

## **IMPORTANCE OF THE TOTAL COST OF OWNERSHIP CONCEPT IN THE CORPORATE SOURCING PRACTICE**

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**Abstract:** The total cost of ownership was introduced in the corporate praxis in the late 80s by the Gartner Group. A huge number of mathematical methods and IT applications have been developed to improve the transparency of enterprise processes from the point of view of costs. Within the frame of this paper authors focus on the importance of the total cost of ownership concept in the corporate sourcing practice. They summarise the TCO costs of the early Gartner model and show some improved methodologies (real cost of ownership, predictive cost modelling, corporative economic normalisation technology study, etc.). As main factors of total costs of ownership the following costs are suggested to taken into consideration for raw material procurement processes: raw material costs, infrastructure costs, processing costs and compliance costs.

**Keywords:** controlling model, corporate sourcing, logistics, raw material procurement, total cost

### **1. Introduction, determination of the project**

#### **1.1 Importance of sourcing activity in business operation**

Sourcing activity has always been a key priority of the corporate operation due to its inevitable function in cost reduction and influence for the profit of the companies. In the past few years – mainly in developed economies – it has received a higher focus, moreover, assigned as a strategical part. Root cause of being strategial is it's role in value creation. As a common company can spend fifty percent of its revenue for purchasing of products and services, all the achieved cost reduction has an immediate impact for the profit and loss statement.

#### **1.2 Evaluation of sourcing activity**

Regarding companies with high value of sourcing function monitoring of purchasing costs is inevitable – for adequate execution a possible implement can be the Concept of Total Cost of Ownership. Actually theory of Total Cost of Ownership is a system approach of logistic costs.

Logistics is an integrated activity that combines functions like transportation, inventory management, storing, packaging and other related material movement activities to reach the one main goal: effective flow of materials and – by means of this – reaching the maximum

customer satisfaction. This process can be supported by total cost of ownership concept as it aims the collective optimization of all emerging costs related to logistics.

Basis of the approach is that the total cost of the logistic process is the aggregated amount of all the revealed costs of partial processes related to logistic.

As these partial processes have a strong relation, the costs of them are also characteristically correlate to each other. There is a frequent occurrence of the case that certain logistic areas have a special impact to each other and cost reduction realized in one process causes increased expenses in a different one – or conversely. This is the so called „trade off” effect. Based on the concept of TCO cost reduction of one logistic activity can be considered effective for the total process only if it does not cause cost increase in any other part – higher than the value of cost reduction.

Of course, there is no need to check in details the effects of all the single cost of a certain process but comparison of the relevant cost elements has primary importance to be able to make the proper decision.

Based on the above in point of valuation of sourcing activity TCO means the comprehensive monitoring of all the costs related to purchasing projects or processes. So the proposition is to work out a generally adaptable valuation model that can support decisions related to purchasing projects and cost reduction processes – if the achieved savings can be defined for the whole process or not.

Of course, general adaptability limits to consider all the details and cost elements in the projects but the most decisive are can be controlled so it is appropriate for support of decision-making.

## 2. Development of the controlling model

### 2.1 Components and explanations of sourcing total cost of ownership

Total cost of ownership has several approximation differing by authors. Relevant cost factors can be determined based on these conceptions.

#### 2.1.1 TCO model of Gartner Group

Development and usage of the model basically is related to the valuation of the information investments. It was worked out by Gartner Group in 1987. Actually it is a cost monitoring framework that ensures a good structure to analyze the cost build-up of the investment and the operation.

Based on the entity of the method TCO is not else than all the possible occurring costs of the IT infrastructure – inclusive of purchasing, installation, management, usage, support, etc. costs [5.].

Based on sheet below TCO cost categories of the Gartner model can be divided for two main groups:

Direct costs				Indirect costs		
Hardware	Software	Operations		Support	End User	System outage
Purchasing	Purchasing	Material expenditure	System and Service Management	Training	Employee support	Total System
Rental Fee	Rental Fee	Costs of Data Transfer	Labour Costs	Finance and Administration	Training	Partial
Lease	Lease	Electricity	Outsourcing costs	Other Support	File and Data Management	
Bracing, Supplement	Licence				Application Development	
	Availability					
	Version Follow up					
	Law Follow up					

Figure 1. TCO costs of Gartner model

Source: Self edited [5.]

After creation of TCO model several companies framed their own TCO system, a few of them are contained in following figure.

<b>META Group</b>	<b>RCO</b> (Real Cost of Ownership) <b>PCM</b> (Predictive Cost Modeling)	www.gartner.com (a META Groupot 2004 decemberében felvásárolta a Gartner Group)
Tolly Group	<b>TCAO</b> (Total Cost of Application Ownership)	www.tolly.com
Standish Group	<b>CENTS</b> (Comparative Economic Normalization Technology Study)	www.standishgroup.com
<b>Forrester Research</b>		www.forrester.com
IDC (International Data Corporation)		www.idc.com; www.idchungary.hu
RFG (Robert Frances Group)		www.rfgonline.com
Yankee Group		www.yankeegroup.com
<b>Gartner Group</b>	<b>ETCO</b> (Enterprise Total Cost of Ownership)	www.gartner.com

Figure 2. A few improved version of TCO model

Source:[2.]

### 2.1.2 Further explanations for cost elements of TCO

Idea of TCO appeared in works of Atkinson and Kaplan (1989.). Based on their opinion it includes purchasing price and related costs of purchased raw materials like timing, material receiving, quality inspection and usage.

Ellram (1995.) emphasized that TCO is for understanding the effective costs emerging during the total purchasing cycle – considering costs occurred by purchasing and usage of the materials assists to differentiate vendors with lowest price from vendors with lowest cost. Elements of total cost based on Carr-Ittner (1992.) besides purchasing price are *purchasing costs* – included placing orders, transportation, quality inspection -, *inventory management costs* – storing, insurance, material damages, invested capital -, *non-conformance costs* – reject item, rework, re-receiving, repacking, downtime cost – and *costs of transportation problems* – downtime cost, lost benefit caused by delayed shipment, storing and administration costs caused by earlier shipment.

## 2.2 Interpretation of TCO for raw material procurement processes

Of course, structure of purchasing total cost can be built up from several kind of elements dependent on company profile and activity – numeric statement of them requires a hard work. Accordingly in practice there is a substantial simplification – at the same time the biggest danger of the analyzation is this excessive simplicity: root of the matter can stay hidden after the examination.

So the main goal is not the analyzation of the utmost factors with huge costs and hard work, rather to provide possibility to think over during the decision-making process the consequences of selection from alternatives.

Based on above I consider to analyze by all following purchasing cost categories – conducted from TCO cost categories of Gartner model:

- **Raw material costs:** here belongs the purchasing price of the product or service – without the taxes but included duties, discounts, etc. – and all costs of transportation, handling, etc. In many cases there are some so called peripheral assets – these are one-off investments or expenses are essential for commissioning of the purchased item.
- **Infrastructure costs:** costs of labour, assets, technologies, etc., related to the purchasing project. It includes those services that ensures usability of the purchased item, like costs of commissioning or trainings.
- **Process costs:** costs related to the transaction, for example cost of placing the order.
- **Compliance costs:** here can be mentioned costs arised default of the transaction. These are like cost of buying out of frame contract, delayed transportation, default product or costs of administrative failures.

Direct Costs				Indirect Costs		
Hardware	Software	Operations		Support	End User	System Outage
Purchasing	Purchasing	Material expenditure	System and Service Management	Training	Employee support	Total System
Rental Fee	Rental Fee	Costs of Data Transfer	Labour Costs	Finance and Administration	Training	Partial
Lease	Lease	Electricity	Outsourcing costs	Other Support	File and Data Management	
Bracing, Supplement	Licence				Application Development	
	Availability					
	Version Follow up					
	Law Follow up					
Raw Material Costs		Infrastructure Costs		Process Costs		Compliance Costs
Purchasing Price		Labour Costs		Transaction Costs		Cost of buying out of frame contract
Transportatin Costs		Asset Costs		Ordering Costs		Cost of Lost Benefit
Loading Costs		Commission Costs				Downtime Costs
Customs Costs		Training Costs				Overage Stock Cost
Related Taxes						Non-conformance Cost
Duties						
Handling Fees						
Storing Costs						
Peripheral Costs						
Quality Costs						

Figure 3. Categories of purchasing total cost  
 Source: Self edition

Based on above:

$$K = K_A + K_I + K_F + K_T$$

where

- $K_A$  – procurement raw material costs,
- $K_I$  – procurement infrastructure costs,
- $K_F$  – procurement process costs,
- $K_T$  – procurement compliance costs.

Based on above formula total cost of raw material purchasing can be given by procurement raw material costs, procurement infrastructure costs, procurement process costs and procurement compliance costs. This definition is the most general regarding costs and at the same time these categories can cover in the most satisfactory way all the occurent costs.

With adoption of this method sourcing activity of the company can be more effective and in view of given terms costs can be optimized.

Formula above is a cost determination, but dependent upon the concrete purchasing project and terms of it optimization can be executed – in this case costs should be changed for minimum requirement in the formula.

### 3. Summary, importance of the TCO adaptation in the corporate raw material sourcing practice

Cost categories determined above are influenced by several factors. Aim of further researches is to develop a generally usable cost structure that can support the evaluation of new or repeating purchasing projects or the effects of changes for the whole purchasing process.

This can especially have a great importance for those major companies where complexity of processes restricts transparency and follow up of the total procedure. With recording an adequate cost structure in the controlling system of the company analysis and valuation of new purchasing projects or process changes can be executed by anyone.

Idea of adaptation the TCO concept to corporate raw material purchasing processes can be explained with its success in information area.

With adaptation of this method all the occurred costs could be considered during the valuation of the investments – as against previous practice that analyzed and compared only the purchasing price as first priority and secondary the costs of operation.

This can be a big improvement and effect on savings also in raw material purchasing procedures if companies can break with previous methodology that compare only purchasing price in sourcing evaluation processes – as this can hide significant miscalculations and cause wrong decisions made. With taking all possible cost factors caused by the product into consideration they can receive a more complex and correct picture about each projects.

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