

THE IMPACT OF SOFTWARE ACTIVITY ON THE IMPLEMENTATION OF COST MANAGERIAL SYSTEM

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Abstract. The cost management system must be tailored to the needs of the company. The article details the elements of a cost system, as well as the methodology for implementing the cost system based on the specificity of software companies activity.

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1. Introduction

The cost management objectives within a software company are [1]:

- Determining costs. By using the cost accounting managerial system, managers can determine the cost of software projects, maintenance services, etc;
- Cost control. The cost accounting managerial system allows minimizing costs by comparing the recorded costs with estimated or planned ones;
- Determining the size of sales. The cost accounting managerial system allows managers to determine the volume of sales to be achieved to reach a certain level of profit;
- Comparing costs with earnings. The cost accounting managerial system allows to keep costs and revenues in balance;
- Profit planning. The cost accounting managerial system helps managers plan their future activities and, as a result, maximize their profits;
- Determining and controlling efficiency indicators. The cost accounting managerial system studies various aspects of developing a product or service, making it easier to measure the effectiveness of the organization as well of a subdivision;
- Contributes to the preparation of both financial reports and non-financial ones. The cost accounting managerial system allows the collection of information on going projects and made products;
- Provides a decision base for the approval of operational policies. The cost accounting managerial system helps managers to justify operational policies with reference to the production processes, closure of some company subdivisions, giving up some projects, etc.;

To achieve its goals, a cost accounting managerial system has to be practical, simple and tailored to the company's needs; it has to provide accurate data; the performers and future users must cooperate and participate in its development; the implementation costs must be commensurate with the benefits it brings. The introducing of the system, should not affect the existing methods of obtaining information if they were recognized to be

efficient. The system must be implemented step by step by developing an appropriate network within the organization, and the managers' support must be unconditional in designing and managing the system, in order to get the expected result.

2. The elements of the cost managerial system

For a cost managerial system to achieve its goals it is necessary to develop six components of it: costing methodology, data, performance indicators, reporting system, procedures and system applications [2, 3].

The costing methodology describes how the organization forms the cost, by defining the basic cost elements, and how each element of the cost is calculated and reported. The methodology must be documented, which makes it easier for new employees to be trained. Selection of one or another method will be based on the specificity of the enterprise activity, its strategic objectives and how they are dispersed over time, the effort desired to achieve the given objectives.

For a software enterprise, it is important to understand the behavior of costs and how they can be influenced, in order to ensure greater efficiency. Costing methods are designed to find answers to the questions how costs are formed, which factors influence the costs in order to predict their future evolution. These are grouped into traditional ones, which give, as a rule, post-factum answers, when the actions have already been undertaken and they can only be ascertained. The second group of methods are the modern ones that allow ante-cost calculation and will serve as a reference for current and future decisions.

Methods for cost determination will be chosen according to the enterprise needs, and the analysis of the local software product market has shown that we have [4]:

- developers who serve one segment of the software development cycle, their activities are routine, with very clear specifications for the final product. It is crucial for them to fit within certain limits in order to estimate their performance. In this case, it is advisable for them to apply ante-calculation cost methods, such as the standard method;
- developers who produce standard products (specialized software) that only adjust to the needs of the beneficiary. For such companies, determining the parameters of a standard project, with standard cost, would serve as an efficiency norm, that would allow a more accurate negotiation of contracts with its customers and would contribute to reducing the risk of exceeding the contractual parameters;
- developers who serve the entire software development cycle, or even the software life cycle. For these, the method of variable costs is the most appropriate. It supposes to pay attention only to those costs that change proportionally to the production volume. For a software project, it is difficult to estimate exactly the quantity of needed resources, especially for innovative projects.

Data can be financial and operational, both describing how resources are consumed per product or service. It should be noted that financial data are not just those recorded in the financial reports that are rigorously controlled, but also financial data that are recorded in the accounting books and used for internal reporting, such as current recorded costs, as well as financial data included in annual budgets or financial forecasts, such as costs or standard costs. Financial data with reference to costs can also be obtained from other reports, not only from the financial ones, such as cash flow reports, movement of fixed assets reports, and so on. Financial data for costing can also be got from outside the enterprise, such as data on the markets evolution, sector development rates, or from

benchmarking. Another source of data used in cost estimation and management arise from the operational activity, which are called operational data, in this way operational managers estimate through statistical or expert models what resources are needed to provide a service, which they indicate in the service description. The basic requirement for the data is that they must be precise and reliable, so that the decisions that will be taken while using them to be accurate.

Regarding *the procedures*, it is important that the procedures for recording and reporting financial data, which will be further used for the calculation of costs, to be adapted to the applied costing methodology. For exemple, if it was decided to allocate equipment maintenance costs to the project based on the working hours of the equipment within each project, then this principle should be also applied to budgeting and execution. If during the execution as a basis will be used direct salary costs, then the data will be no longer comparable. Operational procedures are equally important, as a lot of data are collected from operational managers, such as: consumed hours to perform certain operations, material consumption (in the case of software projects - applications or software required to produce customized software), who must be responsible for ensuring that all data reach the system accurately, complete and in time. All data recording procedures, both accounting and operational, have to help and provide support to the costing methodology.

The system applications that are used to collect, process, and report cost information are extremely important. The cost system must be able to also retrieve information from other applications where data referring to cost can be stored. A software company may have time standards to execute certain operations that might be found in the system application used for planning. In establishing the links between different systems, it is necessary that people who will use the information for decisions justifying, to know which enterprise subsystems influence their cost calculation. When creating the cost system which will be used for both reporting and managerial purposes, it is crucial to know the previously used cost system, what are its limitations, as well the limitations of other information systems used by other departments. It is very important to define the cost model used previously, what information the system must generate, and how the existing or future system can be adapted to the business needs.

The performance indicators often used by the enterprise refer to the performance indicators per fields of activity, indicators of capacity usage, labor productivity, etc.; at the same time, the cost system must give an answer to the question of how the change in these indicators will influence the financial indicators. The cost system must be able to quantify financially the impact of non-financial performance indicators. Such analyses could reveal hidden costs and opportunities that otherwise would not be visible in the analysis of traditional financial reports. The value of a cost system is that managers intuitively understand the financial impact of daily decisions without waiting for financial reports at the end of the month. Thus, if in a software project it would be necessary to develop a software component where the enterprise does not have the necessary skills or the necessary personnel, the understanding of the cost formation of internal elaboration or outsourcing will make the manager to take the right decision. In this situation, it is important for the manager to understand how the costs are formed, and the cost system must come as a support.

The sixth element are *the reportings* and they refer to how information is accessed and presented for the decision-making process. The cost system has to generate simple, legible and easy to use reports. The cost system must ensure access to both accounting and operational information, that's why it is necessary for managers to be involved in the designing of cost system, otherwise, there is a risk that the reportings become more accountable, than tailored to the decision-making process. For example, an analytical report per story points in an Agile project could include, besides data on actual costs (labor cost, cost of used materials), also data regarding the number of iterations, the number of people involved per iteration, the number of working hours, the type of support materials used.

3. Stages of managerial cost system implementing methodology

The managerial cost system implementing methodology involves several steps [2, 3]. In the implementation process, it must be taken into account that this process is an iterative one and at each stage, as the cost system implementation is progressing, the team that will implement the project will return to its initial objectives to adjust them to the needs of the enterprise.

Determining the needs of the enterprise. At this stage, the enterprise will benchmark the six components of the cost system: the costing methodology, the data, the performance indicators, the reporting system, the system procedures and applications, the way they interact and the shortcomings the enterprise face when providing cost information. The tools to be used: questioning the basic users of cost information from different functional areas of the enterprise, analysing the data from the accounting books and financial reports, understanding currently applied cost methodology, and determining the system capacity to gather, store and report data.

It is recommended that the assessment of the needs to be done by one or two people. The people involved need to know the specific of production activity and to have knowledge about the accounting system, processes and procedures applied in the enterprise. As a result of the analysis, the findings are listed and recommendations are made to the management team with reference to the following actions. If the enterprise has limited resources and it is looking for an objective analysis of the situation, the preliminary assessment can also be done by outside consultants.

Launching the project. It is one of the most important moments because the decisions taken at this stage will influence other stages of the process. A few steps are recommended:

1. Obtaining commitment from managers.
2. Formation the project team.
3. Building a project plan, which will include the description of the business needs, the objectives, the scope and the limits of the project, the deliverables of the project, the project timetable.

4. Estimating the cost of the project implementation as well as its benefits. The project costs include consultant payments, the cost of training sessions, books, software to be used, or the equipment, as well as the amount of salaries paid to the team members for the system development. The benefits of the system can also be estimated, which can consist of measurable benefits: cost savings for the future, as well as non-quantifiable benefits, which could include more accurate information, which will lead to a more precise budgeting, or a more efficient consumption of costs, which will not lead to over budgeting.

5. Approving the project by the senior managers. At the given stage the final presentation of the project will be done, the project adjustments will be performed and the approval of the managers will be received.

System design. At this project stage, the team will conceptualize the design of the new cost system, determine what type of information is required, and how this information will be collected. The team will focus on three core elements: costing methodology, financial and operational data, and system applications. For a software company, some important moments need to be considered when designing the enterprise cost system, and namely: the software is done through distinct projects, some projects after the product completion and delivery to the customer are extended to maintenance projects of the soft. If the cost system will cover all elements within the enterprises, a possible cost system architecture could be as shown in Figure 1

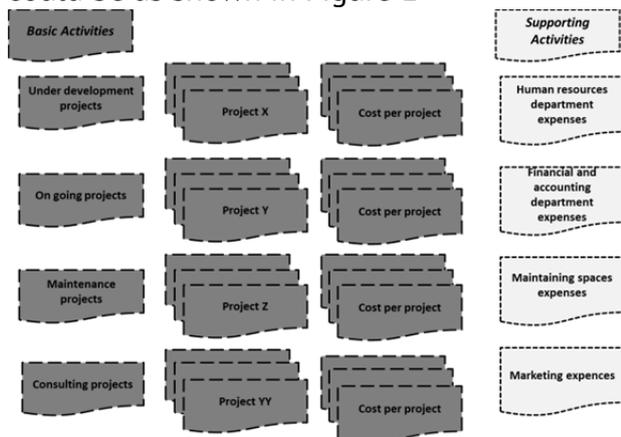


Figure 1. Model of cost system architecture

Source: Developed by the author

collection methods and will be adjusted to the requirements of the new model. For data collection initially can be used the project sheet.

2. Data validation. Once the data have been collected, the team must validate its reliability. Validation can be done in two ways: by comparing it with the current ones, budgeted or previously recorded, by examining them with experts, or by comparing them with industry ones, or by internal benchmarking. Validation aims to highlight inconsistencies or areas requiring additional investigations. This will demonstrate that cost information is reasonable and representative for the concerned business processes or consumed resources by these processes.

3. Setting up the system. This step involves setting up the system application and entering data into the system. The company can have cost-specific applications that can calculate the cost per unit, or spreadsheets can be used. Whatever system application is used, it is important for it to reflect the cost methodology set up in the previous step. If the system application used does not correspond to the cost methodology, then the implementation team will have to assess the possibility of adjusting to the new methodology. If it is not possible to modify the system, it will be evaluated the possibility to perform the calculation without using the existing system, or the original design will be changed in order to adjust to the existing system limitations. If the team members choose to redesign the system, they must understand how this will influence the accuracy and reliability of the cost calculation, and they will document these changes.

System setup and testing

Once the system design has been approved, the team will proceed to create the cost model. This stage includes four steps to follow:

1. Data collection. Collecting the financial and operational data that are considered the basis of the model. The company may have some time standards or some others that do not support the developed model. In this situation, the company will revise the standards in line with the new methodology, the data

4. Testing the system. After the system has been set and the data have been entered, the team will calculate a preliminary cost and review the results. At this stage, the team receives confirmations that the data is reliable and can be used for decisions.

As a result of the given step, if the system does not meet the initial requirements of the system, for example the double allocation of expenses for the final product, the team could return to the previous stage - the system designing.

Implementing the system. Once the system has been tested, it goes to implementation. Depending on the purpose, the system can be implemented at one stage or at several ones. Implementation is recommended to be started at the beginning of the fiscal year because the company can start from "zero". During the fiscal year, changes in the system could lead to major changes in financial reporting and cost differences, which will require additional explanations. The optimal launch period is the end of the year - the first quarter of the fiscal year. It is recommended to track the system's progress, to ensure that there are no deficiencies or stops and the progress is ongoing.

Evaluation and review. During the first year of implementation, it is advisable to review the cost system every 3-6 months to ensure that the core objectives have been achieved and operational managers receive the information they need. Once the system is stable, it should be reviewed periodically, especially if there are changes at the top management, business processes, or organizational structure (merge or acquisition).

A cost system can operate between three to five years without major changes, which does not mean that it remains static, it grows with the company and evolves with the company.

4. Conclusions

Studies conducted in the previous research have shown that local software companies do not have any cost management systems, mainly focusing on cost reporting rather than managing them. Implementing a cost system tailored to the enterprise's requirements will enable it to know the cost of each project and, consequently, to manage it more efficiently.

References

1. Horngren, Charles T. Cost accounting: A managerial emphasis, 13/e., Pearson Education India, 2009.
2. Cooper, R., Kaplan, R. The Design of Cost Management System, Consulting Editor, 1998.
3. Lianabel, O., Designing Strategic Cost systems, John Wiley&Sons, 2004.
4. Țurcanu, T. Evaluarea managementului costurilor în întreprinderile din domeniul TIC. În: *Meridian Ingineresc*, nr. 3, 2013, p. 81-85.