

# HOW TO MEASURE COMPETITION? THE ROLE OF PRICE DISPERSION IN B2B SUPPLY MARKETS

*Paul Scheffler<sup>1</sup>; Holger Schiele<sup>2</sup>; Philipp Horn<sup>3</sup>*

## ABSTRACT

Prior research in the field of purchasing points out that an assessment of sourcing strategies is a complex task. Accordingly, it is proposed to expand the purely cost-saving oriented assessment of sourcing activities. Particularly, it is recommended to monitor the intensity of competition in the supply market as an indicator for sourcing success. However, buying organizations struggle to measure competition in their supply markets. In this context, in homogenous product markets, it can be observed that the offered prices for an item vary considerably. A review of economic literature on price dispersion indicates that offered prices could reflect competitive pressures in B2C markets. As a consequence, in this paper, it is argued that also in B2B environments, price dispersion could be applied as a measure for competitive pressures. Thus, this conceptual research paper aims at clarifying the role of price dispersion in B2B supply markets. Based on the reviewed literature, and in combination with the theory of competitive dynamics, five practical recommendations for industrial purchasing are developed.

**Keywords: Competition; Price Dispersion; Competitive Dynamics**

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<sup>1</sup> University of Twente; School of Management and Governance; PO Box 217; NL-7500 AE Enschede, The Netherlands.

<sup>2</sup> University of Twente; School of Management and Governance; PO Box 217; NL-7500 AE Enschede, The Netherlands.

<sup>3</sup> University of Twente; School of Management and Governance; PO Box 217; NL-7500 AE Enschede, The Netherlands.

## **AMBIGUOUS RESULTS IN THE ASSESSMENT OF SOURCING SUCCESS IMPLY THE NEED TO INTRODUCE NEW INDICATORS**

Since Kraljic (1983), researchers as well as practitioners have acknowledged that purchasing is a strategic function that can significantly and directly contribute to corporate performance. Given the fact that most organizations in business-to-business (B2B) environments appear as customers as well as vendors in certain markets, savings generated through purchasing activities considerably affect the profitability of enterprises (Monczka et al., 2008). As a consequence, in recent years, the pressure on purchasing departments and purchasing staff respectively, has increased dramatically (Haynes and Helms, 1991; Wagner, 1993; Wood, 1995).

Being aware of the eminent role of procurement for business success, recent research has put remarkable efforts in the identification of effective purchasing levers and strategies (Carter and Narasimhan, 1996; Doha et al., 2013; Schiele et al., 2011; Steinle and Schiele, 2008). As procurement activities become more focused and efficient, also on the supplier side important developments can be observed. Particularly the trend towards supplier consolidation is broadly discussed in supply chain management (Abe and Ye, 2013; MacNeill and Chanaron, 2005). Whereas some scholars view supplier consolidation as a threat (Hüttinger et al., 2012; Schiele et al., 2012), some researchers even argue in favor of downsizing a company's supplier base, in order to reduce the efforts of supplier management (Dubois et al., 2003; Krause, 1997; Ulaga and Eggert, 2006).

As a consequence, it might be appropriate to distinguish between innovation-oriented and cost-oriented strategies (Theodosiou et al., 2012). In this context, it is argued that for some projects close relationships with suppliers are required, whereas in other situations a more transactional perspective might be sufficient (Parker and Hartley, 1997). Focusing on procurement activities, Schiele et al. (2011) propose to classify purchasing levers depending upon whether they rather support innovation-oriented or cost-oriented strategies. Accordingly, in the group of cost-oriented levers, we find international sourcing, price evaluation, and pooling of demand (Schiele et al., 2011). In recent years, these practices have been intensively discussed in the literature, resulting in ambiguous estimations on saving-potentials.

As indicated by Scheffler et al. (2014) the unclear picture of certain sourcing activities might be attributed to some extent to the missing distinction between direct and indirect sourcing effects. So far, literature has almost exclusively focused on cost-saving potentials in order to assess purchasing practices. Scheffler et al. (2014) however, point into the direction that also the creation of increased competition in the supply base could be interpreted as an indirect outcome of sourcing activities.

Prior research from the field of economics has shown that a large number of sellers (density) can lead to lower price levels as well as intensive competition, which is accompanied with a relatively small amount of price dispersion (see e.g. Clay et al., 2001; Gerardi and Shapiro, 2009; Hayes and Ross, 1998; Lewis, 2008; Sorensen, 2000). As a consequence, the idea emerges that price dispersion, could be used as a measure to assess the competitiveness of a firm's supply base. Thus, this conceptual paper aims at clarifying whether an evaluation of price dispersion could be an appropriate means to monitor competition in B2B supply markets and by doing so, to assess the effectiveness of purchasing activities. This is supported through the application of competitive dynamics as a theoretic framework. The underlying rationale of competitive dynamics literature is to examine how a company's competitive actions and reactions influence the corporate success (Chen and Miller, 2012; Ketchen et al., 2004). Consequently, the purpose of this paper is to combine insights gained

in economic research with the theory of competitive dynamics in order to develop five recommendations for successful cost-oriented supply management.

Recently, a growing number of scholars deplore the decline of conceptual articles in scientific journals (Geuens, 2011; Watts, 2011; Xie, 2012; Yadav, 2010). The main argument is that conceptual papers are essential for the vitality of scientific disciplines, since they provide and combine new ideas, and thus, extend the boundaries of research fields (MacInnis, 2011; Stewart and Zinkhan, 2006; Yadav, 2010). In this context, MacInnis (2011) identifies four major contributions of conceptual papers, namely: envisioning new ideas, relating ideas, explicating ideas, or debating ideas. The intention to apply insights from economic research in the field of purchasing seems to fit to this description. As a consequence, for the present research setting, the form of a conceptual paper is chosen.

The remainder of the paper is structured as follows: In the subsequent section, an overview of relevant economic literature is presented. Then, the characteristics of purchasing in B2B environments are discussed. As a next step, price dispersion in industrial purchasing is discussed, followed by elaborations on measures of price dispersion. The next section is an introduction into competitive dynamics literature. Then, five recommendations for successful purchasing are derived. Subsequently, the impact of the present paper as well as its limitations are discussed. Finally, we end with some concluding remarks and avenues for future research.

### **HOMOGENOUS PRODUCT PRICE DISPERSION IN COMPETITIVE ENVIRONMENTS AS CONSEQUENCE OF DIFFERENT INFORMATION LEVELS, FIRM HETEROGENEITY, AND COLLUSION**

During the last century, many scholars have analyzed consumer and producer behavior from an economic perspective (e.g. Belk et al., 1989; Jacobsen, 2013; Rosen, 1974; Von Hippel et al., 2012). A core element of these studies is research on price setting and competition (Kreps and Scheinkman, 1983; Tremblay et al., 2013). Looking beyond the boundaries of economic literature, it becomes apparent that particularly for the field of purchasing these topics are of interest as well (Hahn et al., 1986; Parker and Hartley, 1997). Thus, for the present paper, we review economic literature on competitive behavior under a procurement perspective.

In general, economic literature suggests a distinction between two types of competition, namely “Cournot” and “Bertrand” competition (see e.g. Kreps and Scheinkman, 1983; Qiu, 1997; Singh and Vives, 1984). Companies engaging in Cournot competition compete on output levels, whereas under Bertrand competition firms compete on price levels (Bonanno and Haworth, 1998). Put in another way, under Cournot competition, sellers limit their production to achieve a high price, whereas under Bertrand competition many suppliers compete to offer the lowest price. In an industrial procurement context, where in the majority of cases the buying company specifies the demand (producer output), it is reasonable to argue that there is an increased likelihood of price competition (Bertrand) between suppliers (Jin and Ryan, 2012).

Further, most researchers share the opinion that increased competition leads to lower price levels (Bonanno and Haworth, 1998; Chen and Zhang, 2011; Clay et al., 2001; Morgan et al., 2006). Hence, the idea emerges that buying organizations could strive to induce competition within their supply base in order to reduce price levels (Gerardi and Shapiro, 2009). This in turn leads to two essential questions: How can the intensity of competition between producers be evaluated? And, given the fact that organizations struggle to assess the effectiveness of their savings calculations, could the intensity of competition be a new sourcing performance indicator?

In the reviewed literature, it is indicated that there could be a relationship between the distribution of prices and the intensity of competition between sellers (Barron et al., 2004; Clay et al., 2001; Lewis, 2008; Pereira, 2005; Tang et al., 2010). The distribution of prices is often referred to as price dispersion which is described as the phenomenon of “(...) *firms in the same market selling identical goods for different prices (at the same time)*” (Lewis, 2008, p. 654). According to the law of one price, for identical, so called “homogenous”, products there should not be any price dispersion under perfect competition (Ancarani and Shankar, 2004; Azar, 2013). However, already Varian (1980, p. 651) highlights that “(...) *‘the law of one price’ is no law at all*”. As a result, a vast amount of research was conducted in order to clarify why price dispersion for homogenous products is persistent and how it relates to competition (Azar, 2013; Barron et al., 2004; Baye et al., 2004a; Lewis, 2008; Pereira, 2005). The results of these studies are partially ambiguous (Pan et al., 2004). While the majority of scholars report that increased competition leads to lower price dispersion for homogenous goods (e.g. Barron et al., 2004; Chevalier and Goolsbee, 2003; Clay et al., 2001; Gerardi and Shapiro, 2009; Lewis, 2008; Pereira, 2005), there are also researchers claiming the opposite (Borenstein and Rose, 1994; Chandra and Tappata, 2011).

In spite of partially contradicting findings, the majority of papers analyzed, support the idea that “(...) *as more competitors enter a market, incumbent firms will find it more difficult to maintain markups over marginal cost*” (Gerardi and Shapiro, 2009, p. 2). Thus, the more quotations are available, the more will the offered prices converge towards the perfect competition price (Chen and Zhang, 2011; Clay et al., 2001; Gerardi and Shapiro, 2009; Pereira, 2005). In this context, the perfect competition price is that one that equals the marginal cost of production (Basu and Fernald, 1997; Brander and Spencer, 1981). Hence, in highly competitive markets, different sellers are expected to ask the same price for a certain product (Baffes, 1991). In contrast to the predictions of the law of one price, all of the reviewed studies find evidence for the existence of price dispersion for homogenous goods (e.g. Chen and Miller, 2011; Chevalier and Goolsbee, 2003; Ghose and Yao, 2011; Pan et al., 2004).

In the reviewed literature, various potential reasons for homogeneous product price dispersion are proposed. First, it is indicated that consumers need information on the offerings available in the market (Barron et al., 2004; Liu et al., 2012). To gather this information, customers must engage in search activities, which produce costs (Baye et al., 2004b; Bayer et al., 2013; Chandra and Tappata, 2011). Some customers are not willing or able to bear the incorporated search costs (Chandra and Tappata, 2011; Sorensen, 2000), ultimately leading to a market which includes well informed and less informed customers (Chen and Zhang, 2011; Morgan et al., 2006). Due to the heterogeneity of the customers’ information levels, sellers are not necessarily forced to engage in price competition (Bonanno and Haworth, 1998; Chellappa et al., 2011). In contrast, sellers might accept to lose some share among the well informed customers, if they assume that the increased profits generated to sales to less informed or bounded rational customers will outweigh these losses (Baye et al., 2004a; Chen and Zhang, 2011). Generally, this is a form of price discrimination and an important reason why price dispersion is also persistent for homogenous goods (Borenstein and Rose, 1994; Chellappa et al., 2011; Gerardi and Shapiro, 2009; Hayes and Ross, 1998).

Another eminent source of price dispersion is firm heterogeneity (Arnold and Saliba, 2011; Bayer et al., 2013), incorporating different cost structures of the producers (Borenstein and Rose, 1994). Economists suggest that the perfect competition price equals the marginal production cost of the supplier. Accordingly, if the marginal costs of sellers within the same market vary, it is argued that there will be price dispersion (Borenstein and Rose, 1994; Chen and Zhang, 2011; Ghose and Yao, 2011). Additionally, suppliers usually add a markup to

their marginal costs, which further causes variations in the prices offered (Borenstein and Rose, 1994; Goldberg and Verboven, 2001).

Finally, collusion might be a reason for price dispersion. Collusion describes collaborative behavior of a group of competitors that either explicitly or implicitly aims at limiting the competition between each other (Porter and Zona, 1992; Potter, 1998; Stigler, 1961). It seems to be reasonable to assume that suppliers strive to avoid price competition, in order to secure their markups (Fornell and Robinson, 1983; Hess and Gerstner, 1991; Hopp and Xu, 2008; Slade, 1990). One of the most well-known forms of collusive behavior is the formation of a cartel, in which the participants secretly agree on prices or market shares (Stigler, 1961). As a consequence, some scholars attribute persisting price dispersion for homogenous goods to collusive behavior of the suppliers involved (Blanckenburg et al., 2012; Harrington, 2005; Slade, 1990). In this context, it has been shown that repeated interaction of sellers could limit competition (Bayer et al., 2013).

In summary, it is highlighted that price dispersion is closely related to the intensity of competition in supply markets. Particularly for Bertrand competition, theory predicts that there should be no price dispersion. However, empirical studies find evidence that homogenous product price dispersion exists and is persistent. The most prominent reasons for price dispersion are different levels of information among customers, differences in the cost structure of sellers, as well as collusion.

## **CHARACTERISTICS OF INDUSTRIAL PURCHASING**

As demonstrated in the previous section, there is a considerable number of publications in economic literature, investigating the phenomenon of price dispersion. A major limitation of the reviewed literature is the almost exclusive analysis of Business-to-Consumer relationships (Webster Jr and Wind, 1972). Thus, in this section, the essential differences between B2C and B2B purchasing are highlighted.

Whereas in B2C markets, consumers buy products for their own use, in B2B markets, the customers are organizations rather than individuals (Tanner et al., 2010). As a consequence, *“industrial buying takes place in the context of a formal organization influenced by budget, cost, and profit considerations”*(Webster Jr and Wind, 1972, p. 12). Hence, it is not surprising that B2B purchasing is usually considered to be more complex (Hutton, 1997; Murtaza et al., 2004; Talluri, 2002). Most large companies execute their purchasing activities by applying a structured purchasing process, involving multiple professional buyers (Arantola, 2002; Bendixen et al., 2004; Min et al., 1994; Woodside and Wilson, 2000). These purchasing agents are assumed to act primarily rational by systematically making their decisions on the basis of defined criteria (Anderson et al., 1999; Hakansson, 1982; Stock, 2005).

Moreover, in many industrial organizations, not only “the buyer” is involved in the decision making process, but a cross-functional group of people representing different roles (Emiliani, 2006; Töllner et al., 2011; Webster Jr and Wind, 1972). The group of individuals involved in the organizational procurement process is usually referred to as buying center, incorporating the roles of user, influencer, decider, buyer and gatekeeper (Töllner et al., 2011; Webster Jr and Wind, 1972). Consequently, additional complexity stems from the need to identify transparent criteria that are comprehensible to all of these roles.

As mentioned in the introduction, it can generally be distinguished between innovation- and cost-oriented purchasing strategies. Following a cost-oriented approach, most organizations prefer to base their sourcing decisions on the price of an item, making price the main vendor selection criterion (De Toni, 1999; Emiliani, 2006). Accordingly, suppliers and offerings are carefully selected (Min et al., 1994) because buyers must justify the prices they pay

(Arantola, 2002). Usually, professional buyers aim at achieving cost reductions, which means “(...) *paying less for the same quantity and quality purchasing requirements in the current year compared to the previous year (...)*” (Woodside and Wilson, 2000, p. 359). To achieve price reductions, buyers strive to interact with multiple suppliers, to create potential sourcing alternatives and to promote competition (De Toni, 1999). This reveals another essential difference between B2B and B2C markets.

Whereas in many B2C markets there is a large number of potential customers, B2B environments are often characterized by a small number of customers purchasing large volumes (Monczka et al., 2008; Webster Jr and Wind, 1972). This is particularly true for routine as well as leverage products (Kraljic, 1983). Hence suppliers find themselves under pressure, since it would be a considerable loss if a business relationship with one of these large customers would end (Cooper and Gardner, 1993). Industrial purchasing organizations, are aware of this pressure on suppliers and take this as a point of departure for intensive and time consuming negotiation processes (Emiliani, 2000; Giunipero et al., 2005; McCarthy-Byrne and Mentzer, 2011). For items with a relatively low complexity and many available suppliers, most of these negotiations focus on cost reductions (Ancarani, 2002; Bharadwaj and Matsuno, 2006; Khan and Burnes, 2007).

The fact that buying organizations (at least for productive materials) provide detailed specifications, additionally improves their bargaining position (Lilien and Wong, 1984; Schoenherr and Mabert, 2008). As a result of detailed specifications, industrial customers are able to compare the quotations they receive. By doing so, buying organizations can create an artificial supply market for homogenous product offerings, limiting the suppliers opportunities for product differentiation and conjoint price premiums (Chioveanu and Zhou, 2013; Desai et al., 2001).

A precondition to compare offers is that organizations gather information. In contrast to B2C markets, where the literature distinguishes between informed and uninformed customers (Baylis and Perloff, 2002; Chen and Zhang, 2011; Salop and Stiglitz, 1977), it is reasonable to assume that B2B customers are well informed (Emiliani, 2006; West and Paliwoda, 1996). In order to get the information that is required to assess the supply market conditions, industrial organizations are rather willing to bear the incorporated search costs (Johnson et al., 2002). This is also reflected in the growing number of international purchasing offices, searching for competitive suppliers in low-cost countries (Jia et al., 2013; Nassimbeni and Sartor, 2006; Sartor et al., 2014). Examples for additional sources of information costs could be the preparation of requests for quotations (RFQs), legal considerations, negotiation processes, and supplier ratings. However, the investments in the accumulation of relevant information are an acceptable burden, as they might protect the purchasing organization against price discrimination (Chandra and Tappata, 2011; Chellappa et al., 2011; Chen and Zhang, 2011).

Taking all things into consideration, in this section it is argued that industrial buying is essentially different from purchasing in B2C markets. Accordingly, the most striking characteristics of procurement activities in B2B environments are: the involvement of professional and rational buyers, complex decision-making processes, the possibility to negotiate, and the willingness to bear search costs. These specific characteristics should be considered, when preparing practical recommendations for purchasing agents.

### **PRICE DISPERSION AS A MEASURE FOR COMPETITION IN INDUSTRIAL PURCHASING DUE TO WELL INFORMED CUSTOMERS, HOMOGENOUS PRODUCTS, AND THE ABILITY TO BEAR SEARCH COSTS**

It has been highlighted that the nature of purchasing in B2B environments differs essentially from B2C markets. Consequently, this section aims at framing the literature on price dispersion for the application in a B2B context.

Currently, in industrial purchasing, buying organizations struggle to assess the intensity of competition in their supply markets (Boone, 2008; Boone et al., 2007; Raider, 1998; Yeyati and Micco, 2007). Recently, different approaches have been discussed, such as the determination of cost-profit margins (Boone, 2008; Boone et al., 2007) or the R&D intensity (Raider, 1998). Nevertheless, from a practitioner's perspective, these measures have serious limitations. The data that is required to calculate the aforementioned indicators is rather hard to get, since suppliers are likely to decline their disclosure (Kajüter and Kulmala, 2005).

In contrast, most buying organizations dispose of a large amount of price data, as they usually intensively screen the market and send out requests for quotations (Colton, 1962; Johnston and Bonama, 1981). Thus, the available price information could be used to calculate the price dispersion, and by doing so, to draw inferences on the intensity of competition in the supply base (Barron et al., 2004; Clay et al., 2001; Gerardi and Shapiro, 2009; Lewis, 2008). The underlying rationale is that higher levels of competition are found to be associated with lower price levels (Clay et al., 2001), ultimately leading to an improved purchasing performance.

Previously, it has been shown that from a theoretical perspective, the price dispersion for homogenous products should be rather low, if the intensity of price competition is high. For B2C environments, this hypothesis has been tested and confirmed empirically in various studies (Barron et al., 2004; Clay et al., 2001; Gerardi and Shapiro, 2009; Lewis, 2008). Surprisingly, we were not able to find a study investigating price dispersion in an industrial buying context. After reviewing the respective literature on price dispersion, it could be argued that within B2B contexts price dispersion is likely to be even stronger associated with the intensity of competition.

A precondition for this argumentation is that industrial buying activities aim at homogenous products. Without homogeneity of the requested products, there would be the opportunity for suppliers to differentiate their products and to use unique features as justification for price dispersion (Chandra and Tappata, 2011; Clemons et al., 2002; Pan et al., 2002). Yet, many buying organizations (e.g. automotive OEMs) provide very detailed specifications in their requests for quotations, impeding the possibilities of product differentiation (Chioveanu and Zhou, 2013; Lilien and Wong, 1984; Schoenherr and Mabert, 2008). As a result, the obtained offerings are homogenous and comparable, under the assumption that the respective suppliers fulfill certain hygienic requirements (e.g. quality management).

Literature further points into the direction that a certain amount of price variance stems from the simultaneous presence of well informed and less informed customers (Chen and Zhang, 2011; Morgan et al., 2006). For B2C markets this assumption seems to be reasonable but in B2B markets it can be expected that the customers possess high levels of information (Eggert and Helm, 2003). Many industrial organizations have complex purchasing decision making processes in place, involving multiple roles and professional buyers (Arantola, 2002; Bendixen et al., 2004; Emiliani, 2006; Min et al., 1994; Woodside and Wilson, 2000). Additionally, organizational customers are often considered as being rational in their decisions, which requires a sound set of relevant information (Anderson et al., 1999; Stock, 2005). In this context, buying organizations are willing and possess the resources to cover the incorporated search costs (Johnson et al., 2002). Consequently, in B2B markets, the likelihood of price discrimination is expected to be lower than in the B2C segment.

Another source of price dispersion is grounded in different cost structures of the sellers (Arnold and Saliba, 2011; Bayer et al., 2013). Also in B2B environments, the production costs vary across the suppliers, potentially causing price dispersion. Nevertheless, the factor costs such as labor and capital are assumed to be comparable in industrialized countries

(Kaufmann and Körte, 2010; Kogut, 1985), somewhat limiting the influence of this cause of price dispersion.

Finally, literature suggests that price dispersion can partially be attributed to collusive behavior. It cannot be denied that also in an industrial context competitors wish to collude, in order to maximize their joint profits (Stigler, 1964). Still, the fact that there might be collusive behavior in supply markets does not contradict an assessment of the competitive intensity in certain markets. On the contrary, an increasing number of researchers analyze price dispersion to detect collusion (Abrantes-Metz et al., 2006; Blanckenburg et al., 2012; Bolotova et al., 2008).

Taking these points into consideration, it is argued that intensive competition can reduce price dispersion, particularly in B2B environments. Put in another way, the prices offered by the suppliers are likely to converge towards to the perfect equilibrium price. This argumentation is specifically grounded in the assumption that the requested products and suppliers exhibit relatively homogenous characteristics; companies are willing to pay search costs; and the customers are well-informed (Brynjolfsson and Smith, 2000; Ghose and Yao, 2011; Salop and Stiglitz, 1977; Varian, 1980).

### **RECOMMENDED MEASUREMENT OF PRICE DISPERSION IN B2B ENVIRONMENTS: THE PRICE RANGE BETWEEN THE TRANSACTION PRICE AND THE NEAREST POSTED PRICE**

So far, it has been argued that the intensity of competition in supply markets could be assessed through an evaluation of price dispersion. In this regard, it is expected that the smaller the price dispersion, the stronger will be the competitive pressure between suppliers. Consequently, in this section, it is discussed how price dispersion in an industrial purchasing context could be calculated appropriately.

In the reviewed literature, scholars apply a large set of methods in order to determine the extent of price dispersion (Chellappa et al., 2011). Many of them calculated the GINI<sup>4</sup> coefficient for an assessment (Borenstein and Rose, 1994; Gerardi and Shapiro, 2009). Additionally, it is highlighted that also a measurement of dispersion by the coefficient of variation (standard deviation of prices paid divided by the mean price) can deliver very similar results (Baye and Morgan, 2004; Borenstein and Rose, 1994; Chellappa et al., 2011; Clay et al., 2001; Ghose and Yao, 2011; Sorensen, 2000). An advantage of using the coefficient of variation is that the dispersion for products selling at different price levels can be compared (Baye and Morgan, 2004; Chellappa et al., 2011). There are also studies that calculated the variance or standard deviation of prices (see e.g. Dahlby and West, 1986; Pereira, 2005; Pratt et al., 1979). However, it is acknowledged that the variance is indeed a prevailing but a poor measure of dispersion (Pereira, 2005; Rothschild and Stiglitz, 1970). Some scholars even calculate the ratio of the highest prices to the lowest prices (Borenstein and Rose, 1994; Pratt et al., 1979) or the difference between the highest and the lowest price (Baye and Morgan, 2004; Brynjolfsson and Smith, 2000; Chellappa et al., 2011; Clay et al., 2001; Sorensen, 2000). Similarly, also the percentage price difference (highest price - lowest price, divided by the mean price) could indicate price dispersion (Ghose and Yao, 2011). Though, the disadvantage of this kind of measure is the high sensitivity in the case of extreme values.

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<sup>4</sup> For a detailed explanation see Borenstein, S., Rose, N., 1994. Competition and price dispersion in the U.S. airline industry. *Journal of Political Economy* 102, 653-683.



Additionally, it should be noticed that not only the calculations differ, but also the unit of analysis. When investigating price dispersion, it can be distinguished between listed prices and transaction prices. Listed prices represent the overall amount of prices for a homogenous product that are available (or at least visible) for the customer. In contrast, transaction prices are those that are actually chosen and paid by the customer (Borenstein and Rose, 1994; Ghose and Yao, 2011). A large share of studies focuses on price dispersion among listed prices (Baylis and Perloff, 2002; Pan et al., 2004). Specifically, many research settings review prices that are posted on shopping websites, where offerings from different sellers can be compared (Ancarani and Shankar, 2004; Baye and Morgan, 2004; Baye et al., 2004a; Chellappa et al., 2011). Yet, there are also papers that examine transaction prices, such as prices paid for airline tickets or transaction prices from electronic markets (Azar, 2013; Borenstein and Rose, 1994; Cornia et al., 2012; Ghose and Yao, 2011).

Surprisingly, the vast amount of papers does implicitly not distinguish between listed prices and transaction prices. In the reviewed literature, some studies (e.g. Baye et al., 2004a, 2006; Brynjolfsson and Smith, 2000; Clemons et al., 2002; Venkatesan et al., 2007) reveal that the predominant reliance on posted prices might be a limitation. Though, it is primarily the paper published by Ghose and Yao (2011) that raises the idea that the type of price analyzed makes an eminent difference. In their research they point out that the range of listed prices for a certain product might be relatively high. In contrast, when actual transaction prices are analyzed, this price range is way smaller (Ghose and Yao, 2011). As a consequence, an analysis of posted prices “(...) would lead to an upper bound on the actual level of price dispersion” (Ghose and Yao, 2011, p. 2). Ghose and Yao (2011) even propose that for transaction prices the law of one price might actually be true, somewhat supporting the idea to use price dispersion as an indicator for competition. Nevertheless, it could be argued that due to the assumption of well informed and less informed customers in the market (Chen and Zhang, 2011; Morgan et al., 2006), paving the way for price discrimination (Borenstein and Rose, 1994; Chellappa et al., 2011; Gerardi and Shapiro, 2009; Hayes and Ross, 1998), it could be appropriate to evaluate the range of posted prices.

Yet, in a non-monopolistic industrial purchasing context, where the buying organization receives quotations from different suppliers, the assessment of transactional prices might be particularly reasonable. We could imagine situations where requests for quotations are sent to several suppliers (Feng, 2012). Some of these suppliers might not be interested or able (e.g. due to capacity constraints) to quote to specific requests. However, instead of simply refusing to quote, suppliers might feel under pressure to prepare an offering, in order not to jeopardize the relationship to a large industrial customer (Scheffler et al., 2014). This could lead to unrealistic high posted prices, by which the supplier implicitly expects not to be considered for contracting. If in such situations the dispersion of listed prices would be calculated, the results might be misleading.

Still, an essential challenge of researching price dispersion is to gather suitable data (Lach, 2002). This might also explain the prevalence of posted prices, since these data are presumably easier to get. When researching B2B purchasing, though, it should be possible to obtain the necessary data. Most large companies have business intelligence departments and data warehouses in place, allowing them to track all relevant price information, such as posted prices, contracted prices, and volumes (Laudon and Laudon, 2011; Sahay and Ranjan, 2008; Vogt, 2011). Even though, in industrial environments it should be possible to obtain transaction prices of requested goods, it might still be difficult to analyze them. If only one supplier is chosen for a specific item (single sourcing) (Larson and Kulchitsky, 1998), there would be no price to compare with. As a consequence, it is proposed to compare the transaction price to the “nearest” listed price. The underlying rationale for this comparison is that for the buyer it might not be possible to distinguish serious offers from unrealistic offers.

As previously explained in this section, some suppliers prepare quotations without a serious interest to deliver an item. However, if the buyer receives several quotations from different suppliers, the lowest offered price (next to the chosen one) is most likely to be a serious attempt to get the project (Scheffler et al., 2014). Further, it is also conceivable that the responsible buyer does not negotiate with all suppliers. Rather it can be expected that the buyer pre-selects the most promising initial offers and then engages in negotiation processes only with this group of suppliers (Aissaoui et al., 2007; Park et al., 2010).

In summary, a wide set of measures of price dispersion is used in prior research. In the reviewed literature, particularly the coefficient of variation as well as the price range appear to be the most popular measures. Further, it is argued that there should be a distinction between posted prices and transaction prices, in order to receive more accurate results. Finally, we propose, for industrial contexts, to calculate the price range between the chosen price and the “nearest” declined offer, in order to determine price dispersion.

### **COMPETITIVE DYNAMICS: AWARENESS, MOTIVATION, AND CAPABILITY AS PRECONDITION TO INDUCE COMPETITION IN THE SUPPLY BASE**

In recent years, the literature stream of competitive dynamics gained increased interest among researchers (e.g. Chen and Miller, 2012; Furrer and Thomas, 2000; Ketchen et al., 2004). Grounded in Schumpeter (1942) and his theory of creative destruction, it is supposed that companies can exert a competitive action (e.g. the introduction of a new product), allowing them to achieve a favorable competitive position. Likewise, competitive dynamics is “(...) *the study of interfirm rivalry based on specific competitive actions and reactions, their strategic and organizational contexts, and their drivers and consequences*” (Chen and Miller, 2012, p. 137). Hence, competitive dynamics literature strives to reveal how competitive actions can be translated into long-term competitive advantages and performance improvements (Ketchen et al., 2004).

Acknowledging that competitive dynamics is rather a literature stream than a theory of its own, prior research has benefitted from diverse theories and frameworks (Chen and Miller, 2012; Furrer and Thomas, 2000; Ketchen et al., 2004; Lamberg et al., 2009). Specifically, the awareness-motivation-capability (AMC) framework gained popularity among researchers (see e.g. Chen and Miller, 2012; Hutzschenrieder, 2009; Lamberg et al., 2009; Livengood and Reger, 2010). At its core, the AMC framework postulates that the likelihood of exerting a competitive action depends upon a company’s awareness, its motivation, and capability to compete (Chen, 1996; Meyer and Sinani, 2009; Smith et al., 2001). More precisely, a firm needs to be aware that there is competition, before it will undertake a competitive action (Chen and Miller, 2012; Meyer and Sinani, 2009). Similarly, the incumbents must be motivated to accept the challenge and to engage in competitive actions (Chen, 2009; Sirmon et al., 2010). Finally, companies must possess the required capabilities to compete (Ndofor et al., 2011; Sirmon et al., 2010).

We argue that the AMC framework can also be adapted to an industrial purchasing environment. Particularly in the supply markets of large buying organizations, the requirements of the AMC framework should be fulfilled. It can be assumed that, at least for routine and leverage items (Kraljic, 1983), suppliers should be aware of the fact that they find themselves in a situation of rivalry with other suppliers (McIvor, 2008; Wilhelm, 2011; Wu and Choi, 2005). Additionally, in most cases, it can be expected that suppliers actually want to engage in a business relationship with an industrial customer that potentially is requesting large volumes of goods (Saxena et al., 2013). However, there might be situations, in which suppliers are not particularly interested in winning a contract, e.g. to capacity constraints (Scheffler et al., 2014).

The last requirement of the AMC framework is the capability to compete. Capability, though, is often operationalized as financial or technical resources (Lamberg et al., 2009). Thus, particularly suppliers from industrialized countries are most likely to possess a large set of resources, allowing them to compete actively.

In essence, competitive dynamics is a literature stream that aims to explain corporate success through the interplay of competitive actions and reactions. In this context, the awareness-motivation-capability framework acts as a theoretical foundation and can also be applied for industrial purchasing research settings.

### **PRACTICAL RECOMMENDATIONS: HOW TO CREATE AND BENEFIT FROM COMPETITION IN THE SUPPLY BASE**

In the previous sections, it has been highlighted that under certain circumstances the assessment of the effectiveness of sourcing levers is quite challenging. Particularly, an exclusive focus on cost-savings is likely to lead to ambiguous results and might misguide the judgment of sourcing activities (Horn et al., 2014; Horn et al., 2013). As a consequence, in this section, the aforementioned theoretical insights are translated into five practical recommendations, aiming at improved sourcing performance.

#### ***Recommendation 1: Let the supplier perceive competition!***

Literature indicates that the induction of competition promises various advantages for customers (Blalock and Gertler, 2008; Lieberman and Montgomery, 1988). From an industrial purchasing perspective, specifically lower price levels are assumed to be one outcome of increased competition in the supply market (Chen and Zhang, 2011; Clay et al., 2001; Gerardi and Shapiro, 2009; Kraljic, 1983). Based on economic literature, the underlying rationale is that competition might force suppliers to charge equilibrium prices that equal their marginal production costs. Put in another way, under high pressure, suppliers might partially compete their profits away (Carlton, 1977) and are incentivized to invest in price reducing innovation (Arrow, 1962; Bester and Petrakis, 1993; Bonanno and Haworth, 1998). A precondition is that suppliers can be urged to engage in price competition. In this context, it is argued that in B2B purchasing environments Bertrand competition can be facilitated due to detailed product specifications provided by the buying organization; the willingness to bear search costs; as well as highly informed customers (Ghose and Yao, 2011; Salop and Stiglitz, 1977; Varian, 1980).

Further, from a competitive dynamics perspective, the requirements of the awareness-motivation-capability framework must be fulfilled to pave the way for competition (Chen and Miller, 2012; Chen et al., 2007; Lamberg et al., 2009). In industrial purchasing configurations, though, it is likely that the majority of suppliers that are invited to quote for a certain item, are motivated engage in a business relationship (Hughes and Gordon, 2011; Johnson and Selnes, 2012; Smeltzer and Carr, 2003). Similarly, it can be expected that experienced suppliers also possess capabilities or resources that allow them to remain competitive (Bonanno and Haworth, 1998; Mudambi and Tallman, 2010). Still, it cannot be assumed a priori that the suppliers are aware of competing with other producers; neither they know who their competitors are (Aláez-Aller and Longás-García, 2010). Thus, suppliers have only limited information on their competitors (Jap, 2007). Consequently, in order to fulfill the preconditions of the AMC framework, the supplier needs the information that there are more competitors battling for the business relationship. As a result, the buying organization can facilitate the intensity of competition in the supply base, ultimately leading to lower price levels (Clay et al., 2001; Gerardi and Shapiro, 2009; Tang et al., 2010).

### ***Recommendation 2: Make use of the data available to you!***

More and more companies support their day-to-day and operational activities through the application of IT systems (Sahay and Ranjan, 2008). Recent research claims that in modern enterprises, a vast amount of information is hidden in these corporate systems (Rozinat and van der Aalst, 2006, 2008). As a consequence, many large organizations establish business intelligence departments, in order to use the available data effectively (Gottschalk and Berg, 2007; Sahay and Ranjan, 2008). In times of metrics-driven decision making, organizations even compete on data analytics (Davenport, 2006). This is not surprising, since studies found companies with an effective business intelligence in place, to be more successful (Sahay and Ranjan, 2008). Specifically, in a purchasing context, supply market intelligence can support the development of sourcing strategies (Handfield, 2004).

Since recent economic studies point into the direction that intensive competition can create pressure and reduce the price levels in a market (Chen and Zhang, 2011; Clay et al., 2001; Gerardi and Shapiro, 2009), in recommendation 1, it has been suggested to let the supplier perceive competition. This can be supported through supply chain intelligence practices. Most companies use IT systems to prepare and evaluate requests for quotations. The data available in these systems could be analyzed. As proposed earlier in this paper, firms could use the offered prices to calculate the price dispersion for a specific good. In this context, other things being equal, it is proposed to determine the range between the lowest offered price and the second best price. If this value is rather small, then it can be assumed that the supply market is relatively competitive and the applied sourcing strategies are appropriate (Scheffler et al., 2014). Additionally, an analysis of price dispersion might help purchasing organizations to detect collusive supplier behavior (e.g. cartels) and to take action, if necessary (Blanckenburg et al., 2012; Bolotova et al., 2008).

### ***Recommendation 3: Take many and diverse suppliers into your consideration set!***

In some situations, suppliers might behave different than expected. From a theoretical perspective, even a relatively small number of suppliers that offer the same product should cause intensive competition (Arrow, 1962; Jap, 2002). Yet, it can be observed that some influence factors might affect the intensity of competition in the supply market.

Literature indicates that buyers have a preference for domestic suppliers (Quayle, 1998). However, over the last decades, industrial organizations have extended their scope and are increasingly exposed to foreign products (Andersson and Servais, 2010; Quayle, 1998). Domestic suppliers start to realize that particularly in industrial markets customers are likely to switch to another competing supplier, if this one better matches the defined criteria (Shipley et al., 1991). Since for cost-oriented purchasing strategies, price is one of the most important selection criteria, the competitive pressures are high for products offered by many suppliers (De Toni, 1999). Most scholars agree that the higher the density of suppliers in a market, the smaller will be the price dispersion (Barron et al., 2004; Lewis, 2008; Morgan et al., 2006). Hence, it is recommended to invite a large number of suppliers to prepare quotations for a specified product. Including many suppliers in a quotation is thus likely to limit price dispersion and to increase the intensity of competition. Additionally, Chellappa et al. (2011) find that the presence of low-cost suppliers limits the extent of price dispersion. Hence, also taking diverse suppliers into consideration for a business relationship might increase the competition in the supply base. This recommendation fits also to the findings of scholars, who argue that repeated interaction of the same set of rivals might reduce the intensity of competition (Bayer et al., 2013). Accordingly, collusive behavior e.g. through the

formation of cartels, might be a result of repeated interaction of suppliers (Blanckenburg et al., 2012; Bolotova et al., 2008; Slade, 1990).

***Recommendation 4: Bear the incorporated search costs!***

In the reviewed economic literature on price dispersion, there is usually a distinction between well informed and less informed customers (Chen and Zhang, 2011; Morgan et al., 2006). The reason for this distinction is that rational customers have to gather information about market conditions, such as suppliers available and offered prices, in order to make a purchasing decision (Barron et al., 2004; Liu et al., 2012). However, some customers are not willing or able to bear the accompanying search costs (Baye et al., 2004b; Chandra and Tappata, 2011; Sorensen, 2000). As a result, there is a market which includes well informed and less informed customers (Chen and Zhang, 2011; Morgan et al., 2006). Less informed customers cannot compare prices and consequently do not know whether another supplier might provide a more favorable offering. In turn, suppliers might exploit this ignorance and aim at customers with limited information. These customers are assumed to pay higher prices for certain products and are therefore particularly attractive for suppliers (Baye et al., 2004a; Chen and Zhang, 2011). In order to avoid this price discrimination, industrial customers should strive to gain as much information on market conditions as possible. Accordingly, purchasing agents are expected to be motivated to search more information in order to gain a competitive advantage in negotiations with their counterparts in the selling firm (Alejandro et al., 2011). This approach could be facilitated through an ongoing supplier search, which could also involve the establishment of international purchasing offices, identifying competitive foreign suppliers (Jia et al., 2013; Nassimbeni and Sartor, 2006).

***Recommendation 5: Develop and follow a code of conduct!***

Another important recommendation is to develop transparent purchasing rules and to consistently follow these rules (Ellegaard and Koch, 2012; Hatani and McGaughey, 2013). In essence, the defined rules should ensure a fair competition between suppliers and increase the professional credibility of the buying organization (Zhang et al., 2011). In contrast, inconsistent behavior as well as deviations from the defined rules might somewhat limit the trust in the business partner (Seymour, 1986). Moreover, unclear behavior creates a vulnerability to price discrimination (Chellappa et al., 2011; Lach, 2002). This might be particularly true for relationships with established suppliers that have a long history with the buying company (Stole, 2007). Since many organizations rate the success of their purchasing departments based on price reductions, this might be a starting-point for price discrimination (Jap, 2003; Stole, 2007; Woodside and Wilson, 2000). Suppliers might offer the purchaser to reduce the price of another running project and expect in turn that they are awarded with a purchasing order for a certain item, even without offering the lowest price. Purchasers might be willing to accept such propositions because they can generate quick-savings (Meißner, 2012). Consequently, the purchasing organization might actually allow supplier differentiation, which would undermine one of the preconditions for fair price competition (Stole, 2007). Furthermore, those suppliers that are not considered despite offering the lowest price (Jap, 2002; Thomas and Wilson, 2005), might lose their motivation to prepare a serious quotation in the future.

**DISCUSSION: THE COMBINATION OF COMPETITIVE DYNAMICS AND AN ASSESSMENT OF PRICE DISPERSION AS ENABLER OF SOURCING SUCCESS**

The initial question of this conceptual paper was whether price dispersion could be an appropriate means to evaluate competition and to assess the effectiveness of sourcing levers. To answer this question, a literature review has been conducted and the results were combined with the theoretic framework of competitive dynamics.

The reviewed literature indicates that, particularly in the field of economics, many researchers engage in an analysis of price dispersion (see e.g. Baye et al., 2004b; Borenstein and Rose, 1994; Chen and Zhang, 2011; Gerardi and Shapiro, 2009). A large portion of these studies finds evidence that, for homogeneous goods, the price dispersion decreases when competition becomes more intensive (Barron et al., 2004; Clay et al., 2001; Gerardi and Shapiro, 2009; Lewis, 2008). However, some studies find contradicting results (Pan et al., 2004). We argue that these ambiguous results might partially be due to the fact that the unit of analysis in the reviewed economic studies was the consumer. Hence, we explicitly unravelled the distinctive characteristics of purchasing in B2B and B2C environments.

The core differences are that in industrial purchasing, there are multiple roles involved in the purchasing process, the buyers are professionally trained individuals, the decision processes are complex, there are rational decision criteria, and firms possess financial resources that can be used to gather market information (Emiliani, 2006; Emiliani, 2000; Webster Jr and Wind, 1972; Woodside and Wilson, 2000). Based on these insights, it is argued that in B2B markets, price dispersion might be indeed a valid measure for competition (Scheffler et al., 2014).

In order to understand how competition and competitive forces might affect corporate success, competitive dynamics have been chosen as a theoretical lens (Chen and Miller, 2012; Katila et al., 2012; Lamberg et al., 2009; Sirmon et al., 2008). Literature on competitive dynamics suggests that actions of one company are likely to provoke a reaction of another company (Chen and Miller, 2012; Ketchen et al., 2004). Thus, in a purchasing context, the idea emerges that the buying organization can exploit the forces of competition to increase the own corporate performance. In order to illustrate our elaborations, five practical recommendations have been presented, which could act as a guideline for buying organizations that pursue a cost-oriented purchasing strategy.

The first recommendation is that the buying company should let the suppliers perceive competition. Only when the suppliers are aware of a situation of rivalry, they can exert and react on competitive moves, ultimately leading to favorable conditions for the customer (Chen and Miller, 2012; Meyer and Sinani, 2009). By doing so, the suppliers might be motivated to engage in price competition, which could considerably reduce the negotiated price levels (Chen et al., 2007; Sirmon et al., 2010).

The second recommendation is to make use of the data available to the buyer. In the age of big-data, most successful companies install business intelligence departments (Sahay and Ranjan, 2008). Thus, large amounts of information, such as offered prices and market conditions are available (Davenport, 2006; Gottschalk and Berg, 2007; Handfield, 2004). Purchasing departments are recommended to analyze these data. Particularly a calculation of the price dispersion for a certain item is assumed to be beneficial for the buying organization. By evaluating the price dispersion, companies could assess the intensity of competition in their supply base, which in turn could indicate the effectiveness of the applied sourcing levers (Scheffler et al., 2014). Thus price dispersion is proposed to expand the boundaries of a purely cost-reduction oriented assessment of sourcing success.

Additionally, it is recommended to take many and diverse suppliers into consideration for a business relationship. Prior research shows that a large number of suppliers available can contribute to the competitive pressures in a market (Barron et al., 2004; De Toni, 1999; Lewis, 2008; Morgan et al., 2006). Furthermore, the set of bidding suppliers should be rather diverse, in order to breed competition. If suppliers know each other very well as result of repeated interaction, the risk of collusive behavior increases (Bayer et al., 2013). By taking

diverse suppliers into consideration, the risk of collusion could be reduced and the competitive pressure can grow (Blanckenburg et al., 2012; Bolotova et al., 2008).

As a fourth recommendation, it is stated that buying organizations should be ready to cover the costs that emerge during the process of gathering information (Chandra and Tappata, 2011; Liu et al., 2012). Only if the company has different quotations from different suppliers, comparisons can be made (Barron et al., 2004). This kind of information is a precondition to induce price competition between suppliers. However, to receive different offerings, buyers must engage in a costly search process (Chandra and Tappata, 2011).

Finally, it is recommended to develop and to follow a code of conduct (Ellegaard and Koch, 2012; Hatani and McGaughey, 2013). For specific items it might make sense to pursue strict cost-oriented sourcing strategies. Accordingly, for these items the rule could be defined that the supplier that offers the lowest price will be selected for the business relationship, under the precondition that the hygienic requirements (e.g. quality) are met. Deviations from the defined sourcing rules might increase the risk for price discrimination because some suppliers could search for opportunities to differentiate themselves from their competitors (Jap, 2003; Stole, 2007; Woodside and Wilson, 2000). Further, it could be detrimental to a firm's credibility, if there is no enforcement of the defined and communicated rules (Seymour, 1986; Zhang et al., 2011).

Taking all things into consideration, the paper combines approaches from the field of economics and links them to purchasing practice and the literature stream of competitive dynamics. The presented recommendations do not just aim at squeezing out suppliers but rather set incentives for cost reducing innovation and to unleash the competitive forces of the market. By doing so, the buying organization might considerably increase its corporate performance. However, also the selling organization could improve its performance by investing in efficient production approaches, reducing the marginal cost and possibly gaining a competitive advantage over their rivals.

### **IMPACT ON THEORY AND PRACTICE: A NEW MEASURE OF COMPETITION, THE COMBINATION OF MANAGEMENT AND ECONOMIC LITERATURE, AND THE DEVELOPMENT OF FIVE PRACTICAL RECOMMENDATIONS**

This conceptual paper provides various implications for theory and practice. Starting with the theoretical contributions, a literature review on price dispersion has been conducted. Specifically, literature from the field of economics has been analyzed, in order to explore whether homogenous product price dispersion could be a suitable measure for competition in B2B supply markets. The literature review resulted in the proposition of an additional tool to assess the success of sourcing levers, which was called for by many scholars (Horn et al., 2013; Scheffler et al., 2014; Schiele et al., 2011).

Additionally, economic insights are combined with the literature stream of competitive dynamics, resulting in a synthesis of knowledge, which can be used as point of departure for further research efforts. Particularly, future research could focus on the empirical validation of price dispersion as a measure for competition in industrial purchasing environments. Moreover, it could be interesting to develop a framework for buying organizations, facilitating the decision, whether to aim at price competition between suppliers or to engage in collaborative partnerships. Further, it should be assessed how big data can be used as a basis for purchasing decisions.

From a practitioner's perspective, the paper strives to translate theoretical insights to practical recommendations. As a consequence, five recommendations have been developed that can represent a practical guide for buyers and purchasing organizations. In detail, the recommendations cover the desired characteristics of competition in the supply market, the

optimal configuration of the supply base, the application of big data, the investments in gathering information, and the consistency of purchasing behavior.

Despite its contributions to theory and practice, the paper has also limitations. One limitation is the exclusive reliance on literature, instead of using original data or observations. Next, the recommendations are to a large extent grounded in assumptions and need to be validated through further research. Still, the paper is argued to be a viable starting point for future research and purchasing practice.

### **CONCLUSION: COMPANIES SHOULD ACTIVELY INDUCE AND MEASURE COMPETITION TO IMPROVE CORPORATE SUCCESS**

Scholars as well as practitioners have acknowledged the importance of purchasing for corporate success (Kraljic, 1983; Monczka et al., 2008; Quintens et al., 2006). Though, purchasing is not seen any more as “necessary evil” but rather as an opportunity to make an organization more profitable (Monczka et al., 2008). As a consequence, a large amount of research has been conducted on how to achieve purchasing excellence (Trent and Monczka, 2005). Recently, it became apparent that the assessment of the effectiveness of sourcing strategies and levers is a complex task (Horn et al., 2013; Schiele et al., 2011). In this context the idea emerged that next to directly observable cost savings also indirect effects, such as the emergence of more favorable supply market conditions, should be examined. Particularly the creation of intensive competition is assumed to improve the purchasing performance of industrial organizations (Chen and Miller, 2012; Lamberg et al., 2009; Monczka et al., 2008). So far, there was no feasible measure to assess the competitiveness of supply markets.

In this paper, economic theories on price dispersion have been reviewed and framed for an application in supply chain management. Specifically, previous research on price dispersion was limited to B2C markets. In this paper, however, it is highlighted that there are significant differences between B2C and B2B environments (Emiliani, 2006; Webster Jr and Wind, 1972; Woodside and Wilson, 2000). Therefore, price dispersion is argued to be a suitable measure for competition in supply markets. In general, it is assumed that the stronger the competition, the smaller will be the price dispersion for homogenous goods (Barron et al., 2004; Clay et al., 2001; Lewis, 2008).

The idea to assess the intensity of competition in supply markets is combined with the theoretical framework of competitive dynamics. Thus, in this paper, economic research has been combined with management literature and translated into five practical recommendations for purchasing agents.



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