings
Relevance for research in relation between PS and PS performance	James ea. (IPSERA 2011, 2012; lit review, surveys, interviews)	SMEs poorly served by PS research.
Relevance for practice by developing insight into best Practices	Ellegaard ea. (2006, 2009; lit review, case study); Walhof ea. (2011, case studies) James ea. (IPSERA 2011, 2012; lit review, surveys, interviews)	PS often seen as not important by mgr / owner. BUT they also see potential to develop. SMEs need a set of best-Practices to increase their competitive position.
PS function of SMEs is interwoven on a functional, personal and task level	Ellegaard ea. (ibid); Pressey ea. (2009; survey); Morrissey (IPSERA 2011)	Mgr / owner perceives his company from a holistic point of view. Show different drivers.

### *Theoretical perspective*

Research focus	Key references	Findings
Identify <u>governance-relevant</u> variables in the context	Ellegaard ea. (2006, 2009; lit review, case study) Morrissey ea. (2006, IPSERA 2011; lit review; interviews)	Specific SME and external characteristics moderate its PS performance
Classification of <u>best practices</u> into governance types	Adams (2004, PhD study) Paik ea. (2009, 2011; Four surveys) James (2012)	They found several best-practices. Many variables will impact performance. SMEs could be lagging behind in maturity

### *Methodological perspective*

Research focus	Key references	Findings
<u>System approach</u> : take the SME context into account	Ellegaard ea. (2006, 2009; lit review, case study)	Specific SME characteristics have an influence
Study object are <u>PS activities</u>	Pressey ea. (2009; survey)	Low PS formality, often not strategic
Case studies to get insight in <u>relation between variables</u> : how to understand the relation.	Adams (2004) Paik ea. (2009, 2011; Four surveys)	Relation between Development & Performance. Differences SE (TCO) and ME (long-term relations).
<u>Segmentation</u> needed & relevant segmentation criteria	Morrissey ea. (2006, IPSERA 2011; lit review; interviews)	Need segmentation ( <i>suggestion: in context, sector, motive, size</i> )

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