

## THE IMPACT OF THEORY OF CONSTRAINTS ON THE MANAGEMENT ACCOUNTING

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### Abstract

History of managerial accounting is older more than one hundred years. During this time it went through a lot of changes, however its primary focus was and still is to support managers with relevant information for decision making process. In the traditional approach to the management of the company for which the theory of constraints uses the term "cost world", with managers trying to improve every link in the chain (each functional area of business). During the last twenty years of the 20th century, managerial accounting had to face a serious criticism that it fails to this its primary function. Critics recruited also from advocates of the theory of constraints who developed their own methodology concerning this issue and called it throughput accounting. The key role of restrictions on business performance is still better than using conformed to the chain demonstrated with the largest output, which the company is able to achieve. The paper will be about comparison of both methodologies including explanation when and why managerial accounting, eventually throughput accounting, fails as a tool for supporting of management decision making.

**Key words:** Theory of Constraints, accounting, decision making, logistics

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### Introduction

For more than two decades have passed since 1985, when Eliyahu M. Goldratt presented his now memorable contribution entitled "Cost Accounting: Public Enemy Number One of Productivity" at the meeting, which was held by an organization known by the acronym IMA. Declare a cost accounting that is public enemy number one in productivity just to land this institution, whose vision is to be the world's leading association for management accounting, with a bit of exaggeration even be compared to Galileo's statement: "And yet it moves". There is therefore no wonder that this contribution Goldratt aroused quite a stir not only in academia, where you suddenly gained a lot of opponents, but also among business managers, which on the contrary Goldratt approach allowed to find a logical and efficient solutions to

many problems that are now a daily struggle. Whether Goldratt Among the hotly rejected or neglected and others admired and called the new management guru, one thing is certain - Galileo's ignominious end was spared.

## **1 Business management and cost accounting**

The issue of management and cost accounting in the literature devoted considerable attention and resources available literature are really rich. For a start, it is sufficient if we can properly define terms such as "cost accounting" or "traditional cost accounting". It is these concepts used by most authors mentioned in the introductory chapter, in his criticism of cost accounting. So what is covered by the term?

According to CIMA official terminology can define cost accounting, as that part of management accounting which establishes budgets, calculated and actual cost of operations, processes and departments or products, and analyzes variations, profitability and shared use of resources.

Wöhe (1995) sees the main challenges in cost accounting to determine the breakdown and allocation of costs incurred in the production and exploitation of business performance. With its own costs compared with performances can then check the efficiency of business processes, thereby creating a basis for corporate decision-making processes. Knowledge of the actual cost of performance (cost carriers) then allows to calculate the bid price, respectively. lower price limit performance.

According Hradecky, Lančí, Šišky (2008) then the contents of cost accounting is "information capture processes that take place in enterprises in transforming the input of economic resources to the performance of the enterprise."

Král (2005) defines cost accounting using the information provided by the managers. In terms of historical development was therefore the task of cost accounting in the first phase to determine the actual costs and actual revenues associated with produced performances and later also allow the expression of these costs and revenues due to the processes, activities and services that meet for their formation. In the second stage, cost accounting thus provided an opportunity to compare the real costs to the cost desirable, thereby supplying the treasures for short and medium-term management with deviations. In the most recent third phase extends cost accounting information provided by those by which managers can make decisions on the future development of the company. This third phase and by Král et al. passes cost accounting

management. Shillinglaw and Meyer (1986) then management accounting understood as a set of tools with which managerial accounting help company management to plan and manage business processes. Representative of German literature on management accounting, Lang (2005), then adds that management accounting is a sub-discipline of the doctrine of corporate management.

### **1.1 Current concepts of management accounting**

The aforementioned Král et al (2002) gives managerial accounting in connection with information which is unlike financial accounting primarily for internal users. As indicated Hradecky, Lanči, Šišky (2008), managerial accounting system then creates three components - cost accounting, costing and budgeting. Hradecký and Konečný (2002), then this system further integrate financial analysis.

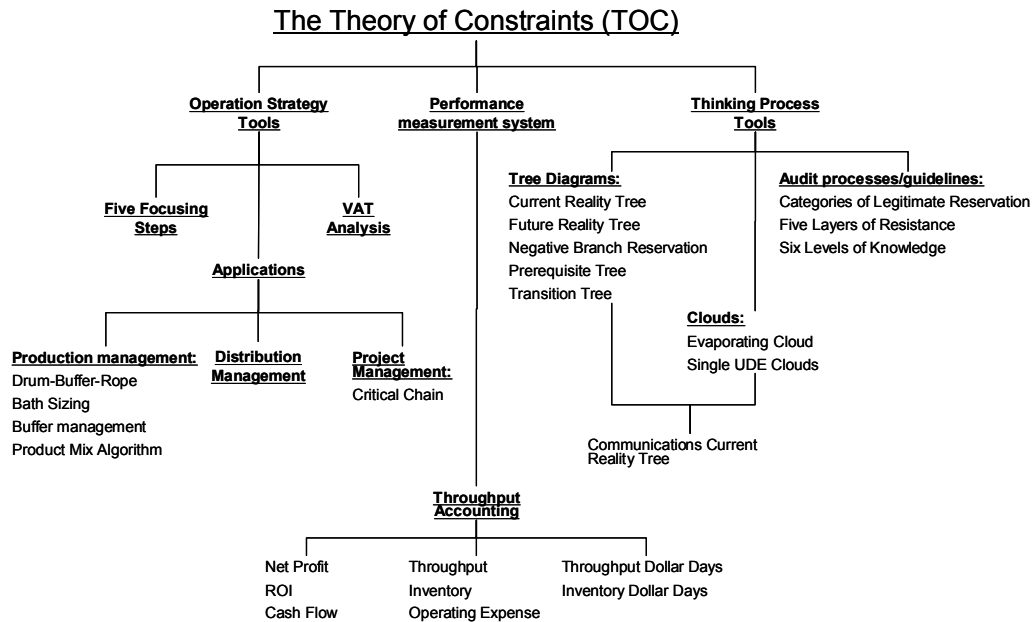
Over the years it has managed to formulate tasks that management accounting should fulfil. Schroll et al (1993) is defined as follows:

1. First provide information for financial accounting,
2. Second provide information on costs, revenues and profitability performance, both for internal management, as well as price control and sometimes even pricing,
3. provide information for departmental and liability management,
4. provide a common cost control,
5. provide additional information for management and decision-making, if not already included in items 1 - 4, as an example, the information for the assessment of long-term deposits of funds, information for decision-making on the structure of assets and capital, etc.)

Lang (2005) then the main task of management accounting sees in the "fully, continuously and systematically record costs included in the billing period. They are assigned to perform a given period and compared with each other so that in this manner calculated operating result.", but notes to other functions, and it's - information, screening, standard, control and analysis.

According to Cox & Spencer creates flow accounting one of the three main branches of TOC, as shown in the diagram below.

Fig. 1: The Theory of Constraints



Source: Král et al (2002)

Analyzes the flow of accounting, without having it in the context of the theory of constraints would therefore be somewhat unfortunate. What is it the Theory of Constraints? Where are its roots and from what?

Already mentioned Mabin & Balderstone (2000) understand the TOC as a paradigm shift that requires us another way to think about our problems, objectives, policies, processes and metrics. TOC by them is not just a set of tools and techniques, although these of course also contains.

Schragenheim (1999) describes the theory of constraints as unique management philosophy that requires a rational scientific approach to management. A further adds that a successful solution to the problem is needed to understand the causes that led to it, otherwise we can find an excellent solution to a problem that does not exist.

Corbett (1998) notes that although the application of the methods of scientific management was one of the causes of the extraordinary growth of the industry in the last century, its time has passed. In his opinion, may be just the TOC one of the building blocks of a new approach to management in the 21st century and Goldratt main creative principle of this approach.

Smith (2000) then expresses the opinion that the theory of constraints shows managers where and how to focus resources of the company so that there was a maximum return on

investment. It also provides guidance on how to monitor and measure processes and communicate with the rest of the organization in order to get on the path of continuous improvement.

Theory of constraints based on the systemic approach. Hálek, Palatová, Škapa (2005), the term means "a way of thinking, a theoretical or practical solution to a problem that is characterized by purposeful contemplation of man the object of his interest." Concept system then understood as an abstract object that one defines the purpose and which has functional properties.

According to the TOC can be any business (organization) compared to the chain (system) dependent activities, through which the company realizes output either in the form of a product or service. Dependence of activities based on the logic of the passage of the product now. For we cannot deliver the product to the customer before it was made. But we can make it up when we have raw materials and we could go on and on - viz. Image.

Obviously, that is not always the product must go through all the articles. Some may jump to some may come back, but always there are some dependencies that can not be avoided.

The basic assumption on which the TOC based and which can also be easily demonstrated is that each system (including plant) has and have some limitations. It is defined as anything that reduces system in achieving higher performance in relation to its objectives. (Goldratt, 1990a)

If we stay in analogy with the chain, then how to correctly recall Schragenheim and Dettmer (2001), each chain is only as strong as its weakest link. From which it follows that if we want to strengthen the chain, we must strengthen the rights of its weakest link, which is immediately reflected to improve its performance. It should be added that the strengthening of any other article than just and only the weakest, the performance of the chain at all affect or influence to a minimum.

In general it can be said that the firm may have limitations (weakest) some, at least at least once. If not, the company reached its goal by an unlimited extent. Reality, however, shows that such companies exist in practice.

In relation to businesses, which aim to determine the profits, Smith (2000) justifies the existence of at least one limitation in any business the fact that there is no company in the world, which would amount to an infinitely large profit. Bragg (2006) then Goldratts

definition more specifies when the restrictions described as a "source, which limits the total output of the company." As an example, it shows the capacity of the production machine that allows you to produce a certain amount of the component under consideration time, thus preventing a further increase in sales. Let's talk about the physical resources, which limits the output of the company. Just further adds, however, that the most common form of restriction constitutes a restriction, which can not be touched because they are hidden in various business rules and policies, which can be both formalized and non-formalized. An example of such rules can be found e.g. in companies, where they try to maximize the size of the batches to maximize the use of available time a particular source. This type of restriction then called "policy constraint". Or restrictions in the form of rules. Basl, Majer, Settlements (2003) then used the translation restrictions intangible.

Corbett (1998) and others indicate limitations related to physical resources using the term "capacity constraint resource - CCR" (loosely translated as a source of capacity constraints), or "bottleneck" (bottleneck). Authors Basl, Majer, Settlements (2003), virtually the only textbook google TOC issued in the Slovak Republic, the term bottleneck being used in connection with physical limitations and restrictions subdivided as follows:

- Depending on the location restrictions inside or outside the company to:
  - on internal - such as a low number of employees in the department coating,
  - the external - such as a lack of customer demand for enterprise performance, inability of suppliers to deliver on time required material;
- depending on the physical reality of limitation:
  - the material (physical) - e.g. capacity of various corporate resources
  - the intangible - such as rule setting a minimum lot size of production in which it moves between corporate resources.

Caspari and Caspari (2004) subdivides the tactical constraints that limit the performance of the company right now and the identification and proper management is more reactive and limited strategic step that the company itself proactively chooses.

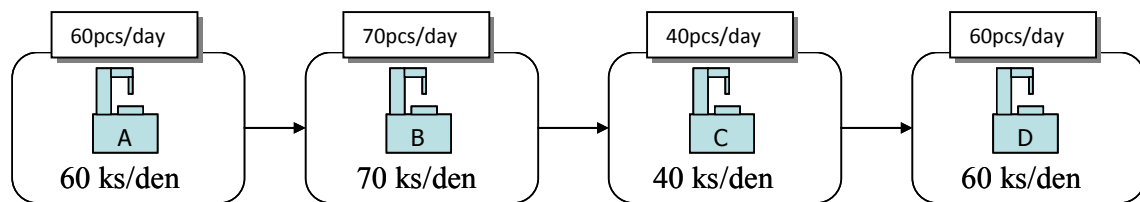
Based on the above we can deduce that every company must have at least one physical limitation (whether internal or external), and may or may not have any intangible constraints that limit the performance of the material significantly influences. From the definition of the

bottleneck then be inferred that all other sources, except for a narrow space, must have a higher capacity than it needs a resource that constitutes a restriction on the system.

## 2 How to find the limit

All authors mentioned in the previous chapter indicate that finding physical limitations are often not a problem. Often an indicator of the existence of physical restraint is a large volume of work in progress positioned before a given source. For illustration, we will use the following simplified example. The manufacturing process processing product shown in the figure below, consists of four business centers that have the capacities.

**Fig. 2: The Theory of Constraints in production chain**



Different capacities of the individual centers must when trying to use their full necessarily lead to an increase of production in front of the machine C. After the first day there would lay 20 pieces of work in progress. The total output of the company, however, in this case (in the absence of external constraints) amounted to only 40 pieces, which allows the machine to produce precisely C. The C is thus the focal point of the company.

Bragg (2006) provides further questions in addition to the above "where the largest volume of work in progress?" That allows you to locate the focal point within the company:

- "Where there is much trouble?" - Due to the fact that the bottleneck is the most overloaded, its activity is usually accompanied by a very common disorder, which must be addressed if management handles the extra material for various types of contracts, the leader of such machinery centers will have to constantly deal which award process earlier.
- "Which work center has a high level of capacity utilization?" If some of the work center is reached after a long period of high levels of capacity utilization, it is expected that the focal point is precisely that source.

- "What will happen to sales if we change the anticipated capacity limitations?" - In the event that we suspect that the source of the bottleneck enterprise, it is necessary to examine what change will have its effect on the output capacity of the company in terms of sales. If the calculations we find that increasing the capacity of the resource would be substantially increased business sales, we can assume that it has found the correct source.

As further Bragg (2006) adds that if the means of the above supplies cannot find the real bottleneck at the first attempt, the real limitation is based on the principles of production management by TOC listed below appear very quickly, because there is transfer of stocks of work in progress throughout the system before the actual limitations.

All the authors mentioned in the previous section is then further agree that the difference identification of material constraints, a finding intangible constraints rather complicated process. Restrictions in the form of rules may in fact be in business for quite a long time and no one was not even aware that such a rule is a problem for the entire enterprise. To find this kind of constraints use the Theory of Constraints "Thinking Processes", which based on causal logic allows to combine the adverse effects identified in the company and thus identify rules that negatively affect the performance constraints and thereby the entire system.

### **3 Global versus local optimization**

Schragenheim and Dettmer (2001) rightly point to "the living and dying as a complete system, not as a set of isolated parts" but then immediately cautioned that "However, the management companies typically governed as if the maximum performance of the system was only simply the sum of all local performance of the system. "If this were true, then, according to these authors, could only reduce management effort to maximize the performance of its individual parts. Schragenheim and Dettmer (2001) note, however: "Optimum system is not the sum of local optima."

Rationale then offer as Caspari and Caspari (2004) when in addition to the already mentioned interdependence of elements within the system, reminiscent of the effect of the statistical fluctuations, which significantly affect the performance of the system and thus the performance of the system as a whole. As a result of statistical fluctuations then running business processes according to a predetermined plan and because such failure on one of the machines and delayed delivery of goods to the customer. Caspari and Caspari (2004) then the existence of statistical fluctuations conclude that "the organization must exist substantial



amounts of unused capacity." Meaning of spare capacity so is their ability to absorb the negative consequences of statistical fluctuations. Spare capacity and can significantly affect the company's ability to fulfil its contract customers in the required time. Based on the above, then Bragg (2006) reformulated known Pareto rule 80: 20 to 99: 1st The intellectual concept of theory of constraints then apply that 1% of all business processes in the company influences the outcome of 99%. Or any change in control of the bottleneck is immediately reflected on the overall business performance. Managerial Accounting, as a system oriented to support management decision-making, should then take into account all the consequences arising from the existence of restrictions. Before, however, attention will be moved in this direction, focus next sub-chapter on how to manage the system limitations, so that enterprises reached its objectives to the maximum extent.

In the traditional approach to the management of the company for which the theory of constraints uses the term "cost world", with managers trying to improve every link in the chain (each functional area of business). Is based on the assumption that global improvement equals the sum of the local improvements and focus therefore on the total weight of the chain. In this situation, then each article needs additional resources to continuously improve. In the "cost world" is then often improved the cost-saving.

Trying to maximize the investigation everywhere and at all times has its historical roots. When during the last century has transformed markets in which the government's offer, the markets where the sole master of the customer, increasing competition has forced companies to reduce prices and thus reduce costs. Almost vast majority of these weight-loss treatment only benefited because it has become much more flexible and efficient. However, often these slimming treatment led companies to ruin. As a typical example is the outsourcing. For example, for reasons of economy we will make the maintenance man to form his own company. Those but, if I can get a better job, our company and we will leave the production line collapses. Another example might be an effort to maximize the coefficient of total use machines. Sometimes it remains a mystery what ways it is possible to achieve one hundred percent of the value of this indicator in a situation where one of the machines in the production line is able to create 1,000 blanks and more of them can produce 1200 products. Thinking "world costs" but it has implications for managerial decision that forces managers to measure up to other metro crown saved and earned the crown.

"The world flow", which uses TOC represents the opposite "of the world costs". In the "world flow" not important weight chain, but its strength. That then determines obviously the weakest link in the chain, and it is for him to be focused most effort and financial resources. Global improvement then do not get a sum of local improvement, but an improvement weakest link of the chain, or in the terminology of TOC system limitations. Access TOC has quite indisputably his logic. If we load the chain can carry more than (in the case of real business, if we want to produce more than its possibility), then it can be expected that cracks and breaks just in its weakest link. Any improvement efforts need to be focused on this article because improvement of any other article of strength does not help at all and just wasting precious financial resources. This supports the idea in principle and Drucker (1994), claiming that organizations often allocate resources not under the impact of the outcome, but rather by inertia and tradition, because it allows them to avoid inconveniences.

## **Conclusion**

The key role of restrictions on business performance is still better than using conformed to the chain demonstrated with the largest output, which the company is able to achieve. From the way it was defined constraints, it is more than obvious that this limitation determines the amount that an enterprise is able to produce. The logical consequence must be held that the minute lost in a narrow place is a minute lost to the performance of the enterprise, while on the contrary minute saved on not arrowed place is a mirage, which I like to think.

Simply expressed the importance of reducing Noreen, Smith, Mackay (1995): "There really is no choice in the matter. Either you manage constraints or they manage you. The constraints will Determine the output of the system whether they are Acknowledged and managed or not."

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