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Control of cost variations through statistical studies

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The knowledge about costs and their evolution represent an essential element in decision process. The priority given to the cost analysis in the decision process can be explained through the fact that often the main factor is the financial implication of the selected decision made by the manager. The management of a company can find in the cost information an important instrument for adjustment, orientation and optimization of the operational and future activity because the cost appears in all its activities. The paper presents some aspects regarding the costs and their role in the management of enterprise because the information concerning costs play a vital part in formulating more performing strategies to get lasting competitive advantage. We intend to highlight the importance of the strategic planning and the role of costs management in a business medium, because the costs structure can be really an advantage in establishing the way in which the performance can be obtained "a durable competitive advantage" (M. Porter, 2001). The recent evolution of the management accounting is essentially characterized by the passing from an information system to a whole bunch of instruments guided towards outward part, strategy and future. Under these conditions, our paper tries to point out the necessity of inclusion the principles of strategy into the management of costs. Therefore, we consider a necessity of a managerial, contemporary system. Such an approach lays down the premises of a new philosophy of costs and opens new perspectives of approaching the management accounting. As result of the recent theories regarding the costs and their determinants factors, theories that contradicted the dominated idea in the classical analytic theory accordingly whose production volume determine the costs, at present, the cost management should consider the variety and complexity of all factors. Considering the randomly character of these factors' influence, for getting some rigorous results that can be the basis for adopting some efficient decisions, in the paper we propose statistical studies based on the influence of the determinant factors, studies based on the using of notions from probability theory and mathematical statistics. The main purpose of these studies is represented by the control of cost evolution, in the condition of incertitude and risk for the companies' activity.

Keywords: Costs, Management accounting, Strategic management of costs, Incertitude, Risk, Statistical studies, Mathematical statistics.

INTRODUCTION

The inclusion of the principles of strategy into the management of costs is considered, from our point of view, a necessity of the managerial and contemporary system is important because the recent evolution of the management accounting is essentially characterized by the passing from an information system to a whole bunch of instruments guided towards outward part, towards strategy, and towards future.

The connection between the management accounting

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and strategy becomes more and more obvious in the specialized literature (Dubrulle, 2002; Hohmann, 2004; Abdel-Kader and Luther, 2004; Bouquin, 2006). This link between the two is seen as a possible key to solve the problems with which the classic, analytical accountancy deals with. This idea seems to be more and more sustained, and probably, we think, this shall be the way which management accounting shall follow in its future development.

In this context, we intend to realize a dynamic analysis of the evolution of strategy and of course, of that of management accounting and we also want to highlight the characteristics and stakes of these concepts in the new conditions imposed by the changes occurred in the business area.

In most of those specialized works that define the management accounting and its objectives, direct or indirect references to the nature and to the substance of the strategic process are made. On the other hand, the analysis of the evolution of the strategy allowed us to be aware of the necessary implementation of the strategic principles into management accounting and allowed us to identify the instruments of the strategic management accounting and also allowed us to know the strategic context in which these appeared and are developed.

In the last 20 years, the instruments of the management accounting and their role have been the issue of many studies and debates (Johnson and Kaplan, 1987; Burlaud and Simon, 1999; Diaconu et al., 2003; Albu and Albu, 2003; Bouquin 2006), taking into consideration the critics of those instruments thought to be traditional ones (Johnson and Kaplan, 1987; Lorino, 1997).

International Federation of Accountants made in 1998 a division into periods of the management accounting's evolution that has the following stages:

On the first stage – that corresponds to the period until 1950 – the management accounting had as its main concern determining the *complete costs and the financial controlling.* In this period, the management accounting is considered to be a technical necessary activity in order to accomplish the organization's objectives, oriented to determining the cost of production. Management accounting appears as a result of the managers needs to rule their business. The development of the industrial organizations asks for adequate instruments to be used.

The second stage – after 1965 – is characterized by the interest of the management accounting for the production of information needed for the *accounting planning and controlling.* The turning point is that of defining and placing the control as a function of the management, and, especially, formalizing Anthony's relation between control and strategy (Burlaud and Simon, 1999). Control must contribute to   the accomplishment of the organization's objectives and must also assure   the behavior's

coordination and motivation. The classical organizational control system starts to take shape, with Anthony's principles, an adequate system to the stable environment appropriate for using the routines. At the beginning, the management accounting is a managerial activity, almost exclusively directed towards the internal management and less towards the environment or strategy. In 1970, the contingent theory expanded the conceptual frame of accountancy by the necessity of integration into the instruments of those factors that influence the organizational control (strategy, environment, technology).

In the third stage – after 1985 - the management accounting was interested in reducing the waste of resources used into an organization by applying those techniques of the *management of the costs.* The transformations that occur in the environment call for new managerial techniques: flexible manufacturing systems, Just-In-Time systems (JIT), supply chain management, Total Quality Management (TQM), materials requirement planning. These, in their turn, involve developments in management accounting: Target costing, value engineering, strategic cost accounting, activity-based costing/ management (ABC/M), Kaizen costing, non-financial indicators.

The fourth stage – after 1995 - the interest of the administrative accountancy is that of *creating or producing value by the effective and efficient use of resources*, through techniques that should allow the analysis of the value inductors for the client, for the shareholder, by organizational innovation.

In 1990, the planning, control and diminishment of the waste get strategic dimensions, because now the focus is on the production of value by identifying and measuring, and through the value management for the clients, but also through innovating and administrating the relations with the clients. The management based on value is built upon previous practices (Ittner and Larcker, 2001) and is made particularly of those models that measure performance, seen as models of the company considered as a system, that reflect the organizational knowledge of the relations along the chain of value (Malina and Selto, 2004).

It can be noticed that the last two stages bring a change of view meaning which consists on the passing from providing information to the resources management. Information itself becomes a resource, asking for bookkeeping and for the production of value. Moreover, the management accounting becomes a very important part of the managerial process (Abdel-Kader and Luther, 2004), evolving from the direction almost exclusively financial (which was based on the financial measures that reflect the result of the past decisions) towards strategic approaches (Ittner and Larcker, 2001). A strategical approach take into consideration non-financial perfor-mance measures which   have as aim the appliance of

specific measure that can ensure the firm success, such as: quality, clients' satisfaction, reaction time, technological advantage, leader position on the market.

Some authors (Waal, 2007; Abdel-Kader and Luther, 2004) claim that the new managerial techniques and the complexity rise were the fundamental factors of the evolution of management accounting, showing that these new techniques influenced the whole process of the management accounting (planning, control, making decisions and communication) and changed the centre of gravity. Thus, from a simple role of finding out the costs and financial control, the management accounting directs itself to producing value by improving the way in which resources are used.

Besides the modern techniques, the strategic management of costs brought has a novelty element that it considered the cost as being determined by numerous factors:

a) Structural determinant
b) Execution determinant.

The structural determinants factors take into consideration the economic structure of the firm, the main factors identified being the followings: the scale (how much is invested in production, development and how much for the trading), the field, experience, technique and the complexity. Each of these factors supposes to take a decision which influences the production costs. From the five factors, the scale, field and the experience presented interest for the strategy researchers. Afterwards, the complexity gained more attention (Kaplan and Cooper, 1998).

The execution determinant factors take into consideration the firm's capacity to develop the established activities and they are the followings:

1) The labor participation (the concept of labor contribution to the quality improvement)
2) The total quality administration (principles and achievements in the field of product and processes quality)
3) Using of the production capacities
4) Configuration and conception of the product
5) Exploitation of the relations suppliers-clients along the value chain.

As Shank and Govindarajan (1989) asserted: "the first rule in order to know what the costs determine is to forget the principle accordingly with the production volume that determine the costs". Therefore, regarding the strategic analysis, the production volume is not the best way to explain the costs' behavior.

The instruments of the strategic management costs are a part of the general evolution of strategy. Thus, there are numerous implications upon the management accounting's instruments: strategic planning, the importance of the organizational learning, partners etc.

There was a connection between the evolution of the management accounting and strategy, but with a slight disparity: thus, the management accounting from 1990 is based upon the researches made in the strategy's field between the 1970s and 1980s. The concept of strategic control shows up in 1970.

In order to increase the relevance of the management accounting, a rapprochement of the objectives and long term strategy must be done. In this way there are two possible approaches:

1) The implementation of a sort of techniques and practices, known as the strategic management accounting approach that has yet a limited usefulness, because it does not explicitly includes the strategic orientation among the control system (Otley, 1999).

2) The development of the entire control system, in the sense of including the strategy (Simons, 1994), considering the organizational control systems as "packages" (Otley, 1999). The strategic control is especially made through non financial indicators.

From a traditional point of view, strategy and management accounting have always been considered as distinct parts of the managerial process: the strategy is directed towards future, towards taking decisions on long term and it is qualitative, while the accountancy is historical, short term directed to quantitative. The strategy sees the company as a whole and is interested in synergies, while the management accounting divides the organization in controllable parts.

The rapprochement between the management accounting and the strategy supposes the integration of the strategic principles such as:

a) Orientation to the future and the development of a long term plan for the business
b) Orientation towards the exterior part of the company, towards the value chain
c) Offering qualitative information (non financial).

The cost management has to take into consideration the activity domain of the firm. For the firms which develop activities in high tech fields it is more important to pursue the research-development expensed instead of the production costs. In the firms from the other domains, a special attention should be paid to the control of the production costs.

Starting from the Porter thesis – which the durable competition advantage can achieved either through the cost domination, or through differentiation – the strategic management of costs has to adapt to each of these two strategies.

The strategy of cost domination is based on the experience curve. This imposes high investment in modern equipments , an aggressive commercial policy which can lead to the gain of new market shares, a

rigorous control of the indirect costs, a proper organization of production and of the distributions system. Such a strategy supposes the identification and exploitation of the possible sources of costs' advantages for getting a margin of average cost above the completion, and fact that will lead to some competitive prices. In this situation, the firm will offer its clients not very complex products but special (generic) ones.

The firms which choose the strategy of cost domination will focus on the reduction of costs. The differentiation strategy impose "the creation of something unique which can be felt at the sector level", in order to create a faithful clients and to get an overprice. This is "something" that is perceived as unique and can be related to the product image (exterior aspect, originality, quality) or can be related to the services offered to the clients (technical assistance, after-selling guarantee services). This strategy can be adapted better off than the "reputation" products.

At the firms which choose the differentiation strategy, the cost management supposes the analysis of the costs structure and it will not focus on their reduction.

Therefore, in the strategic management of costs, the role of cost analysis varies in function of the firm's option to be placed against competition. As well, a special attention should be paid to the strategic context of the administration, the role of the accounting information consists on the permission to define and put in practice the strategies (Shank and Govindarajan, 1989).

MATERIALS AND METHODS

At the launch of a product in fabrication, the production costs are based on the evolution of these costs in earlier periods and in function of specific conditions that present some forecasts for future periods, using a series of statistical studies. These take into account the price of raw materials and the cost of materials needed.

The costs thus calculated are valid for a longer or shorter period of time depending on the manner in which they react to certain factors such as: market fluctuations, technology changes, experience, complexity of technological processes, etc.

Costs that, by their nature, are a measure of performance and profitability of an enterprise may be acceptable to the producer for a certain period of time, but it must have a vision on the evolution of costs so that it can use the cost analysis to implement a policy cost in strategic terms for the company. At the same time, producers can thus benefit from the relevant information for determining the price policy for the use of a certain technology or more efficient for the conduct of relations with suppliers and customers.

Such policies and such strategies should be adopted so that they do not affect the production and of course, they meet the basic objective: "obtaining of profit." In these circumstances, the company can continue its work in good conditions and may possibly continue the expansion and development of its activity.

All these aspects require the need for a systematic and rigorous monitoring of changes and cost trends over time and an implicit efficient management of costs.

Of course, the study of the evolution of costs must be conducted in parallel with the study of changes in selling prices. While cost minimization is pursued with priority by producers, we can accept that some increase in costs, in the condition that prices recorded a level that ensures a minimum profit or a satisfactory profit for producers.

Considering the cost of a product, it may be acceptable (under the conditions mentioned earlier) if it belongs to a tolerance interval allowed $[c_i, c_s]$ of length $T = 2d$, whose center is c_0 (Figure 1). We will consider the cost of the product as a random variable whose values are grouped, in general, around a central group which is usually the average of this random variable (in some cases it may be the median or module of the random variable).

Given this central group, the cost values admit certain dispersion, entitled "dispersion field" and characterized by the average square deviation or the amplitude.

If at any time, by writing a statistical study, we find that the center of a group, that we consider the average selection of this random variable as being $\bar{c}_0$, then we can appreciate that for the respective product, the cost is properly determined.

But if the dispersion field does not exceed the tolerance interval $[c_i, c_s]$ we can say that the accuracy of the determination of cost is appropriate.

For establishment of some control methods regarding the cost variation and evolution methods that contribute to the increasing of management efficiency for the companies, we propose a mathematical instrument based on notion of probability theory and mathematical statistics.

There are usually systematic causes that influence the dispersion center and the dispersion field, but there are also non-systematic or random causes whose presence or deletion can not be sure.

Given that both the causes systematic detected, they can be shelved, the cost variation is due to randomness (in other words, to non-systematic causes).

Taking into consideration that, we can say the process of cost change is stable if it meets certain distribution law which must be estimated with its parameters.

Considering this aspect, two problems arise: one first problem of estimating the probability distribution that follows the process (that is to say, the establishment of the theoretical distribution based on statistical results) and a second problem - that of estimating the parameters which define the theoretical law that is estimated to continue.

Regarding the first problem, statistical studies were performed and were represented in a Cartesian system of coordinates. The results obtained were compared using the curve obtained from the graphs of the probability laws that define the known theories. Based on the observed data, it is estimated that the process of costs' evolution follow a certain probability distribution (normal distribution, the distribution of chi-square, Student's distribution, Fisher distribution). For a greater degree of safety, the chosen samples and periods should be representative, or possibly, it should be taken into account the costs of some similar products.

Once established the theoretical distribution, based on the estimate, we proceed to solving the second problem.

As we already know from the theory of estimation, the estimated values are obtained after statistical studies that are made for solving the first problem. According to the same theory, there are several types of estimates for a certain parameter of the probability distribution:

a) Consistent estimate
b) Correct estimate (shifted)
c) Absolutely correct estimate (non-shifted)
d) Maxim likelihood estimation.

In economics, in general, the estimates of c-type (non-shifted) are considered the best. We demonstrate that the average selection $\bar{c}_0$ is a non-shifted estimation of the theoretical average and the dispersion of selection c_s^2 is a shifted estimation from the theoretical dispersion.
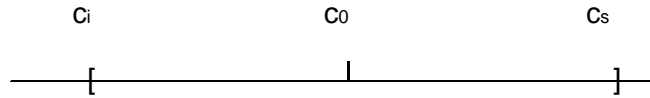A non-shifted estimate from the theoretical dispersion is the

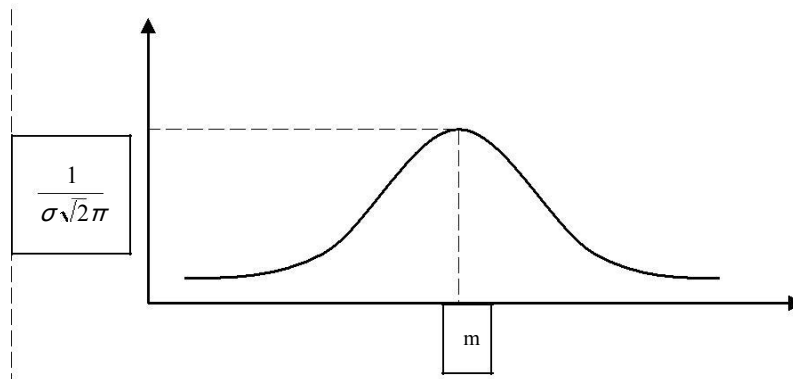**Figure 1.** Tolerance interval [ci , cs] with center c0

Figure 2. Normal distribution chart

dispersion of the modified selection $c_s{}^2$, where:

$$c_s{}^2 = \frac{n}{n-1} C_s{}^2$$

Based on several statistical studies carried out on some products from the furniture industry, we noticed that the graphical

representation of the resulting data, follow similar curves to the probability function graph according to the normal law. (Figure 2).

This poses the problem of estimating the two parameters of this,

that is m and σ^2. Recall that in the case of the normal distribution probability function (probability density) is:

$$f(x, m, \sigma) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-m)^2}{2\sigma^2}}$$

We will have the estimations:

$$m \approx \overline{c}_0$$

$$\sigma \approx c_s$$

On the basis of statistical studies conducted should be determined whether the central group of values for cost can be admitted and if the dispersion field is included in the tolerance interval.

In other words, we must determine whether for the probability distribution (normal distribution) can accept the hypothesis that the parameter $m=c_0$.

According to mathematical statistics such a hypothesis is verified in two situations:

A). When in previous studies we determined the value for the parameter σ of the normal law as having the value σ_0.

B). In the situation where we did not make any study and σ is unknown, in situation (A), we can apply the standard Z (or U) which can be stated as follows:

For a significance level q can accept the premise that $m=c_0$ if

$$\left| \frac{\overline{c}_0 - c_0}{\sigma/\sqrt{n}} \right| < Z_q$$

and it rejects the opposite case where n is the volume of selection (number of determinations made during the statistical study), Zq is in the condition.

$$\Phi(Z_q) = \frac{1-q}{2} ,$$

$\Phi(Z_q)$ the function was introduced into the following figure (figure 3). In situation B, we use the criterion T for a significance level, as follows:

$$\left| \frac{\overline{c}_0 - c_0}{c_s/\sqrt{n}} \right| < T_q$$

The hypothesis $m = c_0$ is admitted if , where:

n is the volume of selection

T_q is determined taking into consideration the

$$F(T_q) = 1 - \frac{q}{2}$$

condition . The function F (t) is presented in the following Figure 4.

Where: f=n-1 represent the number of the freedom degrees.

From these two criteria can be established if following the statistical studies carried out can be assumed that the average cost of the product coincides with the center of the tolerance interval

Figure 3. Normal distribution. Laplace function

Figure 4. Student distribution (T). Distribution function values

considered. It remains unclear if the dispersion field' values for the cost are included in the field of tolerance allowed.

The dispersion field can be considered as the interval [$\bar{c}_0$ -σ, $\bar{c}_0$ +σ] ($\sigma = \sqrt{\sigma^2}$ = average square deviation). In situation A we can easily noticed that.

In situation B, as σ is unknown we use the estimate of non-displaced $\sigma^2(c^2_s)$ and we will consider the dispersion field as being [$\bar{c}_0$ -c_s, $\bar{c}_0$ +c_s], where $c_S = \sqrt{c_s^2}$ or we first check the assumption that σ^2 has a certain value σ_{02} and then the dispersion field is considered:

[$\bar{c}_0$ -σ, $\bar{c}_0$ +σ]

The second method is more efficient so we can see when we can admit that σ^2 has value σ^2_0 and when it does not have this value.

The criterion used for the verification of this hypothesis is the standard chi -square that states as follows: for a level of significance q we accept the assumption $\sigma^2 = \sigma^2_0$ if

$$\frac{c_s^2}{\sigma_0^2}(n-1) \in \chi^2_{\frac{q}{2};f} \quad \chi^2_{1-\frac{q}{2};f}$$

, where χ_p^2 is found in figure 5.

So if, taking into account this criterion, we accept the assumption

$\sigma^2 \sigma_2 = 0$ then we also have the dispersion field. Therefore, we can conclude if the product cost is determined correctly or if the determination is adequate.

RESULTS AND DISCUSSIONS

We will exemplify a result of model application in the furniture industry. The control of the costs' evolution over a period of n = 25 consecutive time units indicate the results in Table 1. Graphically the values are represented in the (Figure 6).

Therefore, the evolution of the considered cost follows a normal distribution. We have a variable selection for which we obtain the average selection:

$$\bar{c}_0 = 28.78$$

The dispersion of selection $c^2_s = 0.32$;

The dispersion of the modified selection: $c_s^2 = 0.326$,

$$c_s^2 = \sqrt{\bar{c_s^2}} = 0.57 .$$

We will first consider that the tolerance interval is [28; 29.5] its centre being $c_0 = 28.75$. We check if we can admit the hypothesis that the average theoretical distribution (normal distribution) is c_0.

It was established in earlier studies that the dispersion of the theoretical distribution is known and it has the value $\sigma_2 = 4$. So we will apply the criterion Z:

$$\left|\frac{\bar{c}_0 - c_0}{\sigma/\sqrt{n}}\right| = \left|\frac{28.78 - 28.75}{2/5}\right| = \left|\frac{0.03}{2/5}\right| = \left|\frac{0.15}{2}\right| = 0.075$$

If we consider the level of significance q=0.05, then:

$$\Phi(Z_q) = \frac{1-q}{2} = \frac{1-0.05}{2} = \frac{0.95}{2} = 0.475$$

From the table result that Z_q= 1.96 and we admit the hypothesis that the average of the theoretical distribution is $m=c_0$.

If σ is unknown (if from previous research its value was not determined) then we can apply the criterion T.

$$\left|\frac{\bar{c}_0 - c_0}{s/\sqrt{n}}\right| = \left|\frac{28.78 - 28.75}{0.57/5}\right| = \left|\frac{0.03}{0.57/5}\right| = \left|\frac{0.15}{0.57}\right| = 0.26$$

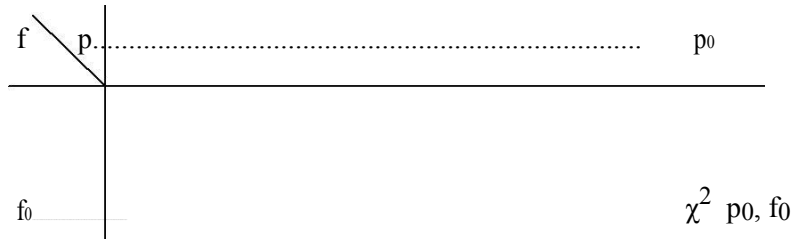$$F(T_q) = 1 - \frac{q}{2} = 1 - \frac{0.05}{2} = 1 - 0.025 = 0.975$$

Figure 5. Distribution χ^2

Table 1 Cost variation in case study for n= 25

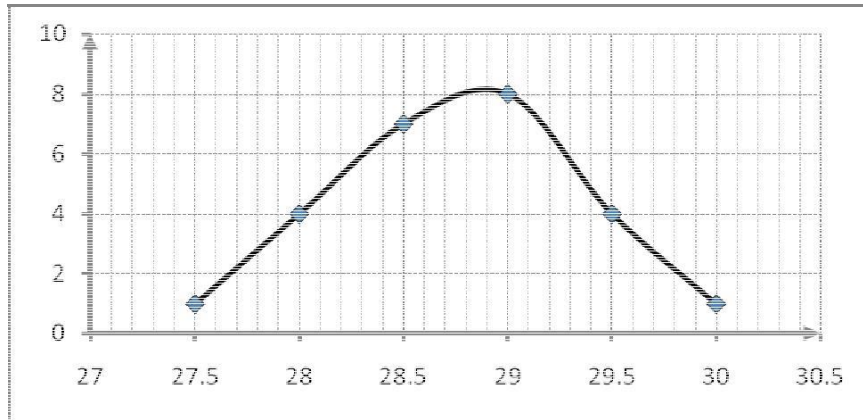| C(t)	27.5	28	28.5	29	29.5	30
Ni	1	4	7	8	4	1

Figure 6. Cost variation in case study
for n = 25

In a similar manner, we obtain from the tables that T_q=1.9 and it is assumed in this case that the average of the theoretical distribution is c_0. The dispersion field is

$$[\overline{c}_0 - c_s, \overline{c}_0 + c_s]$$

, that means [28.21; 29.35].

We observe that in the considered case, the distribution field is included in the tolerance interval. So we can say that the accuracy is adequate, but since $c_0 \neq \overline{c}_0$, the calculation of the anticipated cost is not perfect. Because the difference between the two values is small and we admit the assumption that c_0 is the average of the theoretical distribution that can reach the conclusion that even if not perfect, the anticipated calculation is right.

When analyzing the values obtained after the statistical study we observed that from the 25 tested values, only two values exceed the tolerance interval, so that we can consider that the emergence of these values is fortuitous. Therefore, it is not necessary to intervene in the production process or modify the determinants of the production cost. We must clarify that in a new statistical study, we can analyze a period that follows this or the entire period that consists of the analyzed period plus the next period until the completion of a new study.

In the second case, based on the higher number of determinations we can draw a more eloquent conclusion by using the mathematical apparatus. Similarly, we can obtain results that took into account the trend of variation and of cost evolutions in the last period which is of course closer to the future.

Thus, if in the next period of the study, we observe a trend (increasing or decreasing) in costs' evolution and we can expect that in a not too distant future, not the same trend occurs - a trend that would be somehow minimized if we take into account an earlier period.

In the case of another company from the furniture industry for a similar product, the evolutions of cost during a period of 9 consecutive time units have led to

Table 2. Cost variation in case study for n = 9

C(t)	27.5	28	28.5	29	29.5
n_i	1	2	3	2	1
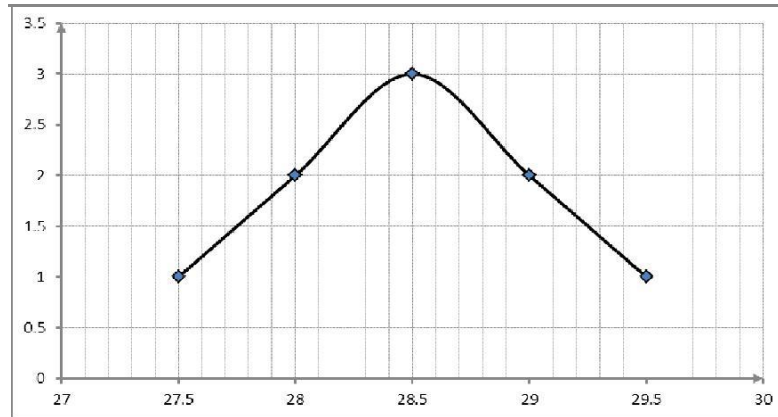
Figure 7. Cost variation in case study for n = 9

the results in Table 2. Graphically the respective values are represented in the Figure 7.

As can be seen, the evolution of cost follows a normal distribution. Considering the variable of considered selection we obtain:

$$\overline{c_0} = 28.5$$

$$C_s^2 = \frac{1}{3} = 0.333$$

$$c_s^2 = 0.37$$

$$c_s = 0.61$$

Considering the tolerance interval [28, 29] we find that

$$c_0 = \overline{c}_0 = 28.5$$ so we could say that the cost was correctly determined.

The dispersion interval is [$\overline{c}$,-c_s, $\overline{c}$ $_0$+c_s], that means [27.89; 29.11] which is not included in the tolerance interval, so the cost calculation is not adequate according to the definition given previously. The differences are small and they can be neglected, since they do not influence the results of the study.

We point out that if one accepts the hypothesis that m=c0, which is true in the case presented, and the assumption $\sigma^2 = \sigma_0^2$ is accepted (based on chi-square test), then the dispersion field can be considered:

$$[\overline{c_0} - \sigma_0, c_0 + \sigma_0].$$

Since in this example, the range of dispersion is not included in the tolerance interval only due to the upper limit, we try to analyze whether we can use what is stated earlier. Because the range of dispersion is included in the tolerance one, the assumption $\sigma^2 = \sigma_0^2 = 0.25$ should be verified. In this case, the dispersion interval calculated using the new formula is [28, 29] which coincides with the tolerance interval. We will check if the hypothesis is considered acceptable. We calculate:

$$\frac{c_s^2}{\sigma_0^2} x(n-1) = \frac{0.37}{0.25} x8 = 11.84$$

Considering the aforesaid that q=0.05, we have:

$$\chi^2_{\frac{q}{2};f} = \chi^2_{0,025;8} = 2.18$$

$$\chi^2_{1-\frac{q}{2};f} = \chi^2_{0,975;8} = 17.5$$

Since $11,84 \in [2.18;17.5]$, it follows, based on the chi-square test, that we admit the hypothesis $\sigma^2 = 0.25$. It results that $\sigma = \sqrt{0.25} = 0.5$.

In that case, the dispersion interval can be considered:

$$[\bar{c}_0 - \sigma, \bar{c}_0 + \sigma] = [28;29],$$ interval that is the same as the tolerance interval.

Since the testing of hypothesis $\sigma^2 = \sigma_0^2$ was performed on the basis of a fundamental scientific criterion, we can consider that we have obtained a proper value of the given cost.

Conclusions

An important task of the management is to ensure the control on operations, processes, activity sectors and not, the last, on the costs. Achieving the objectives of an organization contribute to many control sectors (the production control, the quality control, the stocks control) but the informational system of costs is important because it control the others systems results. The detailed analysis of expenses, the calculation of the production cost, the quantification of losses, the efficiency of work, offer a solid basis for the financial control. The knowledge of the costs and their evolution represents an important factor regarding taking decisions or planning for future activities.

The analysis and registration of data regarding the costs of the past activity is only a part of cost accounting. The managers are concerned about the costs that will appear in the future, their level being the base for some supply and production decisions, as well as pricing policies.

In these conditions, it is necessary to implement the strategic management accounting based on the techniques that can be divided into three groups:

1) Orientation towards the internal part of the company – underlines the collecting and reporting of relevant internal information in order to obtain efficiency as an advantage competitive source and that regards: ABC, ABM and the bookkeeping associated with the development of the new strategies of production (information as quality, cost, time, related to TOM and JIT).

2) Orientation towards the exterior part of the company – it is believed that those orientations internally directed limit the ability of competing in an efficient way. The strategic management accounting must draw the comparison between the structure of the cost and that of the competitors involved into a cost strategy and it also must draw the comparison between the report of the product's qualities and the market's demands into a diversification strategy.

3) Orientation to the future – mostly used in the investment decisions, where an orientation on a long term is needed, especially that this field was criticized because it moved away from the strategy.

Regarding the roles of the strategic management of

costs, these can be followed on three coordinates:

1) Monitoring the strategy – role made through instruments such as the systems of measuring the performance (BSC or other), through competitor-focused accounting, taking into consideration that the competitive advantage can only be created by comparison to competitors.

2) The development of the strategy – information is used to develop superior strategies with the purpose to obtain lasting competitive advantages, and as instruments we have the planning of the investments and the benchmarking.

3) The formulation of new strategies – strategic management accounting has an important role in strategic transformations, not because of the instruments themselves, but more because of the information and knowledge it posses.

In this context, our study provides a scientifically based tool for the control of costs evolution during the production process. This implies the achievement of statistical studies and comparison of results obtained following adaptation with the proposed target, represented by the level of cost that ensures a break-even acceptable to the product.

The results of studies presented in this paper show the usefulness and necessity of such studies in making decisions, because, the information regarding the costs is a key factor for business management. Following completion of these case studies we concluded that the production process can be continued without major changes as regards the volume and structure of production factors.

REFERENCES

Abdel-Kader M, Luther R (2004). An empirical investigation of the evolution of management accounting practices. Working paper, No. 04/06, October.

Albu N, Albu C (2003). Instrumente de management al performantei. Ed. Economica, Bucuresti. pp. 79-91, 255-274.

Bouquin H (2006). Comptabilite de gestion, 4-e edition. Ed. Economica, Paris. pp. 58-112.

Burlaud A, Simon CJ (1999). Comptabilite de gestion-Couts-Contrôle. Vuibert, Paris. pp. 76-99.

Dubrulle L (2002). Contabilitate de gestiune. Ed. Economica, Bucuresti.

Diaconu P, Albu N, Mihai S, Albu C, Guinea F (2003). Contabilitate manageriala aprofundata. Ed. Economica, Bucuresti

Hohmann Ch (2004). Le concept de chaine de valeur, URL: http://chohmann.free.fr

Ittner CD, Larcker DF (2001). Assessing empirical research in

managerial accounting: a value-based management perspective. J. Account. Econ. 32: 349-410.

Johnson HT, Kaplan RS (1987). Relevance Lost-The Rise and Fall of Management Accounting. Hardvard Business School Press

Kaplan RS, Cooper R (1998). Cost effect. Using Integrated Cost System to Drive Profitability and Performance. Harvard Business School Press, Boston

Lorino P (1997). Le contrôle de gestion strategique. Dunod, Paris.

Malina M, Selto F (2004). Choice and change of measures in performance measurement models. Manag. Accounting Res. 15(4): 441-469.

Otley D (2001). Extending the boundaries of management accounting research: developing systems for performance management. Br. Account. Rev. 33: 243-261.

Shank J, Govindarajan V (1989). Strategic cost analysis, the evolution from managerial to strategic accounting. Homewood, R.D. Irwin. pp. 38-75

Simons R (1994). How new top managers use control systems as levers of strategic renewal, Strateg. Manag. J. 15(3): 169-189

Waal AA (2007). Strategic Performance Management, a Managerial and Behavioral Approach, Palgrave MacMillan, London.