

# Transaction costs and costs of activity independence in B2B buyer-supplier relationships: analysis of Central and Eastern European companies

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## Abstract

**Purpose** – This paper aims to identify purchasing-related costs through the prism of transaction costs and costs of purchasing management activity.

**Design/methodology/approach** – The authors conducted a survey among 150 medium and large manufacturing companies in the chemical, automotive and electromechanical industries operating in Central and Eastern European countries. The collected data were analyzed using confirmatory factor analysis.

**Findings** – The studied companies carry out an integrated purchasing-related cost system. The authors found a statistical significance of the covariances between the pretransaction, transaction and post-transaction costs. In addition, costs that are of particular importance in long-term purchasing transactions were identified. Moreover, the authors identified the costs of quality and support actions as the most significant.

**Practical implications** – This research details the discussion of costs with consideration for the insights of managers of medium-sized and large companies.

**Originality/value** – The paper contributes to the knowledge of purchasing-related costs through the lens of the total cost of ownership that influences the purchasing management and the decisions within the buyer-supplier relationship.

**Keywords** Purchasing management, Costs, Total cost of ownership, Buyer-supplier relationship

**Paper type** Research paper

## 1. Introduction

In a business-to-business (B2B) relationship, the selling side seeks to maximize profit while the buying side seeks to obtain the lowest price (Pedersen, Ellegaard, & Kragh, 2020). In the context of long-term cooperation in supply chains, the aim tends to be the reduction of the costs associated with purchasing (Jääskeläinen & Thitz, 2018; Munday, 1992). Therefore, both parties negotiate toward a financial consensus. Studies indicate that purchasing costs account for a significant portion of the cost of manufacturing products (Agndal & Nilsson, 2007). Therefore, they are important in the total cost of the company and the supply chain.



Consequently, we clearly see that purchasing is undoubtedly a significant field for cost savings (Degraeve, Roodhooft, & van Doveren, 2005). These savings come in various forms, such as the traditional approach of hard bargaining to reduce the price or building good relationships with suppliers to jointly extract costs from a product or service (Bensaou, 1999).

For purchasing-related costs to be effectively planned and controlled, as well as contained, it is crucial to know where and how these costs arise. Accounting is one of the information systems in a company that performs these functions and identifies and measures purchasing costs. Financial accounting indicates which resources are related to purchasing costs, which costs relate to the purchasing department, and which to purchasing transactions, indicating which costs are or should be included in the purchase price and which are tax costs. This is an important but narrow measurement of purchasing costs, mainly for financial reporting purposes (Munday, 1992).

The best method to measure the purchasing-related costs in the buyer-supplier relationship has been a combination of the total cost of ownership (TCO) and activity-based costing (ABC) concepts (Lin, Collins, & Su, 2001; Ellram, 2000). In the context of purchasing, TCO includes costs by activity (e.g. order placement, supplier search and qualification, transportation, inspection, replacement, downtime due to failure, disposal or quality), additionally allowing for the specification of pretransaction, transaction and post-transaction costs (Ellram, 1993, 1995). The obtained data in the cross-section of activity and transaction costs (the ABC insight) allowed the purchasing managers (PMs) to steer contracts. Accordingly, purchasing, including buyer-supplier relationships, cannot be effectively managed unless we implement proper cost measurement in these areas, which will result in the use of appropriate tooling approaches. Accurate cost measurement means integrating various cross-sections costs to provide information for effective purchasing management (Jääskeläinen & Thitz, 2018; Thruogachantar & Zailani, 2010; Munday, 1992).

Our article contributes to the literature by providing updated evidence on the following dimensions. First, the article will contribute to the context of TCO concepts. The literature review will focus mainly on the assumptions of TCO. The available studies describe the benefits and barriers of TCO (Ellram, 1993) and demonstrate the use of TCO for supplier selection and evaluation (Bhutta & Huq, 2002). Micheli (2008) presents an understanding of TCO in the context of purchasing a particular good or service from a supplier (Ellram, 1995) and analyses the use of TCO from an interorganizational perspective (McLaren, Head, & Yuan, 2002; Zachariassen & Arlbjørn, 2011). Other papers also discuss the use of the TCO approach in different activities, using cloud computing services as an example (Walterbusch, Martens, & Teuteberg, 2013). Moreover, a significant portion of the articles leading the discourse on TCO is based on the case study research technique (Farris & Manuj, 2018; Walterbusch *et al.*, 2013).

However, no studies have yet analyzed TCO to identify cost categories and their relation to transaction costs in the purchasing sphere, including the buyer-supplier relationship. Therefore, we intend to fill this gap in this article. Second, we intend to contribute to the knowledge of cost measurement and its tools. The analyzed articles detail measurement tools that effectively manage supply chains (Ramos, 2004). These are usually holistic models, such as ABC (Dekker & Van Goor, 2000). Moreover, they refer to the importance of management accounting tools (Joyce, 2006; Ramos, 2004; Ellram, 2000). However, these publications focus mainly on measuring performance with financial and nonfinancial indicators and their impact on efficiency (Nollet, Beaulieu, & Fabbe-Costes, 2017; Pohl & Förstl, 2011). No publications have yet identified the purchasing-related costs and associated them with the costs resulting from the buyer-supplier relationship. Third, our article links knowledge of purchasing management to the knowledge of accounting. Previous publications described purchasing management from the conceptual side and in the context of other management concepts, e.g. quality management or logistics and supply chain management

(Thruogachantar & Zailani, 2010; Hemsworth, Sánchez-Rodríguez, & Bidgood, 2005; Grundlach *et al.*, 2006; Costantino, Dotoli, Falagario, Pia Fanti, & Iacobellis, 2009; Gadde & Wynstra, 2018). Moreover, they discussed the application of accounting in supply chain management (Ramos, 2004). However, no articles focused on purchasing management, identification of purchasing costs in conjunction with the TCO perspective, and in reference to accounting.

This article will identify purchasing-related costs through the prism of transaction costs and costs of activity in purchasing management, including the B2B buyer-supplier relationship.

We formulated the following two research questions:

*RQ1.* Are the different types of purchasing-related costs interrelated through the lens of TCO?

*RQ2.* Among each type of purchasing transaction cost of the TCO, which ones are identified as the most influential by company managers?

Using computer-assisted telephone interviewing (CATI), we conducted a survey among medium and large manufacturing companies from the chemical, automotive and electromechanical industries operating in Central and Eastern European countries. We collected the data between October and November 2019. The collected data came from one hundred and fifty questionnaires with all responses, which we analyzed using confirmatory factor analysis (CFA).

The following section will review the purchasing management and cost measurement literature. The third part of the article will describe the TCO concept applied to the study. We will present the research methodology, sample and findings in the following sections. Finally, the article will end with a discussion of conclusions and implications.

## 2. Background

The managers' task is usually to manage the purchasing process in a B2B buyer-supplier relationship in a profitable, low-cost way. Therefore, cost information is essential in purchasing management. Thus, we must know the following three elements: What causes costs? What those costs are? And, what is the amount of those costs? This is strictly related to cost management, including cost containment, cost avoidance and cost reduction in time (Groth & Kinney, 1994; Schiele, Horn, & Vos, 2011).

Costs are relevant to purchasing management, and consequently to the decision whether to contract or not. The costs can have operational and strategic dimensions. The second area of costs goes beyond the typical purchasing function (purchasing department) and includes costs related to cooperation between partners, the so-called transaction costs (Ellram, 1995; Wouters, Anderson, & Wynstra, 2005; Zsidisin, Ellram, & Ogden, 2011).

Costs relating to purchasing represent a significant area of total company costs (Cousins, Lawson, & Squire, 2008; Zachariassen & Arlbjørn, 2011). Purchasing costs may include product development and design costs, material costs, costs of salaries for employees related to the purchasing process, logistics costs, transportation costs and information costs (Zeng, 2003; Zeng & Rossetti, 2003). Costs are a component of the final price, which influences the purchase contract (Zachariassen & Arlbjørn, 2011). Among other factors that determine the purchase contract is delivery time or quality. Qualitative aspects are also measured and expressed in value thanks to the management accounting tool (Bhutta & Hug, 2002; Zachariassen & Arlbjørn, 2011). Therefore, an effective PM balances the different costs relevant to the buyer and the supplier (Hofmann & Bosshard, 2017). The consideration of the correlation between buyers-suppliers and the resulting transaction costs affects this value. It is reflected in two cost management concepts: interorganizational cost management (ICM) and TCO (Larson, 1994). The first one seeks to coordinate activities between enterprises to reduce costs in the correlation. The second one represents a purchasing perspective that aims

to understand the total cost of purchasing from suppliers (Ellram, 1993; Wouters *et al.*, 2005). The application of the TCO improves the transparency of costs, i.e. their elements and structure concerned with processes and time, and the elements and structure that seek to identify the transaction with the lowest transaction costs (Williamson, 2008). Nonetheless, this process requires identifying the purchasing process components, transforming them into cost components, and adding them to the price-adding formula (Ellram, 1995).

However, the literature has been divided into those who argue that these costs are independent of each other in terms of management and those who argue that there is always interdependence between the costs of a company. The former branch (Zeng, 2003; Zeng & Rossetti, 2003) argues that managers, having their own departments, find it hard to realize other departments' costs, which creates serious gaps in the internal communication processes of incurred costs. Therefore, the different types of purchasing costs can exhibit significant independence even at the company level. Moreover, there are authors (Ellram, 1995; Wouters *et al.*, 2005) who claim that this independence is not observed in most companies. The costs of one department influence the costs of other departments, especially in a medium or long-term perspective. The next section provides a more detailed discussion.

### 3. Theoretical framework of TCO concept and research questions

A strategic view of purchasing practices and management has led managers to identify indirect and direct purchasing costs. Implementing the TCO in purchasing practice has been reflected in purchasing management (Ellram, 1993; Zachariassen & Arlbjørn, 2011). The origins of TCO date back to transaction cost theory. The focus shifts from the product to the transaction while entry costs are higher than product costs, which makes a markup in the purchasing costs necessary. This markup is related to, e.g. costs of information search, negotiation, cleaning or law enforcement (Costantino *et al.*, 2009). However, managers do not always consider the integrality of other departments' costs, and so, a certain independence among departments' reported costs may exist.

Williamson (1993) structures transaction costs by dividing them into market costs and hierarchy costs. Market costs include costs of selecting the supplier that offers the best mix between the price required and the quality provided, costs of finding target customers for the firm's products, costs of drafting and approving a contract, and costs of enforcing a contract. Hierarchy costs comprise costs of selecting and managing human resources; costs of controlling human resource contracts, costs of enforcing contracts, and costs of coordinating and communicating information within the firm. On the other hand, Ellram (1993; 1995) adapts transaction costs to TCO by dividing them into pretransaction costs (expenditures for supplier selection and evaluation), transaction costs (occurring in the period from ordering to product delivery), and post-transaction costs (associated with the use, maintenance and disposal phases). This discussion vein highlights the different relevance that managers put on different cost sources, especially following TCO.

We can implement TCO according to two approaches: dollar-based and value-based. The former is based on collecting actual cost data for each relevant TCO element. It also includes a model that uses formulas to allocate actual costs by items purchased by the supplier. The dollar-based approach is applied in supplier selection, supply base reduction, process improvement, variation in supplier volume allocation and ongoing supplier evaluation. The latter combines cost data with performance data, often difficult to express in value terms. The value-based system is used in supplier selection (Ellram, 1995).

Implementing TCO to support purchasing management has been found to generate numerous benefits. The benefits include consistent evaluation of suppliers, comparison of performance between suppliers, evaluation over several periods, evaluation of supplier performance issues and of cost structure (Ellram, 1993, 1995).

Among purchasing costs, the literature identifies the below 20 as the most common ones:

- (1) transportation;
- (2) delivery quality assessment;
- (3) contract negotiations;
- (4) periodic evaluation of a supplier;
- (5) storage;
- (6) initial supplier evaluation;
- (7) processing documents related to the order;
- (8) definition of product requirements and specifications;
- (9) customs duties (duties);
- (10) utilization/scrapping;
- (11) technical service/servicing (inspections, repairs);
- (12) conducting the transaction (letter of credit, exchange rates);
- (13) operation and use (e.g. devices);
- (14) transaction financing (e.g. credit, leasing, factoring);
- (15) reference visits to existing customers served by potential vendors;
- (16) training connected with the use of a product;
- (17) modernization/upgrading (e.g. devices);
- (18) commissioning (for devices);
- (19) installation at the place of use;
- (20) insurance.

However, as already mentioned, the literature is divided between those who argue that these costs are autonomous among themselves in terms of management and those who argue there is always an interrelationship among the costs of a business. The former branch (Zeng, 2003; Zeng & Rossetti, 2003) foregrounds that having their own sections, executives find it tough to understand other departments' costs, which creates serious breaks in the internal communication processes of incurred costs. Therefore, different types of purchasing costs can exhibit a significant interdependency, even at the company level. Moreover, there are authors (Ellram, 1995; Wouters *et al.*, 2005) who claim that this independence is not observed in most companies. The costs of a department tend to always influence the costs of other departments, especially in the medium- or long-term perspective.

Based on the theoretical review and assumptions of the TCO concept, we introduce our two research questions:

**RQ1.** Are the different types of purchasing-related costs interrelated through the lens of TCO?

**RQ2.** Among each type of purchasing transaction cost of the TCO, which ones are identified as the most influential?

#### 4. Research methodology and sample

The study used a questionnaire survey conducted among companies operating in Central and Eastern Europe. The research was carried out between October and November 2019 using the technique known as computer assisted telephone interview.

The selection of companies for the sample was purposive, based on the Bisnode database – a business directory search platform. The examined group consisted of 150 organizations: 79 had dominant Polish capital ownership and 71 had dominant foreign capital ownership. These were medium (50–250 employees) and large enterprises (more than 250 employees). Medium-sized enterprises constituted 43% of the studied sample, while large enterprises – 57% of the sample. As a rule, due to their complexity and business impact, large and medium-sized organizations implemented advanced management accounting tools and management concepts like lean management or quality management system compliant with the guidelines of the International Standard for Quality Management System (ISO 9001). Moreover, they are part of interorganizational relationships (Mazbayeva, Barysheva, & Saparbayeva, 2022). Thus, we expected a greater chance of applying the TCO perspective to such entities and realizing integrated cost measurement, especially for strategic purchasing management.

Of the analyzed companies, 53% had national or mixed ownership while 47% were owned exclusively by foreign capital. The surveyed organizations were operating mainly in the automotive industry (42%) and the chemical industry (34%), and to a lesser extent in the electromechanical industry (24%).

Following the literature, we identified the following purchasing costs: transportation, delivery quality assessment, contract negotiations, periodic evaluation of a supplier, storage, initial supplier evaluation, processing documents related to the order, definition of product requirements and specifications, customs duties, utilization/scrapping, technical service/servicing (inspections, repairs), conducting the transaction (letter of credit, exchange rates), operation and use (e.g. devices), transaction financing (e.g. credit, leasing, factoring), reference visits to existent customers served by potential vendors, training connected with the use of a product, modernization/upgrading (e.g. devices), commissioning (for devices), installation at place of use and insurance.

In the questionnaire, the companies had to indicate whether a particular cost was considered in purchasing practice or in management. If a given purchasing-related cost was considered, the companies had to show the relevance of the specific cost, namely the rank of its relevance.

We adopted the TCO concept to organize the analysis of the cost data and consider the strategic approach to its measurement and management in purchasing and buyer-supplier relations. Then we used the CFA to analyze the collected data. The CFA is a well-established methodological set of steps for testing the relationship between available variables and latent dimensions (or factors). Today, there is abundant literature on this issue (Gagne & Hancock, 2006). Therefore, unlike the standard factor analysis, in which researchers do not deduce any relations between factors and available variables, the CFA allows for testing predefined links from the quoted literature. As Tomé-Fernández, Fernández-Leyva, and Olmedo-Moreno (2020) write, CFA uses diagrams with circles representing latent variables and recurring to squares to represent observed variables. A single-headed arrow is interpreted as an assumed direction of influence while two-headed arrows represent the covariance between the latent variables.

#### 5. Findings

The purchasing costs identified in the survey (20 items) were grouped into costs that reflect the buyer-supplier relationship in the B2B setting, meaning transaction costs according to the TCO perspective (Ellram, 1995; Costantino *et al.*, 2009). Therefore, respondents could identify

each purchasing-related cost as pretransaction, transaction or post-transaction costs. [Table 1](#) shows the modal identification for each purchasing-related cost considering our respondents' answers.

The purchasing-related costs above show that the transaction and post-transaction costs dominate in the studied companies. If so, why was such a small number of purchasing costs identified as pretransaction costs? We may argue that this is due to underdeveloped cost measurement systems or a lack of employees' knowledge in this regard. The transaction and post-transaction costs are usually based on actual, so-called historical data, measured by financial accounting. The pretransaction costs are often based on estimates, forecasts and budgets and are created by cost and management accounting ([Agrawal, Mehra, & Siegel, 1998](#)).

Using the CFA and following authors like [Dagnall, Denovan, Parker, Drinkwater, and Walsh \(2018\)](#), we compared the goodness of fit of different specifications among the studied variables and the latent variables. [Figure 1](#) shows our initial specification with all the variables considered for the three latent dimensions, while [Figure 2](#) exhibits our final specification. Both Figures consider the values of usual tests (root-mean-square error of approximation (RMSEA); root-mean-square residuals (RMSR); Tucker–Lewis index (TLI); CFI, index of comparative adjustment; Akaike information criterion (AIC); and Bayesian information criteria (BIC)) for proper assessment. [Dagnall et al. \(2018\)](#) refer that good fit thresholds for these indices are comparative fit index (CFI) >0.90, standardized root mean square residual (SRMR) <0.08 and RMSEA <0.08; considering a CFI above 0.87 and SRMR and RMSEA values below 0.10 must be interpreted as a marginal fit.

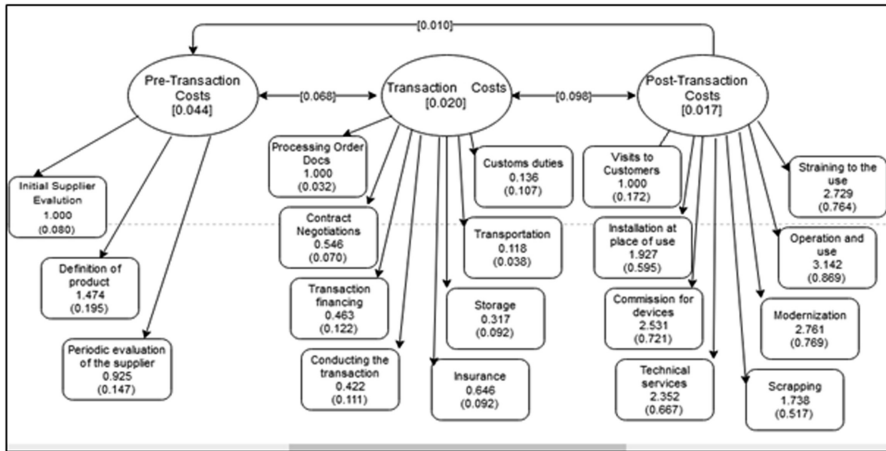
Furthermore, the common procedures for assessing the construct validity must be held in the preferred model. Namely, the indicators for the composite reliability must be higher than 0.70, the average variance extracted (AVE) must also be increased (demonstrating the variables' capacity for explaining the latent dimensions), and Cronbach's alpha must be higher than 0.800 ([Carmines & Zeller, 1979](#)).

[Figure 1](#) reveals that the standardized loadings for the variables range from 0.118 to 3.142. The respective coefficients of determination (R<sup>2</sup>) – available upon request – range between

Purchasing-related costs	Groups of costs in TCO
1. transportation	transaction
2. delivery quality assessment	transaction
3. contract negotiations	transaction
4. periodic evaluation of a supplier	pretransaction
5. storage	transaction
6. initial supplier evaluation	pretransaction
7. processing documents related to the order	transaction
8. definition of product requirements and specifications	pretransaction
9. customs duties (duties)	transaction
10. utilization/scrapping	post-transaction
11. technical service/servicing (inspections, repairs)	post-transaction
12. conducting the transaction (letter of credit, exchange rates)	transaction
13. operation and use (e.g. devices)	post-transaction
14. transaction financing (e.g. credit, leasing, factoring)	transaction
15. reference visits to existing customers served by potential vendors	post-transaction
16. training connected with the use of a product	post-transaction
17. modernization/upgrading (e.g. devices)	post-transaction
18. commissioning (for devices)	post-transaction
19. installation at the place of use	post-transaction
20. insurance	transaction

**Source(s):** Own elaboration

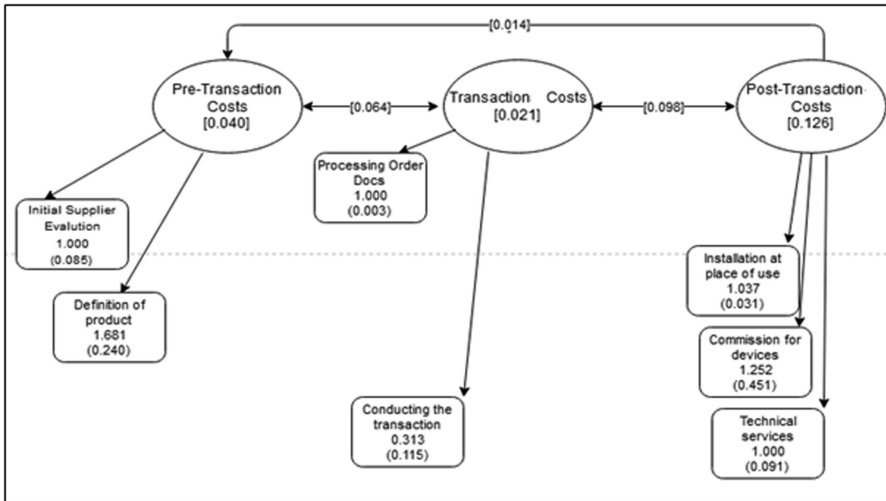
**Table 1.**  
Identified purchasing-related costs through the lens of the costs of TCO



**Figure 1.**  
CFA of the initial (full)  
model with purchase  
cost information  
through the lens  
of TCO

**Note(s):** Error variances in parentheses. Covariances in square parentheses. Fit indices:  
RMSEA = 0.1070, 90% CI = (0.0946, 0.1197); RMSR = 0.0148; TLI = 0.6269;  
CFI = 0.6749; AIC = 1604.144; BIC = 1727.580

**Source(s):** Own elaboration



**Figure 2.**  
CFA of preferred (final)  
model with purchase  
cost information  
through the lens  
of TCO

**Source(s):** Own elaboration

0.068 and 0.758. Except for the costs of “Customs duties,” all the other loadings were statistically significant at a 1% significance level. The covariances estimated for the three types of costs (pretransaction, transaction and post-transaction costs) were also statistically significant at the 1% significance level. There is a high magnitude in the covariance between transaction and post-transaction costs. However, the statistics related to the fit indices did not exhibit good values (e.g. CFI was clearly below 0.900, and RMSEA was higher than 0.080, the threshold for a mediocre fit; construct validity values are available upon request). We also



followed Garrido *et al.*'s (2022) method for constructing a preferred model. Let us recall that Garrido, Hansen, Yaari, and Hawlena (2022) "recommend a formal model selection approach (MSA) that uses information criteria." Therefore, the model in Figure 1 was modified toward the model in Figure 2, which was our preferred model.

Our analysis based on Figure 2 provided additional insights. The standardized loadings for the variables in Figure 2 ranged from 0.313 to 1.252. The respective coefficients of determination (R<sup>2</sup>; available upon request) now ranged between 0.072 and 0.971, expressing a clear improvement. Moreover, all the loadings were statistically significant at a 1% significance level. The covariances estimated for the three types of costs are also statistically significant at a 1% significance level. Once again, the covariance between transaction and post-transaction costs was the highest among the available cases. Finally, the statistics related to the fit indices exhibit highly positive values (e.g. CFI was now 0.958 and RMSEA – 0.069). The AVE for the three types of costs were as follows: AVE for pretransaction costs – 0.915; AVE for transaction costs – 0.934; AVE for post-transaction costs – 0.902. The respective Cronbach's alphas were for pretransaction costs – 0.882, for transaction costs – 0.899, and for post-transaction costs – 0.902. As a result, we could state that there was no problem in terms of the discriminant validity or the convergent validity of each of our latent factors.

In short, the answers to our research questions may be the following:

**RQ1:** Yes, we found in our survey that companies operating in Central and Eastern Europe consider the different types of purchasing-related costs interrelated.

**RQ2:** As Figure 2 shows, our most robust model indicates that only some costs are perceived as relevant, namely initial supplier evaluation and definition of a product for pretransaction costs, processing orders and conducting the transactions for transaction costs, and installation at the place of use, commission for devices, and technical services for post-transaction costs.

## 6. Conclusion

Following the empirical steps of our investigation, we can state two lines of conclusion related to the two formulated research questions. First, the statistical significance of the covariances between the three types of costs shows that the surveyed companies conduct integrated cost management. Thus, the surveyed companies realized that these costs work in a system, as the "pre-transaction" costs were related to the transaction and post-transaction costs. This interpretation of our results agrees with the works of Ellram (1993, 1995) and Wouters *et al.* (2005). Second, some costs have a particular influence on each group of costs. Thus, "initial supplier evaluation" and "definition of product" costs play an important role in pretransaction costs. We should give special recognition in transaction costs to "processing orders," "documents," and "conducting the transaction" costs. Finally, in post-transaction costs, our respondents identified the following costs as the most impactful: "installation at the place of use," "commission for devices," and "technical services." These results converge with Ellram (1995) and Zachariassen and Arlbjørn (2011).

This article contributes to the literature on purchasing and supply chain management and performance measurement considering accounting, especially management accounting (Armitage, 1984). The findings allowed to clarify which types of costs companies identify and measure in the purchasing practice, including buyer-supplier relationships in a B2B setting, and so, the costs that are or can be managed: planning, controlling and decision-making (Ramos, 2004; Schiele *et al.*, 2011; Uddin, 2017; Jääskeläinen, 2018; Zou, Brax, Vuori, & Rajala, 2019). Moreover, the article contributes to the knowledge of TCO and ABC concepts by

showing from the practical perspective how purchasing costs can be linked to transaction cost groups and activity-based costs (Ellram, 1993, 1995; Hofmann & Bosshard, 2017; Williamson, 1993, 2008). This view of costs impacts effective, strategic purchasing management.

In the context of practice, we suggest that companies link the above methods to the so-called life cycle costing. If a company measures the costs of a product throughout its life cycle – from the creation of the product to its disposal – it may report additional savings (Knauer & Möslang, 2018). By adapting this principle to the TCO philosophy (Ellram, 1995; Larson, 1994), we may indicate that if companies identify and correctly measure pretransaction costs, they can prevent high transaction and post-transaction costs in the purchasing practice. Such a holistic and integrated approach to identifying and measuring costs should be a fundamental approach in long-term purchasing management, including buyer-supplier relationships in the B2B setting.

The above-described study has some limitations, mostly linked to scrutinizing only large and medium-sized companies operating in only three sectors of the economy. Furthermore, the grouping of costs according to the TCO and ABC concept could be to some extent subjective, meaning specific cost categories could be attributed to both the support and delivery areas of these sectors.

Further research directions in this area may concern the expansion of the sample to medium-sized and smaller organizations and companies from various sectors. Moreover, what could prove beneficial to better identify the costs associated with purchases in a buyer-supplier relationship are in-depth interviews. Finally, future studies should also deepen the knowledge of the implementation state of management accounting in the surveyed companies.

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