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Task-Based Budgeting in Environmental Projects Planning: A Case Study of a Manufacturing Company in Poland

Anna SIEMIONEK-LEPCZYŃSKA Department of Corporate Finance Faculty of Management, University of Gdańsk, Poland ORCID: 0000-0003-0303-7477 anna.siemionek@ug.edu.pl

Michał CHALASTRA Department of Accounting Faculty of Management, University of Gdańsk, Poland ORCID: 0000-0002-9993-1950 michal.chalastra@ug.edu.pl

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Abstract: In this paper most important differences between performance budgeting and traditional budgeting were presented. The aim of this paper is to focus only on selected differences. The conducted case-study in Poland reveals that activity-based budgeting is an effective method of financial management. Traditional budgeting is implemented according to older concepts. These rules are not compatible with the demands of modern budgeting. Unfortunately, the traditional budgeting method is widely used in public sector in Poland. It is also quite often used in commercial enterprises. The traditional method of budgeting is easier and quicker to implement. Thus, it is popular. On the other hand, it does not allow to achieve positive effects of activity-based budgeting.

Keywords: performance budgeting; traditional budgeting; case study; Poland; managerial accounting, sustainable development; environmental projects.

JEL Classification: G19; Q01; Q56; Q59.

Introduction

Two important areas of entertainments activity have recently developed in Polish companies. These are budgeting and a pro-environmental approach to business. These two trends are related to each other. The first aim to implement those tools is to increase financial performance. The second one is initiated by the growing awareness of managers who notice the need to undertake pro-environmental operations. Quite often these two areas of activity seem to conflict with each other. Budgeting is aimed at reducing activities that are unnecessary in terms of financial performance. Pro-environmental activities are often considered as economically unjustifiable. However, budgeting is not solely focused on positive financial results. Pro-environmental activities are not in every case unprofitable. The purpose of budgeting is such selection of ecological projects is that their total financial result is acceptable. It does not have to be a positive result achieved in the short term. Quite often occurs situation that companies accept a negative financial result in short term. The usage of task-based budgeting method in the comprehensive planning of environmental activities. From this point of view, budgeting can be used in pro-environmental activities so that their total effect is economically acceptable. Therefore, the task-based budgeting method can be used in order to achieve that goal. According to its rules, all proenvironmental activities which are undertaken, should be included in one common program. This will allow to create a total budget for such projects. Positive financial results do not have to occur in every implemented ecological project. Profits from such projects could be financed by losses of the other ones. The purpose of budgeting is to select green projects in such a way that their total financial result is acceptable. Moreover, it does not have to be a positive result achieved in short term. A negative financial result in the short term could be temporally accepted. The aim of this article was to present how the implementation of task-based budgeting method could be used in environmental activities planning.

1. Literature Review

The concept of performance budgeting was first introduced in public finance. However, in Poland this method has been widely used to construct local government budgets. It is one of the additional budgeting methods used only in managerial accounting. This method has been also successfully used also in commercial enterprise finances. The main differences between traditional and performance budgeting are following:

- 1.time horizon,
- 2.compatibility with strategies,
- 3.correlation of budget allocations with tasks and objectives,
- 4.performance indicators.

According to Organization for Economic Co-operation and Development (OECD) performance budgeting is defined as the systematic use of performance information to inform budget decisions, either as a direct input to budget allocation decisions or as contextual information to inform budget planning. Its purpose is to instil greater transparency and accountability throughout the budget process by providing information to government officials. legislators, and the public on the purposes of spending and the results achieved. (Chaplin 2005, 125). Posula Marta in her article presented a comparative analysis of performance budget definitions, and the new trends emerging in the contemporary discourse on public governance methods in Poland (Postuła 2018, 244). In another article she also assed to what degree the advancement in the implementation of instruments from the area of the so-called performance budgeting contributes to the rational management of public expenditure structure (Postula 2018, 144). Peter A. Pyhrr defined "Performance budgeting as an administrative innovation which focuses on the relationship between money and results. It involves the presentation of data in such a way as to emphasize the accomplishment of objectives and the value of outputs." (Pyhrr 1977, 4). Allen Schick stated that "Performance budgeting is a system of budgeting which involves the presentation of budgets in such a way as to show the accomplishments expected from proposed expenditures." (Schick 1971, 1029 - 1030). John M. Gaus was cited by Olsen, Johan P. in 2003. Personally John M. Gaus found performance budgeting as an attempt to relate money spent to work done; it was a method of asking whether the work is worth the money" (Olsen 2004, 69-79). Among others Christian Ax and Elin Ax in 2022 presented empirical case study of beyond budgeting in Sweden (Christian 2022, 444). Performance Budgeting Models and Mechanisms were described by Robinson Marc. The definition of performance budgeting put forward is a broad one. It refers to public sector funding mechanisms and processes designed to strengthen the linkage between funding and results (outputs and outcomes), through the systematic use of formal performance information, with the objective of improving the allocative and technical efficiency of public expenditure. Together with Brumby J. they attempted to ascertain what light the empirical literature sheds on the efficacy of performance budgeting. Performance budgeting refers to procedures or mechanisms intended to strengthen links between the funds provided to public sector entities and their outcomes and/or outputs through the use of formal performance information in resource allocation decision making (Robinson 2005, 3). To sum up, looking at the perspectives in in the United States, it is premature to claim that performance-based budgeting will replace line-item budgeting in near future, particularly at the federal and state level (Kong 2005, 92). The above mentioned changes in budgeting took place not only in the management of public finance. Such trends could be also observed in corporate finance management. Therefore, within time budgeting tools have transformed due to the development of management methods as well development of information technology (Zeller, Metzger 2013, 300). Solutions used in the past do not fulfill today's standards. Such solutions are called traditional budgeting (Asogwa 2017, 112). One of the most significant disadvantages of traditional budgeting is the lack of connection between budget sources with the performed tasks. The management of the company uses the traditional budget as a strict plan that limits the amount of available funds. Within the presented attitude towards budgeting, budgetary discipline is more important than the necessity to accomplish tasks. As a consequence, such an application of the budgeting has been criticized both in practice and literature. (Michalchuk 2017, 55). For these reasons, the Beyond budgeting method of management has become more and more popular, (Neely et al. 2003, 23). This concept allows to resign from creation of a traditional budget. However, the budgeting system is subject to Berland's evolution. Its shortcomings are being eliminated. Current recognized as correct budgeting standards differ significantly from traditional solutions. There are many international organizations creating and promoting good budgeting practices such as for example the

International Group of Controlling (IGC). The principles of effective use of budgeting as one of the most important tools of controlling are presented in the article entitled Controlling Process Model 2.0 (Möller 2018, 32). The tasks of modern budgeting nowadays are much wider than to limit resources (Chalastra 2021, 277). One of the important tasks facing today's budgeting is goal-oriented planning (Rubin 2000, 88). The task-based budgeting method is used for this. Task-based budgeting is therefore quite often used in commercial companies.

2. Methodology

The article was based on the implementation of budgeting systems in a medium-sized manufacturing company operating in the mechanical industry in Poland. The field of the study was the budgeting system of the enterprise and its environmental projects. The result of the research was the development of a task-based budgeting concept. One of the aims of the implemented task-based budgeting system was to create a budget for a proenvironmental program. The study was conducted using the case study method. In the examined enterprise, the method of research by action (Action Research) was applied. The employees of the company were involved in developing the budgeting system.

3. Case Study

The performance budget should be planned for the entire period of the project implementation which may last longer than one year. Traditional budgets are often created for one year according to the compatibility of the budgeting period with the financial year. If long-term tasks are implemented, the new budget project are postponed. Moreover, the financial impact of the implemented long-term tasks is unsure and unknown. The multiyear budget planning process is followed by general rules. It provides synthetic values for specific strategies. In task-based budgeting they are called programs. Such synthetic data are usually peculiar and detailed. Within the framework of these programs, budgets are created for both specific projects as well as for individual tasks. They precisely indicate the resources and their results. These tasks are not random as they are the consequence of long-term strategies. In traditional budgeting process there is no strategic planning which indicates main directions of spending money over next years. This can result in randomness of tasks in the following years in the future. In performance budgets resources, tasks and goals to achieve should be with each other correlated. Moreover, the responsible people for each budget item implementation should be precisely dedicated. In traditional budgeting such requirements does not appear. So it is guite difficult to indicate which budget items are related to its tasks, goals and, what is more, people responsible for them. A major disadvantage of traditional budgeting is also its overall structure. Numerous tasks are implemented within different financing funds. All activities and actions should be focused on the efficient usage of budget funds. Appropriate performance measures should be devoted to each task. Such requirements do not occur in traditional budgeting. Therefore, traditional budgets concentrate on activities which enable to keep resources and implement tasks without taking into account their efficiency. The concept of performance budgeting is used not only in sector of public finance. These principles could be applied to the budgets in commercial enterprises. They share recommendations shared by organizations dedicated to develop modern budget systems. Such es for example studies on Modern Budgeting created and presented by the Internationaler Controller Verein eV. Similar recommendations can be found in the area of beyond budgeting concepts. ("Controlling Process Model 2.0"). The essence of activity-based budgeting is to transfer general data to specific data. According to this concept, it is not correct to plan the budget only in terms of synthetic data as they are too aggregated and difficult to analyze. It is practically impossible to determine the reasonableness of the value of the planned funds or the people responsible for them. Therefore, the budget of a large enterprise should be properly detailed. Several levels should be created depending on the enterprise and the type of its activities, it. At the very first synthetic level, the name of the program is presented as well as allowing to identify the area of activity under which the budget will be planned. At this level synthetic budget data could be included such as total revenues, costs and financial results, as well as targets for the entire program. The second level of such budget is the task group. It could be similar to the organizational unit responsible for their implementation. Within this task group, individual tasks could be indicated. These tasks could be covered by single project budgets. The third level of budget process is to plan individual projects. In such project detailed stages are often identified. Next step is to create sub-task budgets which should be created at every stage. The number of task budget levels depends on specifics of enterprise activity. The example of a multivolume task budget process is presented in Figure 1.

| Programm | | | | | | | |
|----------|------------------|---------|---------|---------|---------|--------|--|
| | Group of tasks A | | G | Others | | | |
| Task | Task | Task | Task | Task | Task | Others | |
| A-1 | A-2 | A-3 | B-1 | B-2 | B-3 | | |
| Subtask | Subtask | Subtask | Subtask | Subtask | Subtask | Others | |
| A-1-1 | A-2-1 | A-1-1 | B-1-1 | B-2-1 | B-3-1 | | |
| Subtask | Subtask | Subtask | Subtask | Subtask | Subtask | Others | |
| A-1-2 | A-2-2 | A-1-2 | B-1-2 | B-2-2 | B-3-2 | | |
| Subtask | Subtask | Subtask | Subtask | Subtask | Subtask | Others | |
| A-1-3 | A-2-3 | A-1-3 | B-1-3 | B-2-3 | B-3-3 | | |

| Figure 1. | The example | of a multi-level | task budget | structure |
|-----------|-------------|------------------|-------------|-----------|
|-----------|-------------|------------------|-------------|-----------|

Source: own work.

Similar principles could be applied to the enterprise budget. An example of such strategy in an enterprise might be enterprise which conducts training or coaching activities. Within such strategy, groups of educational tasks could be implemented, as well as training on specific topics for individuals or groups of employees. In every group it is possible to define detailed tasks. Individual tasks could be divided into subtasks such as for instance business travels, educational room equipment or conducting the trainings. The same principles could be applied to budgeting for other activities of strategic importance. Task budgeting, due to its labor-intensive nature, is rather recommended for the implementation of projects which are significant and consist of many individual tasks. To sum up, activity-based budgeting could be applied to both public entities as well as to commercial enterprises. Environmental activities implementation often faces accusations that they are unprofitable. Due to that fact, many companies carry out only very limited activities within such projects. Most of the companies which can allow to conduct such actions are large corporations. It is one of the ways to achieve their main goal which is to create a positive impact on the company image. Unfortunately, small enterprises in Poland, due to limited resources, are not interested in implementing such activities. Such an approach is not appropriate and pro-environmental tasks can and should be implemented in every company. It should not depend on the size of the enterprise. Appropriate accounting tools should be created to measure the profitability in order to encourage enterprises to undertake such activities. This would allow to select an appropriate set of projects and actions. To conclude, it is possible to implement both pro-environmental and profitable tasks. The first step to create a task budget for environmental activities is to create a relevant process. Within this process, many different groups of tasks could be identified. The tasks could be divided into following criteria:

1.organizational units,

2.profitability (profitable and unprofitable),

3.accounting recognition categories (investments and others financed by current activity costs),

4. importance of expenses incurred (high, medium and low expenses),

5. duration of the task and the payback period of the expenses incurred (long, medium and short-term),

6.sources of financing (own funds, European and national funds, leasing or credit),

7.categories of environmental activities (energy, heating, water, waste, environmental support).

Among the criteria presented, one can select either all or only some criteria. These criteria can be at an equal level of relevance. This will create a multidimensional task budget structure. It will define the main strategic areas of the activities which are undertaken. Its purpose is to apply the principle of sustainable development. This means that the criteria presented will set the framework for the planned tasks. They will determine the strategic areas of pro-environmental activities undertaken in a specific enterprise. They should be determined on the basis of individual conditions. It is worth to implement the principle of sustainable development which indicates the legitimacy of implementing pro-environmental tasks in all dimensions. Pro-environmental activities implemented in too limited a scope should be avoided su as those characterized only by following features: profitable only for production, with subsidies and short-term activities. The next stage is to submit individual environmental projects. Each project should fit into the overall structure of pro-environmental strategies established at a particular enterprise. Projects can be proposed by various entities such as:

1.the Board of Directors,

2.directors of the divisions,

3.employees,

4.controlling department,

5.the lean management specialists.

Environmental projects quite often present positive effects in long term. The lack of such short-term balancing does not mean that this feature cannot be considered as important one. Such balancing should be pursued in the cumulative account. The example of a profit plan for the pro-environmental budget action program balanced by time factor is presented in table 1.

Table 1. Profit budget for the implementation of environmental projects constructed according to sustainable development in terms of time

| Type of the projects | | Time of planning | | Short-term | | Long-term | | |
|----------------------|-------------------------------------|------------------------|--------------------|------------|--------|-----------|--------|--------|
| | | | | year 1 | year 2 | year 3 | year 4 | year 5 |
| According to time | According to profitability | Project | Type of project | | | | | |
| | | 1 | | | | | | |
| | Profitable projects | 2 | | | | | | |
| | | 3 | | | | | | |
| Groop | | Total | | | | | | |
| short-term | Unprofitable projects | 1 | | | | | | |
| nrojects | | 2 | | | | | | |
| projecto | | 3 | | | | | | |
| | | Total | | | | | | |
| | Balance of a | nnual financial result | | | | | | |
| | Cumulative fir | | | | | | | |
| | | 1 | | | | | | |
| | Profitable projects | 2 | | | | | | |
| | | 3 | | | | | | |
| Croonlong | | Total | | | | | | |
| Green long- | | 1 | | | | | | |
| projects | Unprofitable | 2 | | | | | | |
| projecta | projects | 3 | | | | | | |
| | | Total | | | | | | |
| | Balance of annual financial result | | | | | | | |
| | Cumulative financial result balance | | | | | | | |
| Green | Balance of annual financial result | | | | | | | |
| together | Cumulative financial result balance | | | | | | | |

Source: own work.

In the presented profit budget, the item "Ecological projects together" is particularly important. Within its frames the annual and cumulative financial result can be observed. These values indicate whether ecological projects are balanced. A positive value of this item indicates that the total gains from planning ecological projects does not generate a loss for the entire program. Another relevant item is the project category. It can be a breakdown by financing methods, organizational unit or another category in accordance with the designated structure of all ecological activities. The information contained in this item allows for the sustainability of ecological projects in these dimensions. Theoretically, it is possible to aim for total sustainability of all projects in all perspectives. In practice, however, such an approach is difficult to achieve. It can result in very important projects which are not implemented due to the need for full sustainability. Periodic imbalance should occur only temporally but in long-term it is worth achieving balance.

Conclusions

The presented case study shows that many of the pro-environmental tasks which were undertaken at the selected company are unprofitable. Consequently, it is difficult to convince the top management to implement that kind of tasks. The factor of lack of economic effect often causes abandonment of pro-ecological activities. However, there is a certain group of pro-ecological tasks which are characterized by a positive financial result. In order to select such projects and determine their projected profits, one can use the sentence budgeting method.

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Each implemented pro-ecological project will have an individual budget developed. This would avoid undertaking such unprofitable measures. Awareness of the need to develop pro-environmental measures in Polish companies is slowly increasing. More often unprofitable projects are accepted and implemented. Sources of financing for such projects could be financed through profits from profitable projects. Such an attitude makes it easier to approve unprofitable tasks. It is therefore important to develop budgets for each pro-environmental project. The budgets determine the inputs as well as the outputs of each project in specific periods. All individual budgets of pro-environmental projects could be summed up into one common budget. This would enable to create a budget for the pro-environmental program implemented in a specific enterprise. This is a well-known method of task-based budgeting.

Credit Authorship Contribution Statement

Anna Siemionek-Lepczyńska: Conceptualization, Investigation, Methodology, Project administration, Software, Formal analysis, Writing – original draft, Supervision, Data curation, Validation, Writing – review and editing, Visualization, Funding acquisition.

Michał Chalastra: Conceptualization, Investigation, Methodology, Project administration, Software, Formal analysis, Writing – original draft, Supervision, Data curation, Validation, Writing – review and editing, Visualization, Funding acquisition.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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