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**DEFICIENCIES OF THE EXISTING SYSTEMS
OF MANAGERIAL ACCOUNTING FOR THE NEEDS
OF ENVIRONMENTALLY-ORIENTED
MANAGEMENT AND THEIR PROSPECTS**

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This paper deals with the deficiencies of the existing systems of managerial accounting and their prospects as an informative tool for environmentally-oriented management. The existing systems of managerial accounting trace, monitor, and evaluate environmental costs in an inadequate manner and do not provide sufficient information for environmentally-oriented management. Only by connecting information concerning environmental costs with information arising from material and energy balances shall it be possible to obtain the information required for the resolution of decision-making tasks within the scope of environmentally-oriented management, and to design and implement such measures that would lead to an improvement in economic results and to reduction of the impacts on the environment of the activities, products, and services of enterprises.

Introduction

The growth in the complexity of the business process is not only exhibited through the increasing demands on its management. It also influences the method of its information provision. The need for more widely drafted and more detailed information can also be seen in the demands on the accounting system. The major priority of accounting — the ability to systematically represent the business process in its entirety and continuity — has developed in managerial accounting in two main directions in particular [2]. The first direction is the gradual expansion of the spectra of information provided from the perspective of its relation to the stage of the decision-making process. It is necessary to expand the range of information provided with information that enables the appraisal of different variants of the future development of the business (information of the type, “What would happen if...”). It is then possible to employ accounting not only for operational management, but also for decision-making about the future. The second direction is the distinctive decomposition of information regarding invoices that affect the level of economic result (profit). There are number of decision-making tasks whose resolution is contained in the monetary information of managerial accounting. Furthermore, particular types of tasks are closely related and mutually interwoven. The segmentation of tasks into two groups, which also differ in the character of information data, has a fundamental importance in the complexity of mutual relations. The first group is made up of so-called tasks on existing capacity, in other words, short-term tasks that do not require the input of investment means. The second group is made up of tasks concerning future capacity — the lifespan of the current capacity is coming to an end, and so it must be renewed, expanded, tapered, or restructured.

The protection of the environment is a very topical theme. There are negative impacts on the environment associated with the activity of every subject. The approach of the enterprise towards the environment can influence its prosperity in a significant manner. Any attention paid to technical, safety, and environmental requirements will be worthwhile for the business. A considerate approach to the environmental protection represents a significant competitive advantage, since it is possible to use this commercially as well. On the other hand, unfavourable impacts on the environment caused by the activities, products, or services of enterprises can considerably damage their existence and prosperity, and can even lead to their demise. Environmental information is also highly significant for the decision-making process at a strategic, tactical, and operative level. Environmental information is information concerning the impacts on the environment caused by the activities, products, and services of enterprises, as well as information relating to the costs associated with protecting the environment and with damaging it (environmental costs). Environmental information is necessary for handling decision-making tasks, whether this concerns decision-making on

existing capacity or decision-making concerning future capacity.

Managerial accounting as a highly significant information tool must be adapted to suit requirements arising from a considerate approach to the environmental protection and from the needs of environmentally-oriented management. Attention is paid in this paper to the principle deficiencies of the existing systems of managerial accounting for the needs of environmentally-oriented management and their prospects.

It is primarily a matter of which limitations?

The Existing Systems of Managerial Accounting Trace, Monitor, and Evaluate Environmental Costs in an Unsatisfactory Manner.

The first problem is the *determination of the cost items that enterprises regard as environmental costs*. For the most part, only charges for polluting the environment and the costs of waste and emission treatment using end-of-pipe technologies (for example, waste water treatment plants) are included in environmental costs. In this approach, a large part of environmental costs remains hidden in aggregate cost items (for example, costs for the prevention of pollution, the purchase costs of materials which the enterprise left as waste overflow, etc.), and is often part of the overhead costs of the enterprise. Therefore, these “concealed” environmental costs are not taken into consideration in a satisfactory manner during decision-making.

This reality is documented by, for example, research carried out in American companies [4]. This research demonstrated that companies, within the scope of decision-making on investment for example, only consider 25 % to 79 % of the total environmental costs. It is more common for them to only incorporate the costs of treating waste water and hazardous waste materials in environmental costs, as well as the staff costs of “environmental” personnel, fines for polluting the environment, and costs incurred in connection with environmental reporting for external users (primarily for public bodies).

The research we conducted in a selection of large enterprises in the Czech Republic has shown that the majority of enterprises consider environmental costs to be those costs associated with the purchase, installation, and operation of so-called “end-of-pipe technologies” (waste water treatment plants, incineration plants, etc.) and those costs incurred as a result of polluting the environment (charges). Certain enterprises also take the following into account when considering environmental costs; those costs associated with the elimination of undesirable impacts on the environment to arise as a consequence of accidents (costs associated with leakages of oil or other hazardous substances into soil, costs for recultivation, etc.); costs associated with monitoring of environmental impacts; payments made to consulting and auditing bodies in connection with

implementation, certification and re-certification of environmental management systems; and payments made to external organisations for education and training of employees within environmental management.

On the basis of the aforementioned information, we can state that environmental costs are not recorded, monitored, and evaluated in the existing systems of managerial accounting in their full extent in the same manner as they are determined, for example, by a working group of experts in the field of “Improving the role of Government in the Promotion of Environmental Managerial Accounting”. The group defines environmental costs as those costs associated with damaging the environment and with its protection. The total environmental costs of the enterprise are therefore made up of costs for the protection of the environment, costs of “wasted” material, and costs of “wasted” capital and labour (see Table I) [1].

Table I Total environmental costs of the enterprise

	Environmental protection costs (emission treatment and pollution prevention)
+	Costs of “wasted” material
+	Costs of “wasted” capital and labour
=	Total environmental costs of the enterprise

At the same time, experts have documented that the costs of waste disposal usually only make up between 1 % and 10 % of total environmental costs, whereas the purchase costs of the wasted materials represent between 40 % and 90 % of environmental costs (as they have just been defined), depending on the sector that was examined [1]. Therefore, it is clear that the existing systems of managerial accounting only “work” with a very minor fraction of environmental costs.

Another problem is the improper allocation of environmental costs on the *products, centres, and processes* where they develop. Environmental costs comprise a part of overhead costs and are assigned on the grounds of cost-allocation bases that are used for the relevant type of overheads among all bearers of costs. However, “dirty” products, for example, cause a higher amount of wastes and require better equipment for the disposal of polluting substances than products that are environmentally friendly. Inappropriate allocation of environmental costs enables products that are more damaging to the environment to show higher profit than they actually make in reality. “Green” products, on the other hand, are harmed by this method of allocation since they bear the costs that they are not responsible for. The improper allocation of environmental costs (particularly in cases when environmental costs represent a significant part of total costs) can therefore lead to incorrect decision-making by management.

The *classification of costs into fixed and variable* is also significant for decision-making processes. Environmental costs are considered as fixed in certain enterprises, even when a large part of them can be variable, and vice versa.

Aside from “hidden” and improperly allocated environmental costs, there is a large deficiency even in the fact that certain environmental costs are not part of the accounting system whatsoever, and are not, therefore, considered during decision-making (for example, the losses of the enterprise that have an unsatisfactory environmental image in the eyes of consumers and hence a lower share of the market).

With regard to the increasing proportion of environmental costs in total costs, and taking into account the significance of the environmental performance of enterprises, we can conclude that the existing systems of managerial accounting are insufficient and unsatisfactory. Decision-making that was not previously connected to the environment will be influenced by environmental aspects in the future. From this perspective, environmental information is extremely valuable for the decision-making process in the enterprise, and will become even more so.

The Existing Systems of Managerial Accounting do not Provide Sufficient Information for Environmentally-Oriented Management.

It would be possible to assume (on the strength of the previous text) that if the existing systems of managerial accounting properly traced, monitored, and evaluated environmental costs, then the information provided would be sufficient for the decision-making processes within the scope of environmentally-oriented management. In reality, this is not the case.

Managerial accounting is primarily focused on information that is significant for cost management in terms of products, centres, and processes (product-oriented managerial accounting, responsibility managerial accounting, and process-oriented managerial accounting). However, information concerning the flows of material and energy are also particularly important for proper decision-making in the field of environmentally-oriented management. This includes information such as data concerning the exploitation of energy and material resources, and data concerning the origin of wastes in the broadest sense of the word (for example, the volume and type of emissions released into the atmosphere, or the amount of waste water and its components). Information about the flows of material and energy is significant not only as the key parameter of environmental costs in relation to the ineffective management of resources or in relation to waste management, but also because it serves as a basis for the identification and management of the impacts on the environment caused by the decision-making of the enterprise.

The majority of enterprises monitor information from the field of material

and energy flows separately from the accounting system. For example, particular types of wastes, their volume, and the disposal of them are monitored in enterprises mainly in an independent system that is set up in such a manner that it can comply with the requirements of public bodies in the field of reporting. However, there is the problem in the fact that the information about the flows of material and energy is not linked to the accounting system. At the same time, it is clear that it is necessary to use monetary information as well as information concerning the flows of material and energy as mutually dependent for environmentally-oriented management.

Conclusion

In our opinion, the limitations of the existing systems of managerial accounting mentioned above are not completely applicable to all companies. Our experience and research lead us to believe that a considerable shift has come about in the field of managerial accounting in the course of the past few years primarily in the large enterprises of certain sectors (for example, in the enterprises of the chemical industry). Enterprises are aware of the significance of information concerning environmental costs and devote greater attention to environmental costs and their management within systems of managerial accounting. For example, enterprises have been resolving the problem of allocating environmental costs in a very committed manner. They even take the information concerning environmental costs into consideration during decision-making with regard to investments, and during research and development into processes and products.

We believe that enterprises should primarily devote attention to the linking of information concerning environmental costs to information arising from material and energy balances. Knowledge of the way how materials and energy move in the production system is an essential condition for the identification and monitoring of environmental costs. It is necessary to assign material and energy flow values. Only in such a manner is it possible to design and implement such measures as would lead to an improvement in economic results and to the reduction of impacts on the environment caused by the activities, products, and services of the enterprises. The concept to arise from the connection of information concerning environmental costs with information about material and energy flows (the use of materials and energy, and waste overflows) is termed abroad as environmental management accounting (EMA). The management of the enterprise requires information about the flows of material and energy, as well as the monetary information to emerge from the EMA system. This is the fundamental cornerstone for decision-making that will correspond to the environmental and economic goals of the enterprise.

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