

Value creation and supply risk reduction in purchasing: Effects of purchasing involvement and a proactive market orientation

Working paper

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Abstract

In the current study, we explain how involvement and proactivity of purchasing professionals in the sourcing process affect sourcing project outcomes, in terms of value creation and supply risk reduction. The results of this paper are obtained from quantitative research within a large, private, European financial institution. Data was collected from the company's sourcing projects database, complemented by in depth and structured interviews with key stakeholders within the organization. Our quantitative data were analyzed using PLS-SEM. Our research results demonstrate that early involvement, responsibility and proactivity of purchasing professionals in sourcing projects are important drivers of supply risk reduction and value creation outcomes. More specifically, our results indicate that proactivity mediates the effect of purchasing involvement on value creation. The present study empirically establishes the importance of purchasing professionals' role in sourcing projects to realize supply risk reduction and value creation.

Key words: purchasing involvement, proactive market orientation, sourcing project outcomes, empirical case study

Introduction

The changing role of the purchasing department within organizations, from a reactive and supportive buying function towards a strategically involved and internally integrated business function, has been widely discussed in both academic (e.g., Paulraj et al., 2006; Reck and Long, 1988; Schiele, 2007; Úbeda et al., 2015) as well as managerial Purchasing and Supply Management (PSM) literature (e.g., Hales et al., 2011; Keough, 1993). Thereby, several researchers have empirically established the impact of this transition on both purchasing as a business discipline and firm performance (e.g., Foerstl et al., 2013; Hartmann et al., 2012; Schiele, 2007). With respect to the purchasing development process, studies focus on cross-functional integration, talent management, supplier management, purchasing controlling or the purchasing process organization at the function level. Thereby, the role of the purchasing department, reflected by the level of its involvement in the company's sourcing initiatives, and hence its purchasing processes, is merely of a conceptual nature (Bals et al., 2009; Lakemond et al., 2001). Similar, the increasing importance of a proactive purchasing approach has been claimed, though not empirically established so far (Ellram and Carr, 1994; Smeltzer and Siferd, 1998). Quantitative, hypothesis testing research is still scarce in the PSM domain. With the current study, we aim to address this issue. We focus on the effects of purchasing's involvement

and proactive market orientation on sourcing project outcomes. With respect to the latter, much attention has been paid to the cost savings contribution of purchasing. For instance, Hartmann et al. (2012) empirically established a positive effect of purchasing maturity on purchasing's cost reduction performance. Schiele (2007) on the other hand, demonstrated a positive relationship between supply management maturity and an organization's cost saving performance. Other empirical studies report on the importance of a strategically involved purchasing function with respect to the firm's target costing process (Ellram, 2002) and financial success (Carr and Pearson, 2002; Foerstl et al., 2013). Because of its substantive influence on a firm's bottom line, cost savings have traditionally been considered as purchasing's primary objective. However, in light of purchasing's transmission towards a strategic function, this cost-focus approach has become too limited (Hartmann et al., 2012; Úbeda et al., 2015). The purchasing department increasingly becomes a 'supply base manager' improving quality, attracting innovation and supplier knowhow, the so-called value creation contribution of purchasing, and managing supplier performance, thereby managing supply risk (Hartmann et al., 2012; Krause et al., 2001). Despite increasing research attention, insight into the effect of purchasing's role on these dimensions of purchasing performance is limited. Therefore, we focus on supply risk reduction and value creation as dimensions of sourcing project outcomes.

The purpose of the present study is to answer the following research question: To which extent and how do purchasing involvement and proactivity contribute to sourcing project outcomes, in terms of value creation and supply risk reduction? To this end, a quantitative, research hypothesis testing study was used, as so far empirical relationships have not been established and insight into the constructs interrelationships is limited.

Research results provide practitioners with further insight into the importance of purchasing involvement and proactivity to realize sourcing project results in terms of supply risk reduction and value creation. Our study contributes to the current literature and body of knowledge on purchasing development and drivers of purchasing performance.

The remainder of the paper is structured as follows: First, we elaborate on the constructs and literature background of the study wherefrom we derive our research hypotheses (section 2). After explaining the quantitative research design and method (section 3), results of the hypothesis testing are presented (section 4). Finally, we conclude on the research findings, research and managerial implications and suggestions for further research.

Literature background and research hypotheses

Purchasing involvement relates to the purchasing department's integration within the organization (Bals et al., 2009; Ellram and Tate, 2015). It is driven by the degree of trust in and openness towards purchasing by its internal customers (Barratt, 2004; Ellegaard and Koch, 2012; Werr and Perner, 2007) whether or not influenced by previous successful experiences of purchasing involvement by the internal customer (Ellram and Tate, 2015). Although managers are often reluctant to involve purchasing professionals, several arguments are voiced to involve purchasing professionals (early) in the purchasing process. Purchasing involvement may implicate finding opportunities by monitoring the external environment, improving the quality of the purchased product/service, favorable commercial deals, coordination of supplier involvement and purchasing professionals as neutral mediators between suppliers and client managers (McGinnis and Vallopra, 1999; Werr and Perner, 2007). More general, involvement of purchasing is a critical aspect of and basis for a mature purchasing orientation (Schiele, 2007; Werr and Perner, 2007; Wolf, 2005). Nevertheless, purchasing involvement has not been a major

topic of interest in academic PSM research so far (Bals et al., 2009; Lakemond et al., 2001). In fact, academic interest for purchasing involvement in the context of product and development processes (Lakemond et al., 2001; Wynstra et al., 2000), product and operations process development/ improvement (McGinnis and Vallopra, 1999), outsourcing decisions (Laios and Moschuris, 1999), services sourcing (Ellram and Tate, 2015) and purchasing of management consulting services (Werr and Perner, 2007) seems rather limited. Recently, Bals et al. (2009) have developed a two-dimensional framework for involvement and applied it in a marketing-purchasing interface context. In the current study, we will build on this framework to operationalize purchasing involvement. More specifically, we consider both the *scope* and *degree* of purchasing involvement, operationalized by earliness of purchasing involvement and purchasing responsibility respectively. Earliness of purchasing involvement (further also called early purchasing involvement or EPI) indicates from upon which stage in the purchasing process the purchasing professional(s) is involved in the project by the internal customer function. Purchasing responsibility refers to which degree of responsibility is allocated to the purchasing professional(s) involved in the cross-functional sourcing team. This can range from absolutely no responsibility and active involvement towards being responsible for all issues whether routine or unusual situations (Pearson, 1999).

In analogy with purchasing development literature and to deepen our insight into the role that purchasing plays in sourcing project outcomes, we also consider the level of proactivity of the purchasing professional(s) involved. More specifically, we focus on the degree with which purchasing professionals attempt to proactively meet their internal customers business needs. To this end, we build on the concept 'proactive market orientation' (further PMO or proactivity), i.e. addressing the latent needs of (internal) customers, which originates from marketing literature. It refers to an anticipatory approach of driving the market by observing trends and developing innovative and creative value propositions for the customer (Berghman et al., 2006; Narver et al., 2004). In PSM literature, empirical research on proactive supply management is rather scarce (Smeltzer and Siferd, 1998). However, going beyond the traditional purchasing function by anticipating and keeping management and internal customers updated about market developments in their businesses reflects a mature and strategically oriented purchasing department (Cousins et al., 2006; Ellram and Carr, 1994; Strauss, 1962; Van Weele, 2010). Therefore we decided to include this variable in our study.

A great deal of PSM research reports on the cost reducing impact of purchasing as its primary objective (Ellram, 2002; Schiele, 2007). Viewing purchasing primarily as a means to minimize costs, nowadays, discards however a significant dimension of the purchasing department within the organization: its capacity to deliver business value (Hales et al., 2011; Wolf, 2005). In line with the purchasing development process, purchasing increasingly serves as manager of the supply base to obtain value and reduce supply risk while reducing costs (Hales et al., 2011; Úbeda et al., 2015). However, empirical research on the effects of purchasing involvement on value creation and risk reduction performance, in contrast to the cost savings dimension, is rather limited. For this reason, we consider supply risk reduction and value creation as elements of sourcing outcomes. Thereby, value creation implies quality improvement and innovation outcomes as well as relationship value (Cheung et al., 2010; Hartmann et al., 2012). Risk reduction encompasses supply risk related to the supplier relationship, i.e. operational, financial and strategic supply risk (Hoffmann et al., 2013).

The development of our research framework (see Figure 1) and hypotheses is based upon previous research (i.e. Van Poucke et al., 2014) and a thorough literature study on purchasing professionalism, purchasing and supplier (early) involvement and performance.

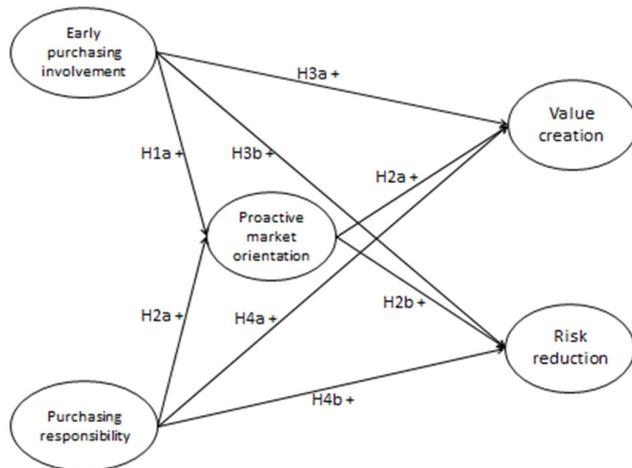


Figure 1: research model (EPI: earliness of purchasing involvement; PMO: proactive market orientation)

The effects of purchasing involvement on proactive market orientation

Involvement of purchasing with other functions characterizes a mature purchasing profile (Schiele, 2007; Werr and Perner, 2007). It corresponds with a strong internal integration, i.e. alignment and collaboration with and openness towards purchasing by internal user functions within the company (Bals et al., 2009; Cousins et al., 2006; Ellegaard and Koch, 2012; Fredendall et al., 2005). In line with marketing literature, internal integration and cross-functional information sharing stimulate the development of a market orientation (Berghman et al., 2006; Van Egeren and O’Connor, 1998). More specifically, EPI is a prerequisite for *meaningful involvement*, which refers to professional purchasing involvement while considering the effects of the various purchasing activities on the long-term needs of the organization (Schiele, 2005; Stuart, 1991). Thereby, professional involvement includes performing meetings with the internal customers to “discuss their needs, providing information not originally requested by the client department...” (Schiele, 2005, p.16). Based on the above, we argue that involving purchasing in the early stages of the purchasing process, where decisions on specifications and supplier selection still have to be made, drives the purchasing professional’s proactive market orientation (Strauss, 1962). Similar, as purchasing responsibility, and hence purchasing’s influence, is higher, purchasing professionals will face an increased incentive to deliver a high internal service performance stimulating the development of (an internal customer’s) market orientation (Fredendall et al., 2005). Thus, we state:

H1a: early purchasing involvement positively affects the purchasing professional’s proactive market orientation

H1b: purchasing responsibility positively affects the purchasing professional’s proactive market orientation

The effects of purchasing’s proactive market orientation on sourcing project outcomes

From a marketing perspective, a PMO refers to satisfying the latent needs of the customer by, for instance, investigating and anticipating the developments and trends in the customer’s business market (Narver et al., 2004). Empirical evidence shows that PMO contributes to value creation gained from supplier relationships, such as product innovation (Lukas and Ferrell, 2000; Narver et al., 2004). In PSM literature, proactive supply management is mainly associated with supply risk management (Smeltzer and Siferd, 1998; Zsidisin et al., 2004). However, in line with

marketing literature, proactive supply management is also characterized by foresight, a long-term perspective, anticipation and willingness to initiate change (Carr, 1996; Krause and Ellram, 1997; Smeltzer and Siferd, 1998). Building on both marketing and PSM literature that links proactivity with value creation, risk management and even opportunities to achieve a competitive advantage (Ellram and Carr, 1994), we state:

H2a: a proactive market orientation positively affects value creation

H2b: a proactive market orientation positively affects supply risk reduction

Direct effects of purchasing involvement on sourcing project outcomes

Based on extant literature on purchasing's contribution by its involvement, in terms of, among others, supplier involvement in new product development projects, improvement of the quality of the purchased product/service and favorable commercial deals (McGinnis and Vallopra, 1999; Schiele, 2010; Tracey, 2004; Werr and Perner, 2007), and the fact that we want to test whether mediation effects of PMO are full or partial, we also test the direct relationships between purchasing involvement and sourcing project outcomes.

H3a: EPI positively affects sourcing project outcomes in terms of value creation

H3b: EPI positively affects sourcing project outcomes in terms of risk reduction

H4a: purchasing responsibility positively affects value creation

H4b: purchasing responsibility positively affects supply risk reduction

Research methods

Research design and data collection

In order to test the hypothesized relationships, an empirical case study was executed on a large purchasing database of one large financial institution in Europe (hereafter: Alpha). Additional data was collected by means of structured interviews.

Alpha is a leader in the Dutch financial services industry. The purchasing department maintains a center-led and category driven purchasing structure. Purchasing professionals serve as 'consultants' to the business for the tactical purchasing process, i.e. from market orientation and analysis until and including aftercare. The operational buying is done by the different business functions and is supported (e.g., implementation of e-procurement systems) by a separate division of the purchasing department, which is out of scope of the current research. The different business functions – and not the purchasing department - are the actual contract owners and budget owners within the company. The organization's purchasing volume of 60% has been stable for the last few years. The annual purchasing spend exceeds two billion euros. Most of this spend is indirect spend.

Primary data was collected from the company's purchasing database (173 purchasing projects from October 2012 until June 2014) which was enriched by additional data collection. More specifically, by means of 21 structured interviews in the field with the purchasers directly involved and responsible for these projects, additional data was collected for 117 projects. The majority of the interviewees were senior purchasing managers with considerable experience both in the company (> 6 years) as well as in purchasing management (> 10 years). Each interview lasted 60 to 120 minutes, dependent on the number of projects to be discussed with the respective purchasing professional. At the start, interviewees were ensured that all information given would be treated anonymously and with full confidentiality. During the interviews, a questionnaire was

used, which was extensively pre-tested by two in-depth review rounds with seven purchasing professionals and the Chief Purchasing Officer (CPO) of the respective company.

Operationalization of the variables

Project information and data for EPI were derived from Alpha's database. For EPI, Alpha used an ordinal scale which is in analogy with empirical research on, for instance, early supplier involvement (e.g., Walter, 2003). Data for the other variables were gathered during the interviews. We conducted a literature study to specify the contents of each construct before sets of indicators were formulated. Where possible, we relied on existing and validated scales from previous research (see Appendix). We made minor modifications to the items given our research objectives and context. A seven-point Likert scale, ranging from totally disagree to totally agree (for purchasing responsibility: no responsibility – full responsibility) was used.

Due to the lack of any validated operationalization of proactivity in PSM literature and because the concept's meaning is linked to both service quality and entrepreneurial behavior, we adopted the widely agreed and validated scale of proactive marketing orientation, developed by Narver et al. (2004). To comply with existing definitions of value creation, we combined perspectives on value creation from innovation (Lepak et al., 2007) as well as (buyer-seller) relationships (Cheung et al., 2010; Ulaga, 2003). In this respect, we also looked into existing PSM scales on purchasing effectiveness/ success (Driedonks et al., 2014; Trent and Monczka, 1994). Items of existing scales were adopted to develop a new integrated scale for value creation. For supply risk reduction, Hoffmann's (2013) framework on supply risk sources was used. Due to the lack of a validated scale for risk reduction outcomes, items for the three dimensions of supply risk reduction relating to supplier relationships, i.e. strategic, financial and operational supply risk, were newly developed.

Analytical approach

In a first step, a missing data analysis was conducted. In line with Hair et al. (2010), 5 observations were deleted from further analysis. These cases missed data on more than 50% of the variables and even on one or more of the dependent variables. According to Hair et al. (2010), deleting cases with missing data on the dependent variables avoids any artificial increase in relationships with independent variables. After deleting these observations, our final purchasing projects database included 112 cases.

Next, our dataset was explored by means of an Exploratory Factor Analysis (EFA) in SPSS for each construct under consideration in order to optimize the measurement model. Insights from EFAs with Maximum Likelihood, Principal Components and Principal Axis Factoring in combination with Quartimax, Varimax and Promax rotation were compared. This resulted in the two-factor structure for the variables *value creation* (i.e. supplier relationship value and quality/innovation value) and *supply risk reduction* (i.e. long term supply continuity and operational supply risk reduction; see appendix).

In order to obtain unbiased estimates and to enable to work with latent variables and indicator variables, our research model requires a multivariate second-generation estimation technique (Hair et al., 2013). The Partial Least Squares Structural Equation Modelling (PLS-SEM) was chosen over the covariance-based SEM for the following reasons (Hair et al., 2011; Peng and Lai, 2012): First of all, PLS is appropriate to analyze hypotheses at an early stage of model development. Secondly, we deal with a relatively small sample size in a relatively complex research model with second-order constructs and a mediator. Thirdly, descriptive statistics revealed that some construct data do not meet assumptions of a normal distribution and interval-

scale. Fourthly, our research model contains a mix of single and multi-item measures. Finally, we employ *reflective* scale items in combination with two *formative* second-order constructs.

Results

Measurement model

The measurement model was tested by means of the first-order structural model. To this end, we conducted a Confirmatory Factor Analysis (CFA) in SmartPLS 3.0. We followed Hair et al's (2011) guidelines to validate our reflective measurement model (table 1): All indicators load high ($>0,707$) on their respective constructs, in accordance with the pattern revealed by the EFAs, at a $p<0,001$ significance level, providing evidence for indicator reliability. Also, the measured constructs demonstrate internal consistency reliability, as composite reliability (CR) for each construct exceeds the 0,7 threshold. In addition, Cronbach's alpha as a conservative measure of internal consistency reliability ranges between 0,813 and 0,920. To assess convergent validity, the average variance extracted (AVE) was looked into. The AVE values all exceed the threshold of 0,5. Finally, the AVE of each latent construct is higher than the construct's highest squared correlation with any other construct (also called the Fornell-Larker criterion). As, in addition, all indicator's loadings are higher than all of its cross-loadings, discriminant validity was proved. In analogy with the first order model, reliability and validity measures were good for the reflective latent variable PMO in the second-order model. For the two formative latent variables value creation and risk reduction, Variance Inflation Factors (VIFs) of below 5 were found.

Structural model

We tested our study's hypotheses by examination of the structural model with second order constructs (see figure 2) wherefore we applied the procedure outlined by Hair et al. (2011). More specifically, we used bootstrapping with 5 000 bootstrap samples and 300 cases. The structural model explains weak to moderate levels of variance of the endogenous variables as for PMO, Risk reduction and Value creation, R^2 values of respectively 0,318, 0,270 and 0,433 were found. All R^2 values, were found significant at 0,05 level. Because the lower predictive power, the Stone-Geisser's Q^2 was calculated as an additional model quality indicator. The Q^2 parameter indicates to which extent the estimated model reconstructs the empirical data and is calculated by a blindfolding process in SmartPLS. For the second order constructs model, Q^2 values greater than zero, for all endogenous constructs were found. This indicates acceptable predictive relevance for the constructs PMO, value creation and risk reduction. In addition, we assessed the variance inflation factors (further VIFs) to check for multicollinearity problems (Hair et al., 2013). As each predictor construct's VIF is well below the cut-off level of 5, we can conclude that no multicollinearity takes place.

Concerning the path coefficients, we first looked at the effects of EPI and purchasing responsibility. Hypothesis 1A stated that EPI positively affects purchasing's PMO. The results obtained support this hypothesis ($\beta=-0,307$; $p<0,01$). Mind that EPI is reversed coded, so negative effect sizes do implicate positive effects for this variable. Hypothesis 1B states that purchasing responsibility positively affects purchasing's PMO. The hypothesis is supported as a positive and significant path coefficient ($\beta=0,422$; $p<0,01$) was found. Secondly, the effects of PMO were looked into. Hypotheses 2A and 2B state that PMO positively impacts on value creation and supply risk reduction respectively. The results obtained support both hypotheses ($\beta=0,685$; $p<0,001$; $\beta=0,212$; $p<0,05$).

Thirdly, the obtained results were scanned on the direct effects of EPI and purchasing responsibility on value creation and risk reduction (i.e. hypotheses H3 and H4). The results show

two positive effects, i.e. a positive impact of EPI on supply risk reduction (hypothesis 3B; $\beta=0,245$; $p<0,01$) and a positive impact of purchasing responsibility on risk reduction (hypothesis 4B; $\beta=0,239$; $p<0,05$). Hypotheses 3A and 4A were not supported.

First order construct	Composite reliability	Cronbach's alpha	AVE	Item	Loading
Proactive market orientation	0,95	0,92	0,78	P01	0,87
				P02	0,85
				P04	0,92
				P06	0,87
				P07	0,91
Operational supply risk reduction	0,96	0,92	0,89	R07	0,90
				R08	0,94
				R09	0,98
Long term supply continuity	0,91	0,81	0,73	R02	0,79
				R03	0,89
				R04	0,80
				R05	0,93
				V01	0,83
Quality/innovation	0,94	0,85	0,75	V10	0,94
				V04	0,89
				V05	0,85
				V08	0,82
Relationship value	0,96	0,88	0,88	V06	0,86
				V07	0,99
				V09	0,96

Table 1: Measurement model descriptives (AVE: average variance extracted)

Mediation effects

We analyzed the mediating function of PMO with the non-parametric bootstrapping approach (Preacher and Hayes, 2008; Shrout and Bolger, 2002) which recently is increasingly employed in management and business research (Landau and Bock, 2013; Rungtusanatham et al., 2014).

In light of the results of the structural model test, we are interested in the mediation effect of PMO in the relationships between EPI and purchasing responsibility on the one hand and the outcome variables value creation and risk reduction on the other hand. Table 3 contains the bootstrapping results with confidence intervals.

The results show that PMO positively mediates the effects of EPI on value creation (indirect effect size: $-0,210$; $p<0,01$). In combination with the insignificant direct effect of EPI on value creation, we can conclude that indirect-only mediation, overlapping with Baron and Kenny's (1986) full mediation, occurs (Zhao et al., 2010). Concerning the mediation between EPI and risk reduction, we observe an insignificant indirect effect (effect size: $-0,065$; $p>0,1$). In combination with the significant direct effect, we conclude that PMO does not mediate the relationship between EPI and risk reduction.

With respect to the mediation effect of PMO between purchasing responsibility and the sourcing outcomes, we observe a significant indirect effect between purchasing responsibility and value creation (effect size: $0,289$; $p<0,001$) and a marginally insignificant indirect effect between

purchasing responsibility and risk reduction (effect size: 0,089; $p=0,72$). In other words, PMO mediates the effects of purchasing responsibility on value creation. In combination with the results on the direct effects, we can speak of indirect-only mediation for value creation, corresponding with Baron and Kenny's (1986) full mediation (Zhao et al., 2010).

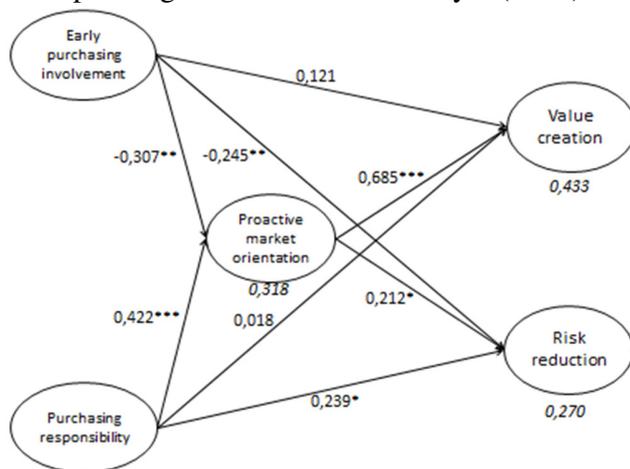


Figure 2: Results of the structural model ($p < 0,001$ ***; $p < 0,01$ **; $p < 0,05$ *; R^2 values given per construct; EPI is reversed coded)

Research findings and conclusions

Research findings and implications

The aim of the current research was to examine whether and how purchasing involvement and proactivity contribute to sourcing project outcomes, in terms of value creation and supply risk reduction. In this respect, our research findings provide the following insights: early involvement, responsibility and proactivity of purchasing professionals are important drivers of purchasing project outcomes with respect to supply risk reduction (0,27 R^2) and value creation (0,433 R^2). More specifically, both early involvement and responsibility of purchasing professionals in the sourcing project positively impact on the proactivity of the respective purchasers, which on its turn positively affects the value creation and supply risk reduction outcomes of the project. Moreover, PMO mediates the effects of the purchasing involvement variables on value creation. In addition, direct and positive effects of purchasing involvement on supply risk reduction were observed, regardless the level of proactivity.

With this study, we contribute to the current literature and body of knowledge in PSM research, which has only paid scarce (empirical) attention to the involvement and proactivity of purchasing professionals and their impact on purchasing (project) performance. More specifically, the current study contributes to PSM literature by empirically establishing construct relationships which only have been conceptually claimed so far. Evidence was found for the impact of both purchasing involvement and proactivity, which are both important elements of a mature purchasing orientation, on sourcing project outcomes. Thereby, for the latter we looked into value creation and supply reduction outcomes, in contrast to the traditional cost savings focus in literature on purchasing performance/ contribution. Hence, this study contributes to the literature on purchasing development *and* purchasing performance. Thereby, a new and comprehensive approach of purchasing involvement (i.e. purchasing's responsibility and early involvement) and purchasing performance (i.e. supply risk reduction and value creation) was

operationalized. Hypothesized relationships were tested with data at the sourcing project level, instead of the traditional operationalization at function or firm level.

The current research is also valuable from a managerial point of view. Insight is provided into the importance of both the degree and scope of purchasing involvement in sourcing projects with respect to value creation and risk reduction. In addition, the present research clearly shows that maintaining a proactive market orientation makes a difference with respect to value creation and supply risk reduction outcomes. Put differently, also insight into the drivers of value creation and supply risk reduction is gained. We hope that this research inspires purchasers to take a more engaged and strategic attitude in sourcing projects. In addition, purchasing directors can use our research conclusions to establish a dialogue with their internal customers and top management on purchasing's role, internal integration and contribution.

Research limitations and next steps

Despite its contribution for both researchers and practitioners, the present study contains some limitations from which lines for further research are derived. First of all, the current paper is work in progress and therefore limited in empirical results. In a next step, control variables, such as the purchase category and purchaser characteristics, will be added to the research model and analysis. Thereby, further interpretation of our research results is required. Secondly, our research conclusions should be viewed in light of the research context and design (described in the research methods section). For instance, in the current study, a purchasing department focus has been maintained to explain sourcing project outcomes. However, characteristics of the cross-functional team (e.g., quality and effectiveness) and individual purchasing professionals (e.g. expertise, soft skills) have not been considered to explain sourcing project results. We also did not put the project outcomes in function of the project intention. In addition, so far differentiation among project types (e.g., project size, sourcing complexity, new versus extended supplier contracts, goods versus services) or purchasing categories was not considered. Though, not every project type may require the same type of purchasing involvement (Ellram and Tate, 2015; Lakemond et al., 2001). Also, value creation intentions may differ among purchasing categories (Kraljic, 1983; Spekman and Carraway, 2006). Further research would benefit from a contingency-based approach. Furthermore, we have treated EPI and purchasing responsibility as two separate constructs since no multicollinearity was detected (VIF: 1,00). However, this does not allow us to draw conclusions on their interrelationship. For instance, we do not know, whether and how the project outcome would be affected if purchasing is involved early *and* given high responsibility. Analogous, we did not explicitly consider an interrelationship between the project outcome variables.

Appendix: measures of all variables

Items in italics not included in further analysis based on EFA and CFA results

Early purchasing involvement (Alpha company database): number of the stage within the purchasing process whereupon involved [1: market orientation; 2: specifications definition; 3: supplier selection; 4: negotiation; 5: contracting; 6: aftercare]

Purchasing responsibility: average score of purchasing responsibility, based on the responsibility levels requested for each phase wherein involved

Proactive market orientation (adapted from Narver et al. (2004))

P01 We (i.e. the purchasing professional(s) involved) helped our internal customers anticipate developments in their markets.

P02 We continuously tried to discover additional needs of our internal customers of which they are unaware.

P04 We brainstormed on how internal customers use our products and services.

P06 We worked closely with lead internal users who try to recognize customer needs months or even years before the majority of the market may recognize them.

P07 We extrapolated key trends to gain insight into what internal customers in a current market will need in the future.

P03 *We incorporated solutions to unarticulated internal customer needs in our internal service.*

P05 *We searched for opportunities in areas where internal customers have a difficult time expressing their needs.*

Value creation (based on Trent and Monczka (1994)*, Cheung et al. (2010) and (Ulaga, 2003) and case company specifications)**

In general, I believe that value was obtained for the project by...

Quality/Innovation

V01 An improved quality of the purchased item(s) (*)

V04 Access to new product/service and/or process technology before competitors have access to it (*)

V05 Early sourcing and supplier participation during product/service design (*)

V08 An improvement of existing products/services for the customers of our internal service user (**)

V10 The development of successful new products/services for the customers of our internal service user (**)

Supplier relationship value

V06 An increased use of supplier abilities (*)

V07 More efficient communication with the supplier(s) (**)

V09 A better understanding with the supplier(s) concerning/about each other's goals (**)

V02 *An improvement of supply performance (punctuality, flexibility, accuracy) of the supplier (**)*

V03 *The development of new technology by suppliers for our company (*)*

Supply risk reduction (based on Hoffmann (2011) and case company specifications)

The project result contained/is characterized by:

Long term supply continuity (strategic/ financial supply risk reduction)

R02 Anticipation/ avoidance of liquidity problems of the supplier(s)

R03 (Improved) exit arrangements with the supplier(s)

R04 A more preferred customer status with the supplier(s)

R05 A decrease of the dependence on the supplier(s)

Operational supply risk reduction

R07 More guarantee of supplier performance

R08 Substantial decrease of risk of quality problems

R09 An increase in supply reliability

R01 *A substantial guarantee of the supply continuity*

R06 *An avoidance of the dispersion of strategic knowledge/ abuse of intellectual property*

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