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COST VARIABILITY AND COST BEHAVIOUR IN MANUFACTURING ENTERPRISES

ABSTRACT. The paper is focused to the variability of costs, cost behaviour and discusses the issues of sticky costs. The main goal of this paper is to analyze the issue of the author's project targeted at the topic of cost behaviour and its projection to the costing systems and confront it with the current state of knowledge in the field. Special attention is paid to the phenomenon of the sticky cost. It highlights the importance of this topic at this time of adverse economic developments.

The first part of the paper analyzes the general historical changes in the enterprise's cost structures. There is also analyzed the cost behaviour and variability of costs due to the standard view of company performance. Attention is also paid to current view on the issue of costing systems and costing methods.

In the second part there are presented findings of completed surveys as proof of the relevance of this issue. From the researches it was found that in recent years there has been a rise in the share of indirect costs up to 40% (till 2009), while almost half of the companies shows steady growth in the portion of these costs. Discussion then follows of this section, in which special attention is paid to area of sticky costs. The author further provides additional research hypotheses and research questions which underlines the need for further exploration of this issue.

JEL Classification: D23, D24 **Keywords:** cost behaviour, cost variability, sticky costs, cost remanence, variable costs, fixed costs, cost management.

Introduction

Cost management is one of the most important issue of company performance and company financial management. Also the issue of the costing systems, methods and techniques is one of the important features of cost management and management accounting. We can observe a continuously growing importance of cost management systems quality that is caused by dramatic changes in business environment. Ecological, economical, social and environmental problems, as well as challenges connected with developing of the consumers, make the companies concerned with existing level and quality of relationship between them and the society, their employees and their consumers. On the one hand new challenges and expectations of the consumers force the companies to develop and introduce policies which foresee their strategy as for dealing with social, ecological and other problems. On the other

hand such actions of the companies positively influence their image, increase competitiveness and lead to higher market value (Bilan, 2013).

Due to growing competition on globalized markets, companies need the more accurate information about the profitability of their products, customers or markets. All these problems carry higher need for understanding of the consumed costs by different activities and other different areas where the costs play the important role. This change in the business environment is associated also with the suitable change of structure and organization of company activities and structure of products. The importance of these problems has significantly increased during the economic crisis, because many enterprises in the world reduced their performance. According to Belas *et al.* (2014) average performance of small and medium enterprises decreased by 15.80% in the Czech Republic and 18.78% in Slovakia at this time.

The main goal of this paper is to discuss the problems related to the cost behaviour, variability of cost groups and the stickiness of costs in relation to researches carried out by this article's author. The special focus of this paper is to analyze the previously performed research surveys in this field and introduce the importance of the cost variability issues in context of manufacturing companies in Czech Republic. Effort of this paper is also to demonstrate the inadequacy of traditional assessment of *cost behaviour based only on the relationship to the volume of production*.

1. Literature Review

1.1. Changes in cost structure

Changes in business environment in last century had the significant impact on the structure of the company costs. In the first half of 20th century, manufacturing-related costs (materials, salaries of employees and replacement of the plant) constituted well over 90% of total costs. Majority of those manufacturing-related costs had the direct character. Portion of the indirect – overhead costs rarely exceeded the 20% of total company costs. Glad and Becker (1996) summarizes the major reasons of the changes in structure of the manufacturing industries in 2nd half of 20th century. These reasons were: smaller quantities of cheaper materials used; increased competitive environment resulting in higher marketing, distribution and communication costs; many “new costs” such as market and other research, prototyping and training occurred; increased mechanization and automation; increased use of information technologies. Above mentioned reasons lead in the situation, when in 1990's portion of the direct costs of manufacturing concern consume only circa 40% of the total company costs. This study is also supported by other authors, for example Drury (2007) or Cokins (2001).

Cokins (2001) explains how the direct costs such as direct material and direct labour have been displaced by overhead costs between 1950's and 1990's from 25% to 60% portion. The technology, equipment, automation and computers are briefly considered as the main reason of change in the cost structure. However, this is only a secondary factor in the shift in organizational expense components. The primary cause for the shift is the gradual proliferation in products and service lines. Over the last few decades organizations have been increasingly offering a greater variety of products and services as well as using more types of distribution and sales channels.

Above mentioned studies are supported by other authors also for production firms in Czech Republic. For example Petrik (2005) points at the dramatic difference between cost structure between 1970's and 2000's. Dependence of the increasing portion of the overhead costs portion on the number of performed tasks and operation could be supported by the Wiener's (1962) study who presented the mathematical model of relation between structure of

the operations and produced units and company cost structure. These findings were partially confirmed by the researches carried out by the authors Popesko a Novak (2011a). Research focused on the product costing method application in Czech enterprises had been performed in years 2004-2009. The performed researches has been focused on the more aspects of the management accounting practices such as cost structure, used methods of product costing, budgeting practices etc.

If the company wants to keep in touch with strongest competitors its costing system has to implement the ability to react on changes in product and activity structure and feature these changes in the product costing. If the costing system will not change and will not conform with process, activities and product structure dynamics, than the costing system will become outdate and will generate the incorrect information about company costs.

So then ability of analysing company costs becomes one of the most important premises of the effective cost management and understanding cost behaviour is an essential element of cost and management accounting. Knowing how costs change as activity output changes is an essential part of planning, controlling, and decision making (Hansen, 2009). Ways to proceed with the assessment of costs and their analysis are numerous. In traditional models of cost behaviour which appears in literature, costs are described as fixed or variable with respect to changes in volume production. In this model, variable costs change proportionately with changes in the volume of production (Noreen, 1991; Drury, 2007; Hansen, 2009; Weygandt, 2010 etc), implying that the magnitude of a change in costs depends only on the extent of a change in the level of production, not on the direction of the change. But some allege costs rise more with increases in activity volume than they fall with decreases (Cooper and Kaplan, 1998; Noreen and Soderstrom, 1997). In fact, not knowing and understanding cost behaviour can lead to poor and even disastrous decisions. And this is the reason why we constantly talk about the variability of costs and how they translate into costing systems and hence the price of the product.

1.2. Cost Classification

Most important feature of the cost analysis is cost classification, where the costs are classified into defined categories according to the particular characteristics. Financial and management accounting in different countries usually brings different approaches to cost classification. Financial accounting uses the cost classification on financial statements (Garrissou *et al.*, 2010). This classification assort the natural types of the costs based on the type of the consumed input. Synek (2011) defines the five major natural types of the costs – material, labor, depreciation, external services and financial costs – and explains that number of identified categories of natural types of costs may vary according to the accounting principles in different countries. Drury (2007) considers the cost classification on financial statements as insufficient for use in effective managerial decisions according to the external characteristics of natural types of the costs. Jonson and Kaplan (1987) in this contexts declared that the traditional accounting systems which focuses on the financial statement cost classification focus too narrowly on inputs.

Most frequently used cost classification in management accounting is the general cost classification where the costs are classified into direct and indirect. Drury (2007) defines that direct costs are those costs that can be specifically and exclusively assigned identified with the particular cost object, while the indirect (overhead) costs cannot. This cost classification is fundamental in cost allocation procedures, where the costs are assigned to the particular cost object, and further utilization in cost management. The higher indirect cost rate disallows use of the simple cost assignment procedures and undermines the application of more sophisticated allocation techniques, in order to achieve the accuracy of the cost assignment.

The problems related to the increasing portion of overhead costs and its impact on cost management was defined by Nimocs (2005) and consequently leads into present trends of overhead cost reduction or cutting which was concisely summarized by Willeman (2008).

And how Hansen (2009) adds, cost assignment is one of the key processes of the cost accounting system. Studies have shown that up to 80% of companies continue to use (or have switched back to) traditional product costing methods, despite the fact that many accountants within these companies express dissatisfaction with relying on the outputs of their cost accounting system for decision-making purposes (Sharman, 2003). However, change comes slowly, especially when the alternative approaches are unfamiliar, somewhat confusing, and offer costing solutions from such divergent perspectives.

Then, just the correct identification of variability in each cost groups due to changing performance is the key to the exact allocation. Each of the criteria of differentiation, lead to a unique resolution costs in defined subgroups. Each cost item can be assigned characteristics that define the inclusion of costs into different groups according to given criteria of differentiation (classification). In context of present state of knowledge, the analyzing the variability of the cost seems to be very often unclear. The distinction of costs into variable and fixed is possible to define depending on whether the development of the examined cost items-dependent variable is dependent on development set of relational variables-independent variables. So we are talking about the cost driver. And how for example Wagner (2012) states, that the determination of all cost drivers affecting the development costs of a business is usually very difficult. This is due to for example too weak intensity of its effects as compared with the other relational values.

Another complication for identifying cost drivers may be their mutual conditionality in relation complementary (ie, relational variables are changed simultaneously) and substitution (ie, decrease in one relational variable causes an increase in other relational variables).

1.3. Cost behaviour

It is necessary to realize that costs need to be split to variable (links to load capacity) and fixed (independent to load capacity). In practice it is really necessary to distinguish these sets of costs. We can speak about purely variable costs, purely fixed and semi-variable and semi-fixed costs (Drury, 2007). As a part of fixed cost can have proportional character by maintaining continuity (e.g. costs associated with production charge). We can distinguish for example costs united with dose and its level, which are going to change in addition at quantity of doses, but stays fixed in link to individually produced units or products. As Weil and Maher (2005) state, the costs can be controllable and uncontrollable. The success of responsibility accounting system depends on the ability of company to identify correctly which costs each level of management can control. Not all controllable costs are variable. Some fixed costs, such as the cost of lighting during a production shift, are also controllable. A watchful manager may generate cost savings even though costs do not directly relate to output. Conversely, variable costs are not necessarily controllable cost. Costs are controllable by one who monitors them. Costs are only variable when they are a function of output. And these two options may not be the same.

Next possibility is to distinguish costs related to group of products or services. These costs are independent of made products quantity of certain type, but they have tend to grow in case of product type number produced by company grows. We could continue in this enumeration of variability, for example through costs, theirs formation is induced by specific customers and individual attitude to them (e.g. in marketing, support of customers etc.).

It is also possible evaluate costs variability also of the viewpoint of the time influence. As for example Hansen (2009) states, according to economics, in the short run, some costs

may be fixed but in the long run, all costs are variable. In that context question related to the exact length of the short term time period arises. Different costs have short runs of different lengths. Items such as direct materials are relatively easy to adjust. But what about the other items such as the lease of space? This is more difficult to adjust, because it may run for one or more years. Thus this cost is typically seen as fixed. The length of the short-run period depends to some extent on management judgment. However, there exist alternative perspectives on the nature of long- and short-run cost behaviours. These perspectives relate to activities and the resources needed to enable an activity to be performed (Hansen, 2009). Weil and Maher (2005) state, that also cost controllability has a time dimension. Costs resulting from decisions of prior periods are not controllable in the short run by anyone. The control over a fixed asset acquisition, for example, occurs when management approves its purchase. The subsequent depreciation expense is not controllable. But in long period, all costs could be controllable by someone, at least to some extent (Weil and Maher, 2005).

Why is knowledge of cost behaviour so important? This knowledge is essential for decision-making. And how Weiss (2010) states, results indicate that firms with stickier cost behaviour have less accurate analysts' earnings forecasts than firms with less sticky cost behaviour.

Activity or volume may be measured in terms of units of production or sales, hours worked, miles travelled or any other appropriate measure of the activity of an organization. Examples of decisions that require information on how costs vary with different levels of activity may include the following:

- Is possible to reduce the price to sell more units?
- What should be planned performance for the next period?
- How it should be set salary sellers? Would it be better to reward them by a fixed or floating wage commissions?

For each of the above decisions management requires estimates of costs and revenues at different levels of activity for the alternative courses of action (Drury, 2007). And it is the behaviour of costs and the subsequent decision depends on the cost driver. But how to correctly evaluate variability of costs being due to the different cost drivers?

How Wagner (2012) states, in the vast majority of the literature is the issue of variability of costs examined only from the perspective of a relationship quantities for which the volume is considered performance (outputs). Volumes of output as the fundamental cost driver, however, individual professional sources usually further specify. Some authors link costs dependency to changes in volume of production. So it is the limitations of only a portion of business activity – e.g. production.

As Landa (2012) specifies, the core of the problem is whether we use total costs or partial types of costs for the identification of the variable and fixed cost component by using synthetic or analytic cost models. And mostly the synthetic models are used. These synthetic cost models are characteristic with their high degree of generalization. Different factors causing the costs are being expressed in relation to costs in a form of a single total cause impacting their occurrence and height. These factors are that primarily total costs expended on the performance of a certain volume of outputs, then costs are examined for a certain production system as a whole, and finally only a single predominant factor – the volume of performed outputs – is supposed to influence the occurrence and the development of costs.

Another approach is divided costs into variable and fixed in terms of their relation to the final performance sold. Alternative view of the variability of costs is through tying costs to the length of the period. The length of time is determined as a factor that determines the possibility of adapting the costs to input volume performance. All of these approaches can be termed as justified, however, in changing conditions can cause inadequate because of a significant part of the company's costs is due to the additional non-production processes

associated with the formation of values for the customer (marketing, distribution, etc.), and these costs may show variability in relation to the volume of output (Doyle, 2006). Or chain of processes associated with creating value performance raises the need to safeguard a wide range of service and support activities. Then the costs of providing these activities may show variability in the range of activities within these processes, although the volume of the final outputs is manifested as a fixed or even inversely proportional.

In this connection we have to mention the cost analysis using analytic cost models. These are characterized as models which are going out of the characters and relations recognized in terms of the synthetic models analysis, these characters are, however, subjected to a further analysis, which aims both at the study of the internal structure of expended costs and at a more detailed identification of factors influencing the costs occurrence. In contrary to synthetic models, the analytic cost models feature aspects like that costs are not considered to be a homogenous unit and costs are not examined for a production system as a whole but their relation to individual activities or to individual elements of the cost process is respected. And finally when studying mutual relations, there is not only one dominant factor (volume of production), but the whole structure of factors impacting the occurrence and development of costs represents the basis for research. These factors can be eventually isolated and studied separately as well as in mutual relations (Landa, 2012).

1.4. Costing systems and costing methods

Various types of the product costing systems and methods are defined by the academics and practitioners. According to traditional management accounting (Shim and Siegel, 2009; Garrison *et al.*, 2010; Weygandt *et al.*, 2010, VanDerbeck, 2013 etc.) to provide management with the data needed for effective cost control, two basic types of cost accounting systems have been developed: the process cost system and the job order cost system. Both systems are used to gather cost data and to allocate costs to goods manufactured. These systems differ in the object of the cost assignment. While in job order cost system, the company assigns costs to each job or to batch of goods, in process cost system companies apply costs to similar products that are mass-produced in similar fashion (Weygandt *et al.*, 2010). VanDerbeck (2013) continues in these considerations and states, that however, as useful as they are in providing cost data, these systems are still limited with regard to cost control. Although they make it possible to determine what a product actually costs, they provide no means to determine what the product should have cost. Therefore extends these considerations on the issue of standard costing, which is not a third system, but may be used with either a job order or a process cost system. It is therefore unnecessary to assign costs to individual units of output (Drury, 2007). Classification of the product costing methods is not general. Product costing methods could be classified in different ways. As mentioned above the costing methods could be classified into job order costing and process costing based on the type of production process. More important classification of the product costing systems is based on cost allocation principles. In this field we can distinguish the traditional absorption costing, variable costing and Activity-Based Costing.

Usage of the management accounting techniques in Czech Republic in the second half of 20th century had several specifics caused by political environment. Methodology of the product costing was regulated by the statutory rules in order to fulfil the needs of central planned economy. This costing technique was based on traditional absorptions costing principles and used three different types of overheads (production, administrative and sales). In 1966, the regulations of the unified costing rules were accepted and in 1971 act of unified social-economic information system finished the complex regulation of the management accounting techniques in state owned enterprises (Lanča & Sedláček, 2005). The politic

system change in 1989 caused the transformation from central planned economy into free market economy. In this situation no regulations related to the system of the management accounting were furthermore demanded. But the change of the political system doesn't mean radical change in the management accounting practices. Companies started very slow process of adoption of diverse costing techniques. Anyway, many companies keep in use the traditional techniques known from 1970s.

2. Research Objectives and Used Methodology

Three individual surveys focused on cost management and the costing method application in Czech enterprises had been performed in years 2004-2009¹. This performed researches has been focused on the more aspects of the management accounting practices such as *cost structure, used methods of product costing, budgeting practices etc.* This paper also presents some results of the research focusing to used product costing techniques. Performance of the similar researches in different periods of time allows the analysis of the product costing method utilization trends.

Several objectives and research questions have been established. First aim of the survey was to *determine the average portion of the overhead (indirect) costs in Czech enterprises.* While above presented foreign experiences shows, that average portion of the overhead costs in enterprises exceeded 50%, objective of the study was to prove if the situation in Czech enterprises is similar. Another objective of the research was to investigate the tendencies in the cost structure. Foreign experiences shows, that relative portion of the overhead costs is gradually increasing in long term period. *The hypothesis about the increasing portion of the overhead costs in Czech enterprises* was tested by the questionnaire survey and by the statistical comparison of the data gathered in different time periods. Objective of the questionnaires survey was to identify the exact percentage of the indirect (overhead) costs. Some of the respondents were unable to explicitly determine the percentage portion of the cost portion. In such cases the respondents were asked to determine the interval in which the indirect cost portion could be identified. If the company indicates the portion of the indirect costs with interval, the mean value of the interval has been used for further processing. Following formula has been used for identify the average portion of indirect costs:

$$\bar{x} = \frac{x_i \times w_i}{u - 1}$$

The main expectation and the main hypothesis, based on the foreign studies, was in *increasing usage of the sophisticated costing methods such as Activity-based costing and decreasing use of traditional absorption costing methods.* Foreign experience shows, that relative use of modern costing systems is gradually increasing in long term period. Expectation about absolute portion of use of different costing methods was different than in foreign studies. Because of the above mentioned specifics of the costing process before 1989 and slower adoption of progressive managerial techniques, considerably lower usage of ABC was expected in the study.

The hypothesis about the low usage of sophisticated methods such as ABC method and about their increasing use in Czech enterprises was tested by the questionnaire survey and by the statistical comparison of the data gathered from different time periods.

¹ These are results of research investigations that were conducted by research team Popesko and Novák in years 2004-2009. The surveys were conducted as quantitative surveys of a random sample of manufacturing firms belonging to the manufacturing sector in Czech Republic.

Data from three questionnaire surveys has been analyzed in the research in order to get better and more accurate results and also because of a need to compare the evolution of the researched indicators. First questionnaire survey was made in 2004, when 116 questionnaires had been evaluated. Similar research was made in 2007. The structure of the questionnaire was focused on the same objectives as in 2004. 96 questionnaires have been gathered and analyzed. Final questionnaire survey was performed in 2009 as a part of extended research focused on costing methods use in Czech enterprises. Finally 77 questionnaires have been processed. Enterprises of different sizes have been researched within the individual surveys.

3. Results

In this part there will be introduced some of the results of research carried out. First, the cost structure has been investigated in terms of direct and indirect (overhead) costs. *Table 1* illustrates, that average portion of the indirect costs increased from 34.5% in 2004 up to circa 40% in 2007 and 2009.

Table 1. Indirect (overhead) cost portion

2004	2007	2009
34.5%	40.7%	39.5%

Source: own.

More interesting, however, are data of the development of indirect costs which can be found in *Table 2*. The data indicated by direct specification of indirect cost portion or by defining the interval, was calculated in order to obtain the average portion of indirect costs in researched sample. The result of cost portion behaviour determined from the latest research was following: 45.5% of the respondents indicate tendencies of increasing portion of the indirect costs, 31.2% of the respondents indicate no changes in indirect cost portion and only 22.1% of the respondents indicate the decreasing portion of indirect costs. 1.3% of respondents were unable to identify any trends in cost structure changes. These results are very similar to research performed in 2007 and prove the foreign studies results about increasing portion of indirect (overhead) costs. We can observe a significant change in the behavior of costs compared to the initial research in 2004, where e.g. only 19% of companies surveyed indicated increasing portion of indirect costs. On the contrary, almost 30% of the firms reported decreasing portion of indirect costs, what was a significant contrast to the initial expectation. Unchanging portion of indirect costs was then reported by almost half of the companies.

Table 2. Indirect (overhead) cost evolution

	2004	2007	2009
Increasing portion of indirect costs	19%	55.2%	45.5%
Decreasing portion of indirect costs	29.1%	12.5%	22.1%
Unchanging portion of indirect costs	49.1%	26%	31.2%
Unknown evolution of indirect costs portion	2.6%	6.3%	1.3%

Source: Popesko and Novák, 2011a.

The above-mentioned development costs, as well as changes in the economy in recent years, may indicate a significant need to further investigation of the cost behaviour. So then based on these carried out researches, new research project will continue focusing on the behaviour of the cost in terms of their variability.

3.1. Cost variability and costing approaches

Standard costs classification into variable and fixed is legitimately in focus of attention of microeconomic theory but mainly enterprise economics and business management. Despite extensive range of applications in theory and practice is devoted little attention to the concept of cost variability. And just previously carried out studies and researches by the author of this article *lead to an idea of a detailed examination of the variability of costs at different angles*. It is appropriate to examine capture this variability in the adequate cost systems.

As was mentioned, two different product costing approaches could be defined as the traditional absorption costing and alternative variable costing. These two major costing approaches differ from one another, by the degree of costs assigned to the cost driver. The traditional absorption full costing method is one of the most used methods. At present simple model overhead rates of allocating costs (most common) looks like insufficient as through are significant inaccuracies in assignment of overheads costs. These mistakes partly eliminate variable costing, but in this case we are not able to calculate total costs attributable to the performance and leave fixed costs. Many other methods of product costing are defined in traditional management accounting. Special category of product costing method is the Activity-Based Costing, which was designed in 1980's and became more natural part of enterprise's costing system in recent years. One of the objectives of the carried out researches was to identify the level of different costing method utilization in Czech Republic (see *Table 3*).

Table 3. Product costing methods used in surveyed companies in 2004-2009

	2004	2007	2009
Calculation by dividing ²	4.27%	9.38%	2.60%
Job-order costing	30.77%	31.25%	40.26%
Joint and by-product costing	1.71%	4.17%	0.00%
Standard costing	42.74%	40.63%	10.39%
Variable costing	29.91%	23.96%	5.19%
Activity based costing/management	5.13%	5.20%	7.79%
No product costing method applied	5.98%	5.21%	3.90%
Other	9.40%	2.10%	38.96%

Source: own.

These surveys show the problems of companies to use correct and appropriate calculate methods in order to the most accurate allocation unit groups of costs by their variability to make outputs. As you can see there was still the most used traditional absorption costing (from 30.77% in 2004 till 40.26 in 2009) and standard costing (circa 40% in 2004-

² It is a simplified costing approach. It is based on simple technique of dividing the total costs by product quantity.

2007 and significant decrease to 10% in 2009). It was also found up that up to 70% of the companies allocate their overhead costs on the basis of historical overhead costs evolution. From the obtained data can be regarded as a positive fact a slight increase in the use of activity-based costing/management, which essentially solves at least marginally different relationships between overhead costs through specific cost drivers (and not only the production volume).

The survey current level of knowledge in this field clearly shows that the constant changes and developments in business and economic environment, companies require new approaches also constantly assessing the costs and their variability. Obviously, the more accurate determination of the variability costs will be done, better it will be possible as well as their recognition by appropriate calculation methods. Companies are now very often lacking sophisticated tool for proper identification and allocation of costs and hence their proper factored into the price of products (Popesko and Novak, 2011b). Supporters of activity-based costing system base their arguments on the view that all costs, are variable in the long-term. The activity-based model captures this variability by assigning costs to products in proportion to each product's expected long-term demand for costly resources. On the other hand, there are for example proponents of the Theory of Constraints, which take a very short-term perspective and assume that the cost of most resources are fixed and inescapable. It means that the TOC model usually assigns only variable material costs to products while seeking to optimize throughput (i.e., contribution margin) on the fixed resource capacities that constrain the overall system. These problems related to the construction of the proper costing system are very significant also in different fields such as healthcare management (Popesko and Tučková, 2012).

4. Discussion

Carried out surveys show, that in many manufacturing companies *constantly grew share of overhead (fixed) costs*. This was due to long-term growth of firms in the growth of the whole economy. Many manufacturing companies through continuous development are surely under pressure of customers and competitors. Thanks to that, the importance of cost management and importance of correct and accurate allocation of cost performance is still growing, as well as growing requirements of the use sophisticated calculation methods. And this is also because of the production capacity created in recent years which became unused in current cycle downturn decline of the economy. All this puts an increased emphasis on accurate knowledge and differentiation between the different groups of costs in terms of variability of performance. As mentioned above most companies (up to 70%) allocate their overhead costs on the basis of historical overhead costs evolution. This situation is most striking especially in small and medium-sized companies. And a fluctuation in capacity utilization often leads to inadequate coverage of fixed (overhead) costs. These considerations must necessarily lead to a reassessment of the cost management approach, stressing the need to uniquely identify the variability of cost groups and their recognition by appropriate and sophistic calculation methods. And it must be emphasized that the concept of variable and fixed costs is at the level of individual economic subjects used for a large number of decision tasks – in particular for tasks aiming at management of costs and profit on the existing production capacity, but also in solution of investment decision tasks.

Unfortunately just in the last 5 years of continuous economic decline and growing problem for many companies showed that *knowledge about the behaviour of costs plays a crucial role in the survival of these companies*. Just in the constant *decline in production leads to a situation of non-proportional decrease costs* we can talk about a certain cost rigidity. It is often referred to as a cost remanence. Our aim is to link the variability of costs in

the business economy with the idea of the causes of cost remanence. This cost remanence may be associated with delayed managerial decision making leading to reducing costs. The causes of cost remanence are not only technological, organizational and administrative limitations but also in a variety of obstacles in the company such as making decision of managers in a period of decline demand. In detail this problem solves e.g. Anderson (2003) on the basis of dedicated empirical research. But he is not the only one. For instance Grolms (2011) points on this issue such describing the concept *Kostenremanenz* in Germany and states that this problem has appeared in the first half of the 20th century. The importance of this issue is the subject of a study of Japanese authors (Pichetkun *et al.*, 2012), who for the behavior of costs and an explanation of the causes of sticky cost are using regression analysis. The consequences of stickiness on the cost used to explain the cost of cost adjustment, political cost, agency cost and corporate governance. The conclusions of their study contributes to the understanding of the behavior and control costs and have a major effect and the importance for managers in their planning, management and cost reduction in the firm. Their study is important because it highlights other relationships, the selected variable and costs, which we will not find in the financial statements of the company. This issue is further in the paper and in our opinion, would require a more detailed discussion.

In standard cost models, variable costs change proportionately with changes in the activity driver, implying that the magnitude of a change in costs depends only on the extent of a change in the level of activity, not on the direction of the change. But some allege costs rise more with increases in activity volume than they fall with decreases. We label this type of *cost behaviour* “*sticky*”. Specifically, costs are sticky if the magnitude of the increase in costs associated with an increase in volume is greater than the magnitude of the decrease in costs associated with an equivalent decrease in volume. Sticky costs occur because there are asymmetric frictions in making resource adjustments forces acting to restrain or slow the downward adjustment process more than the upward adjustment process. *And due to these mentioned problems is the issue of variability cost more than actual.*

4.1. Which cost could be “sticky”?

Among the costs that can cause problems and uncertainties in behaviour due to the volume of production in firms we classify the cost of *sales, general, administrative costs and some costs of production*. Then for these costs can be assumed that the relative size of an increase in these cost groups for an increase in sales is higher than the relative size of a decrease in these cost groups for a decrease in sales revenue. For example, let us mention here as a specific workforce (e.g. machine operators in manufacturing, or warehouse workers), that must be taken in a period of expansion. This increase in level of the workforce can have a proportional increase according to increasing volume of production and sales. But the question then is what to do with this level of labor force, if there is a significant decrease in the volume of production and sales? Is possible also simply reduce this workforce? Unfortunately this is very difficult, and we can boldly say it is nearly impossible and therefore the costs associated with this cannot fall on the same level as the volume of production.

As next we can mention other costs associated with the maintenance of equipment, or with the adjustment or equipment rebuilding in reason of the often modifying production due to variability of products, e.g. different in the case of the color range. The cost of product will be in terms of production volume variable if we produce only one color variant products. If, however, you will need to change settings for example painting lines, then their cleaning, adjusting and resetting will mean increased costs. And these costs will no longer respect the volume of production, but will depend on the frequency of the serial changes (size of series, respectively batches). Therefore, managers are often surprised to find that even though

volume of production decreases (understand is declining volume of production batch, but the number of batches remains the same), costs remain relatively on the same level. This situation is clearly indicated in the following figure.

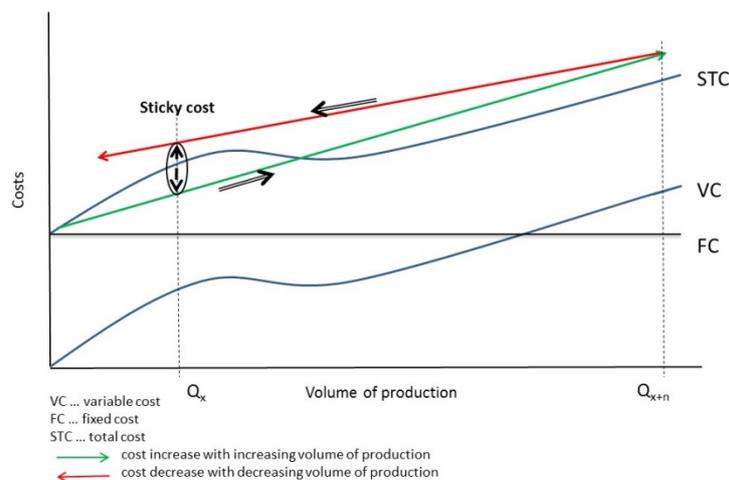


Figure 1. Course of costs in relation to the volume of production

Source: own.

Figure 1 illustrates the evolution of costs in case of an increasing volume of production (green line) and the course of costs when there is a reverse trend – the decline – of production (red line). It is obvious that the costs in the event of a decline of production are decreasing slower than is their rapid growth in the event of an increase of production. And just this is situation we called as “sticky cost”. And just it's causing problems in cost, which are then reflected in profitability in similarly unexpected losses.

The causes many problems which lead to the formation of the cost remanence (sticky cost), the company is understood differently. Some companies implement such steps to reduce these causes, or the scope of action of costs, other build remanence teams of experts (process engineers) to ensure the long-term continuity of the production process, the aim is to shorten the time period of the process at the earliest possible time, from entering through the production of the output. The experience of a corporate practice, analysis of variable and fixed costs and their solution is dealt with in most companies by the controlling department. Some of companies notices the causes of the cost remanence but it is not them able to predict. In the context of the emergence of cost behavior and cost remanence are growing much faster, these costs are not analyzed and are allocated without a difference to individual groups performances. Businesses should strive to limit the causes of the occurrence and extent of exposure, and therefore focus only on the volume of outputs as the sole criteria of variability is restrictive. *Variability of costs should be assessed for individual cost items in relation to the analysis of the correlation of variables.* Managers should not forget that in a situation where company will be able to assign costs to a specific activity, and in practice it often happens that the analysis of the activity ceases to be necessary, because it is given little attention, and the company loses the opportunity to rigorously control costs.

Presented problems related to the cost structure evolution, cost classification and cost behavior along with the problem of the cost variability of the individual cost elements reveals many scientific opportunities for further research. These questions could be concentrated on the unraveling the question what is the dependence of defined costs groups on various drivers. These cost groups could include those concerning production (e.g. maintenance, adjustment, and equipment modification), sales costs (e.g. transport, travel costs, etc.) or a selected group

of administrative costs. Meanwhile, the drivers could correspond as the number of batches, customers, or deliveries, and so on.

Further research could also help to find an answer on the following questions: “Is the relative magnitude of costs for an increase in production (or sales) greater than the relative magnitude of a decrease in these costs for a decrease in production (or sales)?”, “Is the stickiness of these cost groups dependent on period length?”, or “Is the issues of cost variability and rigidity (stickiness) reflected adequately in the tasks conducted by a manager when decision-making, nor in calculation methods and procedures?”. As we can see, the further research into the problems related to the cost variability reveals number of opportunities for investigation of the cost behavior and other related features cost management.

Conclusion

Even though the issue of cost behaviour has been solved by many authors, it is necessary to realize changing economic situation and business conditions of product companies. Companies are constantly under pressure of reducing costs and finding of cost reserves. This is result of global expansion and developing Information Society, which asks still new requirements. That has important impact to structure of performed activities and so to structure and development of different cost groups. That causes problems and difficulties with their appropriate and exact allocation in relation to performance of production.

It is necessary also realize that companies today face far more significant impacts of changes in the utilization of installed capacity due to impact of cyclical or seasonal fluctuation. Higher level of automatization leads to more effective production and savings in extent, what makes from the other hand causes fluctuations in capacity utilization. Its enhanced problems related with controlling the fixed and variable costs and their correct recognition using appropriate calculation methods. Just today, this seems like one of the important competitive factors that may have a distinct impact to the profitability of firms. Balakrishnan (2004) also stated: „our evidence therefore supports “sticky costs” overall but highlights the importance of considering capacity utilization when constructing cost models that incorporate sticky costs.” And how underline also Banker and Chen (2006) „understanding cost behaviour is one of the most important aspects of profit analysis for managers”.

And therefore all these situations and challenges clearly indicate the direction to the more detailed survey of variability of costs and exploration costs, depending on the different cost drivers. In this context, solving of the project and future researches can be considered very relevant.

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