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INNOVATIONS AND COST SYSTEMS TRENDS AND WAYS IN THE COST ACCOUNTING

Not only the strengthening of global competition and the acceleration of technological evolution but also social and governmental demands for sustainability present new challenges and expectations for decision support as well as for accounting. Can decision support and accounting meet these challenges and expectations nowadays? The aim of the author is to present some segments of these changes to the reader.

Key words: innovation, multilevel cost system, cost accounting, financial indicator. Balanced Scorecard.

1. Introduction

It can be proved by a multitude of historical examples that the economic, technical and IT changes incline, incite the decision support and also the accounting for continuous reformation. The aim of the author is to present the two segments of these changes. In the first section insight can be got into the world of financial indicators. The development of indicators is introduced, from the classical financial indicators to the Balance Scorecard. The second section represents the chronological and functional development of cost systems, from the early cost-accounting systems to lifecycle costing, from financial statement oriented systems to integrated decision support systems.

2. Trends and ways 1 – The rise and fall of the financial indicators

Thanks to advanced IT systems entrepreneurs and decision makers encounter masses of information and data sets. Indicators are needed to compress information, and thus can support the work of the management. Compressing the information has created ever more complex, labour-intensive and time-consuming solutions. The development of IT systems reduces the work and time needed, but the interpretation of the indicators is still an energy-intensive activity.

The traditional financial indicators provide information about status of property, finance and profitability. They can give a view of the structure of the assets and the liabilities, the effectiveness of the assets, the amount of the debt, the liquidity, and the profitability relative to the various projection bases. (Zéman et al., 2016)

One of the most popular indicator systems is the Du Pont system. It is based on the idea that not profit – as an absolute indicator – is in the centre, but the Return on Investment (ROI) – as a relative value. The top indicator of the system is the ROI that is definable as the ratio of the net outcome and the net asset value. The strength of the ROI that it is not an individual indicator, but an indicator system whose elements carry important information for the decision maker. The advantages of the indicator system are:

- it takes into consideration the return aims of the undertaking,
- it can be used in case of decentralized organisational units,
- it allows the analysis of factors and the comparison of the performance of subfields and units.

The disadvantages of the system can be:

- it cannot provide information on whether the numerator or the denominator has changed,
- the ROI calculation for units and subfields can lead to the suboptimums instead of to the optimum of the total company,
- the short-term tendencies of the profit maximization can be amplified. (Anthony & Govindarajan, 2014; Horváth, 2009)

Nowadays the economic environment of companies has significantly changed: the former permanence was replaced by variability, marketing has come into the focus of operation instead of production, and the knowledge-focused approach has appeared beside the capital-

centred approach. Flexible adaptation to environmental changes implies the alteration of management methods, which require different kinds of corporate governance, including different kinds of management information systems. A reliable, well-structured information system can insure continuous reference for the company's leaders about the processes at the enterprise, the resources, the realisation of management decisions and environment. (Böcskei et al., 2015; Veresné, 2010, 2013)

In recognition of the changes, Robert S. Kaplan and David P. Norton developed a balanced, strategy-based indicator system that can assist the management's work effectively.

The traditional financial indicators applied as the benchmark of the enterprises cannot provide appropriate information to the management for the following reasons:

- The traditional financial indicators inform about the companies' past achievement; they do not have connection with the future.
- They are unsuitable for the prevention of problems, namely they take into account the effects of the organizational actions and consumer choices that have already occurred.
- They are short term in approach, and therefore cannot serve the aims of the company strategy.
- They are not diagnostic featured: they show the problems, but cannot point out the root cause.
- Due to being set in terms of money, they cannot be used for displaying qualitative factors, although the achievement of an enterprise consists of both quantitative and qualitative elements connected to the performance of the tasks assigned by the company.

In today's highly competitive environment the financial indicators alone are not able to give direction for the future; typically they can give a view about some actions of the past, and so are retrospective, post factum indicators. Based on theoretical and practical experience, both financial and non- financial indicators need to be reflected in the benchmark. The balance between them has to be created and they have to be united in a complex indicator system. This is achieved by the

Balanced Scorecard (BSC). The viewpoints of the basic model (financial, customer, operational processes, learning and development) are looking for answers for four questions:

- What are the expectations of the stakeholders?
- What kind of achievement is expected by the customers?
- In which processes is it necessary to provide outstanding performance?
- How may the change and developmental ability be maintained in the future? (Kaplan & Norton, 1992, 1996)

However, the basic model was not regarded as a definite model by the model creators. Over the last two decades different types of the basic model have been revealed taking different factors into consideration. The range of the stakeholders has expanded; the supplier, the future, social responsibility and sustainability have become independent viewpoints. (Figge et al., 2002; Hágen – Borsós, 2015; Maltz et al., 2003; Butler et al., 2011)

3. Trends and ways 2 – From early cost systems to strategy cost systems

The achievements, the usage of sources and through it the follow-up of the cost have always depended on what kind of devices were available for decision supporters in the given age (this includes the stage of development of the punctuation characters and numerals). Clay tablets and papyrus were used by the early river valley societies to measure the inventory. Nevertheless, the advanced accounting techniques that are suitable for tracking value in addition to quantity and are the basis of present-day accounts were formed only in the 1400s. At that time the primary target of trade accounting was the register of claims and liabilities. The usefulness of accounting was recognized by executives only with the increase in the complexity of corporate sizes and production processes. The geographical separation of the site, the factory and the central office of the owners demanded new types of information. The headquarters needed information that was capable of:

- motivating the managers of the remote sites,
- judging the performance of the workers and leaders,
- accounting for the expenses of the labour and conversion process,
- following up and comparing productivity. (Musinszki, 2016)

According to authors dealing with the history of cost systems, the birth of the modern cost accounting can be traced back in the mid-1800s, when the textile industry, the railway companies of the United States of America, and then the chemical and steel industry were booming. In the textile factories the financial data primary were used for the determination of the real costs of the end products and for the tracking the productivity of the labourer and consumption of the commodity. The engines of the development of the cost systems were the railway companies in the mid-19th century. For pricing, for harmonisation of activities and the divisions (often covering large geographical areas) and for the assessment of their achievements there was need for cost information in an environment characterised by few market participants, growing organisational dimensions and complex production process. Thus, scales and indicators were developed (for example costs per tonne kilometre, expenses per passenger kilometre, operation expense ratio) by which the leaders were able to form judgements on the economical performance of operation processes. The ideas of the railway companies were taken over, adapted and improved by steel industry enterprises.

The appearance of companies dealing with complex metal labourprocessing brought up new problems and questions to be solved. Firms dealing with metal forming were manufacturing a wide range of products, and single end products were using resources in different proportions. Therefore, the cost per unit of product was not an appropriate indicator to characterise the how economical each of the conversion process was. The innovations of the scientific managerial movement connected to the name of Frederich Taylor and his engineering partners led to the emergence of the standard cost accounting systems. The work organisation and industrial engineering solutions contributed to the development of the cost accounting. In the first decade of the 20th century sophisticated systems were already in use for

the fixing and analysis of differences between the actual expense and the norm expense, and in the analysis of the productivity it was possible to compare the actual norms with the norms that can be reached under ideal conditions. First the delegates of the scientific managerial movement dealt with how the overheads could be allocated to products. (Loft, 1991; Chandler, 1995; Kaplan & Cooper, 1997; Kaplan & Atkinson, 1998)

The German business management school also played an outstanding role in the creation of the theoretical bases of the expense accounting. At the beginning of the last century the evolving of cost centres and organisational questions received an emphasised role, as did the assignment of resource consumption to product in the cost accounting of the German business management school. The application of several hundred cost collectors resulted in an informative but slow and costly system. The central management between the two world wars, the many regulations and directives of the period of National Socialism, and the strong state influence led to the spread and integration of the terminology and methodology. (Weber, 2001)

The company union wave of the first decades of the 1900s created huge, vertically and regionally articulated firms. The company leaders were faced with the problem of how to enforce the total corporate interests against the sometimes contrary aims of the individual departments. The previous organisational frameworks and centralised functional management increasingly proved to be inappropriate for synchronising individual interests. The principle of management accounting with responsibility and the divisional organisational form linked to the names of Alfred Sloan, Pierre du Pont and Donaldson Brown, offered a solution. The assignment of the units' aims to the total corporate targets and the control of the achievement of parts of the company that cannot be supervised continuously were solved by developing the organisational units into responsibility and settlement units. These units can be characterised by predetermined responsibility, the result of their operation can be measured and evaluated by itself, rela-

tively independently from the other units. Three types of the responsibility and settlement units were distinguished, based on which operational areas are under the responsibility of the division leaders:

- cost centre responsible for the formation of the operating costs,
- profit centre responsible for the establishment of the result,
- investment centre responsible for the operational earnings as well as the financial earnings.

One of the largest innovations of the DuPont Company – still effective today – was the elaboration of the scale of the return on invested capital, i.e. ROI (Return on Investment) already mentioned in the Chapter 2 and the related scorecard. (Loft, 1991; Horváth, 2009)

Starting with the 1980s criticism of the earlier cost accounting systems can be observed in both the Anglo-Saxon and German economic literature. Johnson & Kaplan (1987) drew the conclusion in their study Relevance Lost: The Rise and Fall of Management Accounting that the management accounting systems applied in the 1980s were not equal to the new challenges of the changing environment. Organisations' cost accounting had remained on the level of the 1920s, diverting the attention of the leaders from the major issues, and were incapable of displaying the organisations' processes, products, technologies and competitive environments in an undistorted way. Johnson and Kaplan summarise the criticisms of the management accounting and cost:

- Cost accounting does not fit the market and technological environment. The cost construction was modified as a result of the modern production technologies.
- The traditional calculation methods are misleading, and the expense and first cost data defined in this way are unsuitable for decision preparation and to inform decision makers. The traditional costing systems were developed when the management was characterised by the dominance of a narrow range of products and by high direct labour and material costs. With the changes in cost structure and information technology, there is no justification for too simple cost allocation methods.

- Management accounting was subordinated to the needs of financial accounting, the accounting information used in managerial decisions meet the expectations for financial accounting.
- Management accounting focuses almost exclusively on the activities within the company, only little attention is paid to examine the external environment of the company (Johnson & Kaplan, 1987).

The strengthening of global competition and the acceleration of technological evolution formed new challenges and expectations. Demands for interconnection of strategy and controlling arose, and strategic controlling and strategic management accounting appeared. Several decision-making, long-term profitability and value creation capability supported (costing) procedures were developed.

Life-cycle costing does not examine the expenses only in the period relevant for financial accounting, but it identifies the costs emerging at various stages during the product's life-cycle. A considerable part of the expenses attached to the product occur in the planning section, and they have an essential effect on the expenses of the production section. The assignment of the costs to the stages of a product life-cycle creates the possibility that the whole life-cycle can be the time horizon of the profitability calculations instead of/in addition to the business year. (Molnár, 2016)

Similarly to life-cycle expense calculation, the target costing developed in Japan is a device used in the planning section. The costs are not assigned to the calculation units, but to the benefit perceived by the consumers. The price the consumer is willing to pay for a product of the expected quality and functions is the starting point of target costing. This target price reflects the range of the functions of the products rated by consumers. The target price minus the target profit gives the target cost. If the planned cost exceeds the target cost, the process continues until the planned cost matches the target cost.

Like target costing, kaizen costing is also driven by goals, but kaizen costing is focused on the manufacturing process instead of the product, and on production instead of planning. The main pillar is that

employees are involved in the development of the processes and thus in the enhancement of efficiency and the reduction of costs.

It was recognised that there is a large proportion of costs whose change is not a function of the amount of output. Consequently, the methods by which the overhead cost is loaded onto the individual products as a proportion of the production volume or an indicator – such as direct material costs and direct labour hours – will necessarily result in distorted cost data. To solve this problem techniques applying more than one projection base were created. It loads the overhead costs onto the products only in the proportion that the products actually utilise the resources. This method is called Activity Based Costing in the Anglo-Saxon literature, and Prozesskostenrechnung in the German literature. The two concepts are based on the same principle, and the appear to be drawing closer to each other. (Kaplan & Atkinson, 1998; Drury, 2015; Horváth, 2009)

4. Trends and ways 3 – One system is not enough –multilevel cost systems

As mentioned above, the flexible adaptation to environmental changes implied a change in management methods, which needed other types of corporate governance, including another kind of management information (and cost) system. This obviously had an impact also on the functions expected from the cost systems. According to Kaplan and Cooper (Cooper & Kaplan, 1988; Kaplan, 1988; Kaplan & Cooper, 1997), cost accounting systems have to meet three main functions:

- the evaluation of stocks in the financial reports (as well as presentation of the impact on profit from stocks),
- the monitoring of the activities, products, services and costs of customers,
- feedback on the effectiveness of processes for managers and persons responsible for the processes.

Kaplan and Cooper distinguish four levels of cost accounting systems. In the first-level systems the recording of the economic events

is incomplete or incorrect, closing the books is time- and resource-intensive, and the system is unsuited to the compilation of the financial report. The system is opaque, its maintenance is cumbersome.

Surveys suggest that most businesses are second level and have a financial report focusing system. The system complies with the requirements of financial reporting, and is suitable for inventory valuation, for the determination of the outcome, and to compile the report. It is constructed around responsible units, manufacturing, assembly, maintenance and other activities supporting cost centres during the collection of expenses. The system deficiency is mainly in the assignment of indirect costs to products. Only the operating and other manufacturing costs are allocated to the products, which is normally based on the direct labour, or the cost of materials or machine hours.

The third-level systems are customised and provide the assignment of indirect costs to product, but are non-integrated systems. Traditional financial accounting systems, the activity-based costing system and the operational feedback system appear in third level-systems. Third-level systems are suitable for the determination of the activities, processes, products, exact costs of customers and for the operative feedback promoting financial and non-financial information, learning and the development. The system includes a traditional financial system that provides the financial accounting and management functions, evaluates the stocks, prepares the financial statements, and meets information needs of external stakeholders, such as investors, creditors and tax. The system includes at least one activity-based costing system that utilises the data of the traditional financial system and other existing enterprise information systems for the determination of the exact costs of activities, products and customers. The third element of the system provides the operative feedback. It provides actual and accurate financial and non-financial information about the quality, transit time and efficiency of processes for the leaders, decision-makers and employees working in the first line (who have direct contact with the customers). At this level, companies retain their traditional (second level) financial accounting systems and the existing information is converted into useful information for managers. The second and third

elements of the third-level system can be established without the construction of a new computing system; the financial system, as well as other information systems of the company typically contain the data required for the other elements of the system (activity-based costing systems, operative feedback system). The significance of the third level precisely lies in that the decision supporters can access data – with little additional effort –that has already been collected in the company.

At the fourth level the activity-based costing systems and operational feedback system are linked to each other, and the preparation of the financial reports can be built on the two systems. The methodology of the activity-based costing can be used for the proper allocation of the overheads following the standards of financial accounting. The costs are ordered to product by activity-based costing, but are not a part of the cost according to the accounting standards – the system automatically ignores them. The operative feedback system continuously collects data about actual operation. The extraction of the financial data of the system allows the financial reports to be prepared. In this way, the learning-feedback system serving managerial aims and the financial system making financial reports for the external stakeholders are linked. However, the focus will shift compared to the past. At the second level the focus is on the financial reports, but at the fourth level it is on the informing of the leaders and decision makers. Thus the role of financial statements, information and indicators are transformed. In addition to the financial, production and economic roles, the roles of social responsibility and sustainability are given more space. Therefore, the former protagonists will become minor players in a multi-player game.

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