The dimensions of purchasing competence

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Abstract

As firms recognize the purchasing function as an important resource for obtaining high quality levels, fast deliveries and cost savings, it reveals opportunities for the purchasing management to become a key contributor. The new product development is one example where acquisition capabilities may confirm to be particularly critical. This paper presents a construct of purchasing competence using three dimensions identified from literature: purchasing interaction, purchasing importance, and purchasing task execution. We discuss the dimensions based on a critical literature review concerning the new strategic role for purchasing. The dimensions of our purchasing competence construct were validated through a sample of 164 manufacturing Portuguese firms.

Keywords: Purchasing competence, factor analysis

Introduction

Traditionally treated as a lower level operating, purchasing's role is changing due to the increasing emphasis on reduced cost and improved quality, on faster product development through cross-functional teams, and on closer buyer-supplier relationship (Pearson, 1999; Watts et al., 1995). Suppliers and supply management can play together a strategic role in achieving sustainable competitive advantage in rapidly changing markets (Carter and Narasimhan, 1996a, 1996b). An early involvement of purchasing personnel permit improved supplier input and researcher and research project time savings (Stuart, 1991). From a marketing perspective, a greater understanding of the customer's requirements would increase the efficiency and effectiveness of the new product development process.

In developing a framework for linking purchasing to organizational performance, Carter and Narasimhan (1996c) demonstrated empirically that purchasing strategy and tactics are highly correlated with business performance. Other empirical evidences of purchasing impact were found for business performance (Carr and Pearson, 2002; Carter and Narasimhan, 1996c; Carr and Smeltzer, 1999a, 1999b), supply management (Carr and Smeltzer, 1999a; Chen et al., 2004; Spekman et al., 1999), external service quality (Stanley and Wisner, 2001, 2002), customer satisfaction (Brookshaw and Terziovski, 1997; Carter and Narasimhan, 1994), and total quality management (Carter and Narasimhan, 1994).

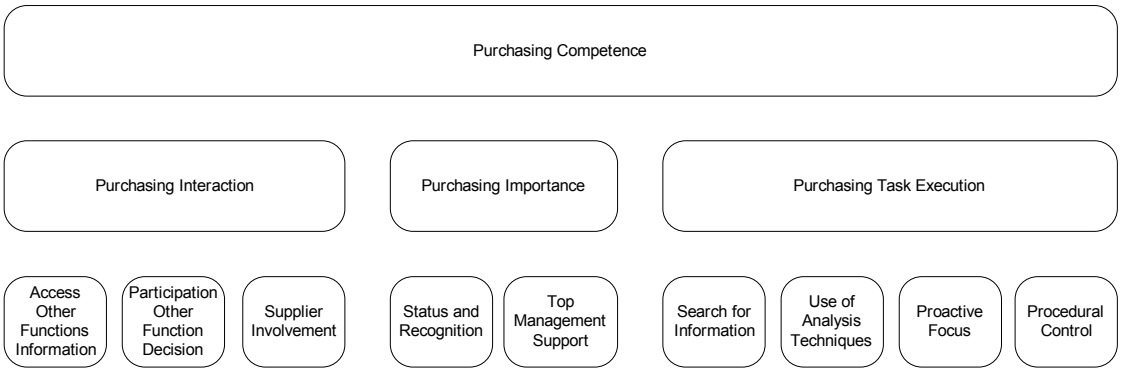
The transformation of the purchasing function to a more strategic focus assumes that effective management of purchasing decisions provides firms with competitive advantages (Narasinham et al., 2001). It requires the recognition of what are purchasing key elements and to understand which antecedents are necessary to its development. Creating a sustainable competitive advantage through purchasing and supply management depends on the development of competencies that are not easily duplicated by competitors (Carter and Narasimhan, 1996a). This is a slow and challenging process.

We are concerned with the development of the purchasing competence construct. More specifically we intend to identify its components and to empirically examine its integration. This paper is organised as follows. First, we present the definition of our construct to purchasing competence. Next, a review of strategic purchasing literature is made. This is followed by a description of methodology and empirical results which are organised in two parts: (1) scale reliability analysis and (2) factor analysis of proposed constructs. The paper concludes with a discussion of implications and future research.

The concept of purchasing competence

Purchasing competence is the latent capability to coordinate, organise, and develop the industrial buying effectively in a way that produces value to the firm. Specifically, the degree of purchasing competence of a firm is defined as the degree of purchasing interaction with other functions and key suppliers, the degree of purchasing internal importance, and the level of purchasing activity execution. The proposed measurement model is presented in *Figure 1*, which shows the relationship of the underlying dimensions to the proposed construct purchasing competence.

Figure 1 – Conceptual model: dimensions of purchasing competence



The first dimension, designated by purchasing interaction is captured in terms of purchasing access to information generated by other functions, purchasing participation in decisions made in other functions, and supplier involvement. The second dimension, named as purchasing importance is defined by the perceived status and recognition of purchasing versus other functional areas, and by perceived top management support. Finally, purchasing task execution derived directly from Bunn's (1993) work and is measured in terms of execution degree of the buying activities: search for information, use of analysis techniques, proactive focus, and procedural control.

Two former constructs of purchasing competence were identified on literature: Das and Narasimhan (2000) and Narasimhan et al. (2001). Both considered purchasing competence as a latent variable with several first-order dimensions. Despite name similarities, our construct has basically two differences from previous constructs. First, it considers as a key factor the internal environment in which the capabilities are performed. The top management support has a significant impact in the way the function is perceived, and that perception induces the purchasing involvement in strategic decisions. Second, as a decision making process, our construct also emphasizes the activities performed by purchasing to assure the "best buy". In our understanding of purchasing competence, this should be a key issue in all organizations.

Literature review

Purchasing Interaction

Under the pressure to increase competitiveness, many firms have form cross-functional teams in order to speed up the new product development or equipment acquisitions, improving quality or reducing costs. Even in key decision issues of the purchasing function was possible to identify a trend toward team responsibility (Ellram and Pearson, 1993; Pearson, 1999). Cross-functional teams also engage the purchasing function to becoming increasingly involved in areas out of it previous responsibility like new product development (Carr and Pearson, 2002); Di Benedetto et al., 2003; Mendez and Pearson, 1994). As Giunepero and Vogt (1997) said: *"the strength of cross-functional teams lies in promoting different viewpoints and participation towards a solution of common problems"* (p.10).

Empowered teams are a similar concept developed by Giunepero and Vogt (1997). Usually categorized as project/task (for example, a capital equipment evaluation team) or ongoing relationship (for example, a sourcing team), the goal of empowered teams is mutual organization and individual success.

For Ellram and Pearson (1993) team participation can contribute to a faster integration of purchasing function, and consequently to an enlargement of the visibility and opportunities of the purchasing contribute. A similar position was taken by Pearson et al. (1996) who stated that the increasing use of cross-functional teams in sourcing and related procurement will help enhance the perception of others about the function. Also Murphy and Heberling (1996) emphasized that team participation will lead to more purchasing influence in the decision-making process, and will increase perceived purchasing status from others functions and top manager. Consequentially, it is expected that being part of a cross-functional team can accomplish several opportunities for purchasing function. As Carr and Pearson (2002) stated *"as purchasing becomes involved in strategic planning activities such as product development, it is more capable of making strategic planning activities"* (p.1048).

However, is cross-functional team *per si* the only guarantee of improved performance? Trent and Monczka (1994) studied effective cross-functional sourcing teams and realized that supplier participation and involvement was one of the critical factors to success. Carter and Narasimhan (1996c) also accomplished that suppliers play a very significant role in success of firm's effort at purchasing strategy development. Additionally, Spekman et al. (1999) recognized on their research that high performing companies managed their supply base as value resource.

Thus, a cooperative relationship with suppliers through integrative strategies is another critical factor in measure of success. Empirical contributions were made by Carr and Pearson (2002); Narasimhan et al. (2001); Ragatz et al. (2002), and Stanley and Wisner (2002, 2001). Therefore, the key challenge of managing supplier involvement is to balance two types of processes: to guarantee the relevant and expected contribution of the project assignee's supplier, and to make certain future project integrations of supply base (Wynstra and Echtelt, 2001).

Considering that different contexts demand different approaches to sourcing, Spekman et al. (1999) identified four different levels of sourcing and supplier relationships ranging from the most traditional notions of purchasing management to a more comprehensive view of supplier management. Di Benedetto et al. (2003) also defined a three-stage sourcing strategy development that goes from the "traditional" (internal cross-functional teams) to the "strategic" (supplier involvement and mutual decision-making) role of purchasing in new product development.

Purchasing Importance

Literature's review also suggests that a strategic purchasing function needs to be viewed by top management as important, and to be treated as an equal to other major functions in the firm. White and Hanmer-Lloyd's data analysis (1999) found that a purchaser is likely to be significantly impaired from achieving a significant strategic role by inadequate internal status and trust, and by the supportive involvement and influence of the firm's CEO. Spekman et al. (1999) apprehended that companies with outstanding sourcing strategies appear to share two characteristics: executive level commitment to building sourcing capabilities and viewing sourcing as a cross functional capability. Carter e Narasimhan (1996c) reached as well that the attached importance of purchasing within organization was the most critical factor for performance, and consequently a high purchasing contribute requires a top management emphasis on the purchasing function. Their previous work (Carter and Narasimhan, 1994) also realized that a requisite for TQM success is top management's acceptance of purchasing's strategic role.

Therefore, purchasing importance emerges as a third factor, in addition to cross-functional teams and supplier involvement. Giunipero and Vogt (1997) realized an enhanced team participation and implementation in those organizations in which purchasing perceived top management's view of the function as strategic or profit oriented. The conceptual work of Watts et al. (1995) linking purchasing to corporate competitive strategy, also stressed that this viewpoint requires top management recognition of the purchasing critical role.

Several construct conceptualizations concerning the perceived importance of purchasing function were studied on literature: status and recognition of purchasing versus other functional areas (Pearson et al., 1996), status of the purchasing function (Carr and Smeltzer, 1997), importance of purchasing and supply management (Ellram et al., 2002; Zsidizin and Ellram, 2001).

As a consequence of this increased purchasing importance, Carter et al. (2000) alleged that: *"increasingly, time spent in purchasing/supply chain activities will be viewed as a very positive source of experience for future CEOs"* (p.18).

Purchasing Activity Execution

Within an R&D environment, Stuart (1991) realized that meaningful purchasing involvement appeared to require a proactive purchasing, i.e., a purchasing function that actively searches for information concerning future directions and expected purchases. Smeltzer et al. (2003) developed a seven-step process that integrates strategic sourcing and negotiation planning. This process indicated the appropriate activities to perform in order to lead a sourcing team to the optimum negotiation plan for a given buy. Both these examples put an emphasis on the activities that need to be performed to achieve something. Therefore, it can be stated that purchasing function needs to know "how to do" (appropriated activities) the best purchase, in order to contribute effectively to business goals.

Many studies on literature focus on the nature of the organizational buying process (see for instance Johnston and Lewin, 1996; Kauffman, 1996; Sheth, 1996). Considered one of most popular research area in the field of organizational buying behavior, the understanding of the decision-making process has implications to sellers and buyers in a business-to-business market. For buyers this understanding is important to make more efficient and effective decisions. For sellers this understanding is critical to influence the buyers' decision (Park and Bunn, 2003, p.237).

Nevertheless this vast research's interest on buying process, Kauffman (1996) found a lack on research for a more general framework with the exception of Bunn's work. Bunn (1993) developed a classification scheme of six buying decision approaches that ranged from "casual" to "strategic new task". In order to accomplish that, she considered buying activities

and situational characteristics. More recently Moon and Tikoo (2002) replied Bunn's work, and recognized the usefulness of the four Bunn's buying activities for classifying the buying decision approaches.

It is clear that many constructs used empirically in the strategic purchasing literature are related to purchase decision making and, in particular, to the more general Bunn's buying activities. A few examples are provided. The constructs of "market monitoring" (Ellram et al., 2002; Zsidisin and Ellram, 2001), "use of technology" or "information technology" (Ellram et al., 2002; Zsidisin and Ellram, 2001), and "change in supplier market" (Carr and Smeltzer, 1999a) take into account activities relating to "search for information" activities. The construct of "total cost of ownership" (Ellram et al., 2002; Zsidisin and Ellram, 2001) considers activities concerning the "use of analysis techniques". The constructs of "purchasing and supply management strategic orientation" (Ellram et al., 2002) and "strategic purchasing" (Carr and Pearson, 2002; Carr and Smeltzer, 1997, 1999a, 1999b; Zsidisin and Ellram, 2001) consider activities relating to the "proactive focus" definition.

Methodology and Results

Sample

Data to the present study was obtained through a mail questionnaire as part of a wider study of the Portuguese industry strategic behavior in a product innovation context. Sample was randomly executed by the Portuguese Statistics National Institute (INE) on its company directory and was stratified by industrial activity and dimension. From the total of 170 responses received, we excluded six responses because of excessive missing data. The 164 usable responses represent an effective response rate of 9%. The length of the questionnaire (40 questions) was the main reason presented by non-respondents to justify non-participation. Our respondents were CEO (50%) or top managers (30%), male (77%), with an average of 40 years old and 15 years of industry experience. Our sample consists mainly of small firms (49%) and medium-sized firms (37%). The participants' firms had been established for 27 years (average).

Scale reliability

Following the recommendations of Bourque and Fielder (1995), our research instrument adapted scales previously tested and validated on literature. The proposed measures were purified by assessing their reliability and unidimensionality. Item-to-total correlations and Cronbach's α were examined in each of the proposed scales and items with low correlations were deleted. Then, a factor analysis was performed on items to assess the extent to which they reflect a single dimension (critical value > 50% variance explained – Jacob (2006)). Results are presented in *Table 1*.

Purchasing access (ACCINF) was measured by nine items. Our construct was based on the scale of Pearson et al. (1996) and included a new item (quality/process control). The items capture the extent of purchasing access to information generated by other firm's functions: logistics, production, accounting/finance, engineering, product design, marketing, process design, R&D and quality/process control (α=0.92; 62% variance explained by one factor).

Purchasing participation (PARTIC) was measured by nine items and is adapted from the scale of Pearson et al. (1996). To the original eight items our construct included a new: quality/process control. This scale measure the perceived extent of interaction between purchasing and the staff of other firm's functions (α=0.92; 60% variance explained by one factor).

Table 1 – Scale Reliability

		Item-to-total Correlation	Cronbach's α	Factor Loading	Var Explained by One Factor
ACCINF	Access Other Functions Information				
	ACCESS1	0,6870	0,92292	0,7560	61,92%
	ACCESS2	0,7163		0,7807	
	ACCESS3	0,6072		0,6811	
	ACCESS4	0,7207		0,7857	
	ACCESS5	0,7587		0,8174	
	ACCESS6	0,7767		0,8310	
	ACCESS7	0,7644		0,8218	
	ACCESS8	0,7770		0,8337	
	ACCESS9	0,6940		0,7623	
PARTIC	Participation Other Function Decision				
	PART1	0,6610	0,91502	0,7353	59,58%
	PART2	0,6612		0,7318	
	PART3	0,5981		0,6748	
	PART4	0,6709		0,7433	
	PART5	0,7692		0,8301	
	PART6	0,7530		0,8159	
	PART7	0,7496		0,8130	
	PART8	0,7495		0,8141	
	PART9	0,7074		0,7747	
SUPPINV	Supplier Involvement				
	SUPP1	0,4153	0,87518	0,4980	54,25%
	SUPP2	0,5882		0,6757	
	SUPP3	0,7830		0,8587	
	SUPP4	0,7784		0,8534	
	SUPP5	0,6077		0,7113	
	SUPP6	0,6642		0,7699	
	SUPP7	0,6859		0,7893	
	SUPP8	0,5612		0,6691	
STATUS	Purchasing Status and Recognition				
	STAT1	0,5407	0,88809	0,6269	53,38%
	STAT2	0,6167		0,6999	
	STAT3	0,4808		0,5731	
	STAT4	0,6884		0,7644	
	STAT5	0,7966		0,8646	
	STAT6	0,7184		0,7991	
	STAT7	0,7508		0,8241	
	STAT8	0,5960		0,6955	
	STAT9	0,5889		0,6777	
TMSUPPORT	Top Management Support				
	TM1	0,4361	0,63792	0,7576	58,62%
	TM2	0,5398		0,8292	
	TM3	0,3835		0,7052	
SEARCH	Search for Information				
	SI2	0,3939	0,81205	0,5275	48,67%
	SI4	0,3893		0,4961	
	SI5	0,4166		0,5446	
	SI6	0,6798		0,8209	
	SI7	0,7031		0,8379	
	SI8	0,7537		0,8670	
	SI9	0,5365		0,6768	
ANALYSIS	Use Analysis Techniques				
	AT1	0,4473	0,83789	0,5925	44,14%
	AT2	0,5405		0,6761	
	AT3	0,4899		0,5972	
	AT4	0,5479		0,6568	
	AT5	0,6088		0,7138	
	AT6	0,6321		0,7379	
	AT7	0,6348		0,7452	
	AT8	0,5162		0,6076	
	AT9	0,5436		0,6312	
PROACTIVE	Proactive Focus				
	PF1	0,3684	0,73063	0,4631	36,21%
	PF2	0,3511		0,5729	
	PF3	0,4194		0,6414	
	PF4	0,4227		0,5110	
	PF5	0,5507		0,7353	
	PF6	0,3727		0,4678	
	PF7	0,5196		0,7097	
	PF8	0,4441		0,6468	
CONTROL	Procedural Control				
	PC3	0,6702	0,85404	0,7790	59,21%
	PC4	0,3447		0,4559	
	PC5	0,7052		0,8213	
	PC6	0,7542		0,8524	
	PC8	0,7064		0,8298	
	PC9	0,6875		0,8053	

Supplier involvement (SUPPINV) was based on the scale of Ellram et al. (2002) and measures the extent of integration between purchasing and the firm's key suppliers in relation to source of new ideas and technology, cooperation, and share of information (α=0.86; 54% variance explained by one factor).

Purchasing status and recognition (STATUS) was adapted from the scale of Pearson et al. (1996) and include three new items (product design, process design, and quality/process control). This scale measures the perceived status and recognition of purchasing versus other firm's functions (α=0.89; 53% variance explained by one factor).

Top management support (TMSUPPORT). This scale was adapted from the scales of Zsidizin e Ellram (2001) and Ellram et al. (2002). It measures the respondent's agreement level with each statement related to the importance of purchasing function and the existence of top management support (α=0.64; 59% variance explained by one factor).

Search for information (SEARCH) was adapted from Bunn's (1993) study and retained nine of the ten initial items. This scale measures the extent of use for each source of information concerning a firm's key buying decision identified by the respondent (α=0.82; 49% variance explained by one factor). Faced with the slightly – but not alarming – low percentage of variance explained, we analyzed the factor loading of items and concluded that they were acceptable (superior to 0.50).

Use of analysis techniques (ANALYSIS) was adapted from the scale of Bunn (1993) (α=0.84; 44% var. explained by one factor). We analyzed the factor loading of the items and concluded that they were all acceptable. This scale measures the extent of use for each purchasing analysis technique in the key buying decision process identified by the respondent.

Proactive focus (PROACTIVE) was adapted from Bunn (1993) and retained eight of the nine items used (α=0.73; 36% variance explained by one factor). We identified two items with factor loadings slightly inferior to 0.50 and concluded that they were acceptable. This scale measures the respondent's agreement level with each statement related to the buying planning, objectives, and budgets, among others during the decision process.

Procedural control (CONTROL) retained six of the ten original items of Bunn's (1993) scale. This scale measures the respondent's agreement level with each statement related to purchasing procedures and control during the buying decision process (α=0.85; 59% variance explained by one factor).

Constructs dimensions: factor analysis

Due to conceptual relevance, we decided to retain all indicators. Final scales (indicators) were computed as the mean of the retained items from the scales' reliability analysis. To isolate the fundamental dimensions of an integrated solution, we then carried out a factor analysis to all the proposed indicators. The principal component analysis with *varimax* orthogonal rotation produced a three-factor solution represented in *Table 2*. For ease of interpretation, we decided to delete factor loadings lower than 0.45.

Table 2 – Dimensions of the proposed construct

			Factor loadings [a]		
			Factor 1	**Factor 2**	**Factor 3**
1	ACCINF	Access Other Functions Information	0,8815		
2	PARTIC	Participation Other Function Decision	0,8724		
3	SUPPINV	Supplier Involvement	0,5048		
4	STATUS	Purchasing Status and Recognition		0,8032	
5	TMSUPPORT	Top Management Support		0,6863	
6	SEARCH	Search for Information	0,7469		
7	ANALYSIS	Use Analysis Techniques	0,6558		
8	PROACTIVE	Proactive Focus		0,4646	0,4986
9	CONTROL	Procedural Control			0,8860
		Eigenvalues	3,65640	1,19689	0,98384
		Total variance explained (%)	40,63	13,30	10,93
		Cumulative variance explained (%)	40,63	53,93	64,86

[a] Principal Component Analysis with Varimax (Kaiser Normalization): rotation converged in 5 iterations.

First factor is composed with variables that reflect the purchasing internal and external integration (indicators ACCINF, PARTIC and SUPPINV) and the purchasing task execution concerning information sources and analysis techniques (indicators SEARCH and ANALYSIS). Second factor illustrates what we perceive as purchasing importance - the status and recognition of the function and the top management support (indicators STATUS and TMSUPPORT) and the purchasing task execution concerning proactive focus of the buying decision (indicator PROACTIVE). Finally, third factor is composed by two variables indicating the purchasing proactive focus and the procedure control of the decision process (indicators PROACTIVE and CONTROL). The proposed relationships should be considered as exploratory, needing further empirical confirmation.

Conclusions and management implications

This paper develops the purchasing competence construct and identifies its dimensions. In order to accomplish that, it provides a summary of the current debate and research on strategic purchasing and the relationship to performance, and empirically studies our construct dimension. Results support our perspective of three dimensions and highlight the importance of the construct. Our purchasing competence construct considers three dimensions: (1) purchasing interaction with others functional areas and key suppliers, (2) purchasing importance concerning the internal status, recognition and top management support, and (3) purchasing task execution concerning the purchasing activities of search of information, analysis techniques, proactive focus and procedural control.

The knowledge of the purchasing competence dimensions could help managers in two ways: (a) they can use it as a diagnosis tool of their strategic purchasing level (strategic or not), and (b) they can use the underlying variables as key factors to improve their purchasing alignment with business goals and plans. There are clear benefits associated with elevating the purchasing function to a strategic function, for example at the level of new product and service development, cost reduction, and key suppliers strategic alliances.

As future work, we intend to study the impact of purchasing competence on organization success, integrating it in a more comprehensive model that acknowledges a network environment – business partners.

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