DECISION-MAKING MODEL FOR OUTSOURCING BUSINESS PROCESS AT LARGE MACHINE-BUILDING ENTERPRISES

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Abstract: One of the ways to significantly increase the competitiveness of an industrial enterprise is to outsource its inefficient business processes. An analysis of the literature showed that the decision on outsourcing is currently based mainly on expert assessments. The use of quantitative methods for assessing the value of business processes (primarily the ABB method and its varieties) due to their shortcomings (including ignoring the cyclical nature of the economic relationships between auxiliary business processes of an enterprise) is problematic to assess the appropriateness of transferring business processes to outsourcing. In order to eliminate this drawback and consider the specific features of large machine-building enterprises, the author developed a methodology for multi-cycle calculation of the cost of auxiliary business processes, which is the basis for the decision model presented in the article on transferring the business process to outsourcing. The model allows economically substantiating the decision to outsource the business process by comparing the total costs of the enterprise in two situations: both without and with outsourcing the business process

Keywords: outsourcing, business process, industrial enterprise.

1 Introduction

For large industrial enterprises, one of the factors of a significant increase in competitiveness is the outsource of individual business processes and business functions. External executives (outsourcers) of outsourced business processes specialize in performing these processes and functions, which forces them to learn best practices and technologies and to perform work more efficiently and economically. Most often, outsourcing is transferred to logistics, information, accounting, personnel, security, translation, advertising functions (Isavnin & Farkhutdinov, 2015), the total market for outsourcing services in Russia is about 4 billion US dollars (Gerasimova et al, 2000). Outsourcing of non-core and non-major functions allows the customer company (outsourcee) to focus on key business processes that create product value for the end-user (Belaichuk & Wagner, 2007).

2 Main Part

All methods for deciding on the transfer of business processes to outsourcing can be divided into qualitative (first of all, these are various varieties of the method of expert assessments) and quantitative. The disadvantages of qualitative methods are their high subjectivity; the impossibility of checking the quality of expert recommendations. The basis of the decision to outsource the business process on the basis of quantitative methods is the following algorithm: the costs of performing the business process on its own and by an external executor are determined, then the costs are compared and the management decision is made based on the results of the comparison. In these conditions, the methods of calculating the value of a business process, their specific features, advantages, and disadvantages are important. We shall take a closer look at them.

Calculation methods for a business process performed by an enterprise can be divided into two groups:

a) the budget of the business process is calculated based on the cost of the products planned for production (these include the ABB method and its variants);
b) the budget of the business process is calculated on the basis of cost estimates, limited by a directive limit, which is determined on the basis of the cost of this process in previous reporting periods, the financial capabilities of the studied company.

The algorithm of the ABB method is as follows:

1. The planned volume of production is determined.
2. The drivers of costs are determined with the help of which the cost of work is assigned to types of products.
3. On the basis of cost drivers, the volume and totality of the work required for the production of marketable products are determined.
4. Resource drivers are determined, which help assign the cost of resources to types of work.
5. Based on the drivers of resources, the volume and cost of resources required for the production of marketable products are determined (Telnov, 2005; Levushkina & Makarov, 2013; Smirnov, 2008).

At stages 3-5 of the ABB method, the volume and cost of work that can act as business processes are determined. Also, as a business process, a combination of several such works focused on the performance of a large function can act.

The *ABB method* theoretically allows estimating the cost of functions and business processes performed by units or centers of financial responsibility, however, its practical application encounters a number of problems, aggravated by the specific features of large industrial enterprises.

The following specific features of large engineering enterprises that affect the choice of budgeting methods can be distinguished:

1) large and complex core business processes;
2) large and complex auxiliary (providing) business processes;
3) a large number of primary and auxiliary business processes;
4) a complex and large-scale intraorganizational turnover, causing a large number of relationships between business processes;
5) the complex cyclical nature of economic relations between auxiliary business processes;
6) a wide range of products;
7) a wide range of resources consumed by the main and auxiliary business processes;
8) limited flexibility (in the short term) of the modification of the main and part of the auxiliary business processes ((Karamyshev, 2017; Karamyshev, 2010; Isavnin et al, 2010).

The disadvantages of the methods analyzed above limit their practical application by increasing the cost and complexity of use at large industrial enterprises due to the identified specific features.

The second group of budgeting methods for business processes includes the following budgeting methods:

1. Traditional method. The labor, material, financial resources of the structural unit for the planning period are calculated. The activities of the structural unit are taken as a separate business process. If several business processes are distinguished within a structural unit, the budget of the unit must be distributed between them. The advantage of the traditional method is the low complexity and lack of methodological difficulties of its application. The disadvantages, in our opinion, are a) the difficulty of assessing the impact of the estimated cost of auxiliary business processes on the quality of marketable products and the financial results of the company; b) neglect of large-scale intraorganizational turnover; c) distortion of the cost of auxiliary business processes, which can lead to the adoption of an erroneous management decision (including the transfer of business processes to outsourcing).
2. Methodology for assessing the value of auxiliary business processes of an enterprise by Makhmutova I.I., Sycha S.A., Karamysheva A.N. (Makhmutov et al, 2008; Karamyshev, 2017; Karamyshev, 2017) It is proposed to use the cost drivers selected by statistical methods to distribute cost estimates for business processes and then allocate the estimated cost of auxiliary business processes to business

consumer processes. It also introduces the concept of the budget value of a business process (calculated on the basis of cost estimates) and the total cost (represents the sum of the budget value of a business process and products of third-party auxiliary business processes). The main disadvantages of the multi-basis distribution technique are a bicyclic distribution of the cost of auxiliary business processes, which distorts their total cost.

3. A.N. Karamyshev's calculation methodology for the value of business processes of a large engineering enterprise, subject to the principle of the multi-cyclical distribution of their value (Karamyshev, 2017; Karamyshev, 2017; Levushkina & Makarov, 2013)

a) The principle of multi-cyclic distribution of the cost of auxiliary business processes in the methodology is used to calculate the actual cost of the auxiliary business process, taking into account the complex nature of the relationship between them. Actual value refers to the actual value of a business process, subject to the value of products received and transferred to other business processes (over several distribution cycles).
b) The actual cost received of the auxiliary business process reflects the actual costs of the enterprise to complete the business process or subprocess. At the same time, the total cost of performing auxiliary business processes of the enterprise remains unchanged.
c) The difference between the proposed methodology and the multi-basis distribution methodology are a) the adjustment mechanism for the cost of the auxiliary business process; b) multi-cycle calculability of the cost of auxiliary business processes, which increases the accuracy of the calculations (Makhmutov et al, 2008; Karamyshev, 2017; Karamyshev, 2017)
d) The application of the proposed methodology makes it possible to more reasonably make decisions on the transfer of auxiliary business processes of the enterprise to outsourcing.

The methods of multi-base and multi-cyclic cost estimation of the main and auxiliary business processes considered in the second group take into account the specific features of large industrial enterprises and allow evaluating the cost of business processes at relatively low labor costs.

We shall consider a conditional example of a decision to transfer an auxiliary business process to outsourcing to demonstrate the emerging problems. The company implements three auxiliary and two main business processes. There are complex cyclic relationships formed between the auxiliary business processes. Taking these relationships into account fully allows you to consider and evaluate the methodology of multi-cycle calculation of the cost of business processes (Karamyshev, 2017; Karamyshev, 2017; Levushkina & Makarov, 2013; Lysanov et al, 2017; Karamyshev et al, 2015)

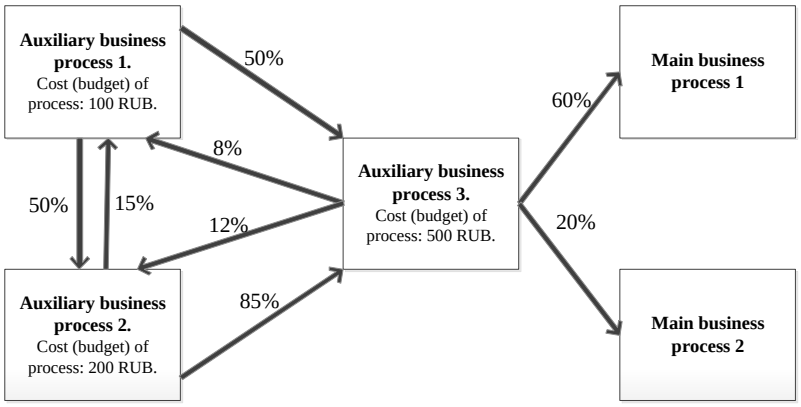

Figure 1. The general cost distribution scheme for auxiliary business processes

We will model the decision to outsource the auxiliary business process No. 2.

Firstly, the cost distribution scheme for auxiliary business processes will change:

1) The existing relationships between their own auxiliary business processes 1 and 2, 2 and 3 will be broken.
2) The business process transferred to the outsourcer for execution will in any way interact with the business processes of the customer company. It is necessary to identify these new relationships and introduce them to the new cost distribution scheme for supporting business processes.

Secondly, it is necessary to analyze changes in the economic part:

1) Change in the budget cost of the remaining supporting business processes 1 and 3 of the customer company (outsourcee) in terms of their variable costs.
2) The possibility of alternative use of the vacated premises, facilities, personnel.
3) Change in the total costs and profits of the customer company.

Based on the identified problems in the analysis of the procedure for outsourcing a business process, the following author's model was developed (Fig. 2):

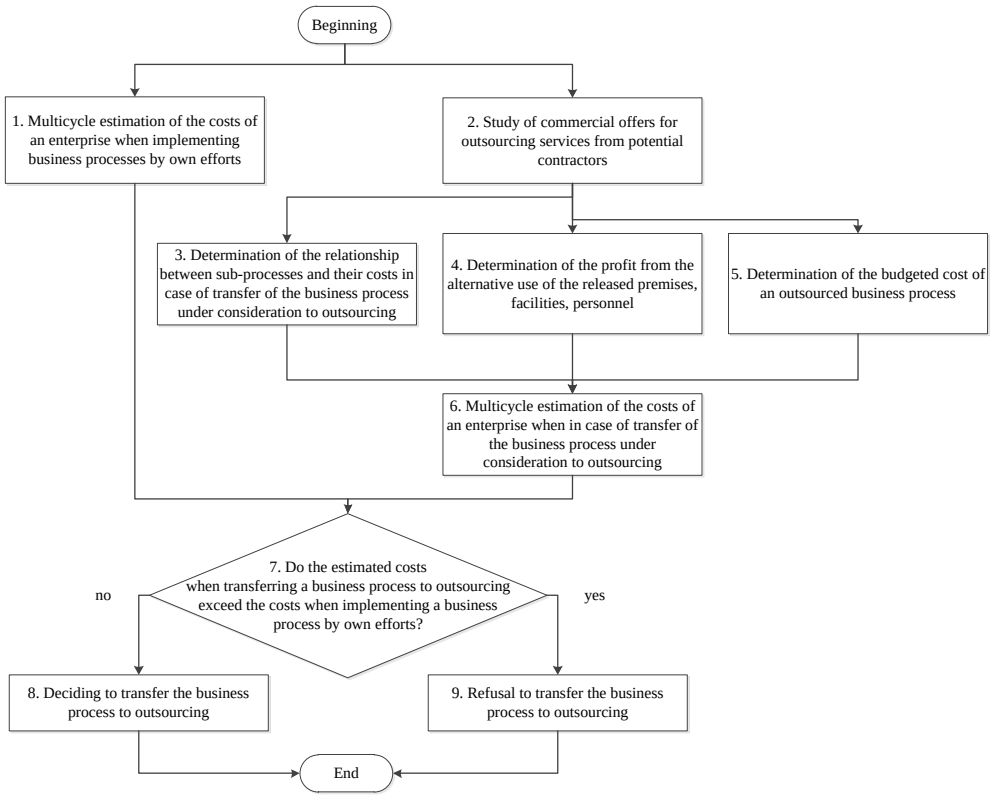

Figure 2. Decision-making model for outsourcing business process
(author's development)

Let us consider the proposed model.

Stage 1. Multicycle estimation of the costs of an enterprise when implementing business processes by own efforts.
The implementation of the stage is carried out on the basis of a revised author's methodology for calculating the cost of auxiliary business processes of a large machine-building enterprise, subject to the principle of multi-cyclical distribution of their costs (Karamyshev, 2017).
Stage 2. Study of commercial offers for outsourcing services from potential contractors.
At this stage, possible external executors of the business process of interest are identified, preliminary negotiations are conducted, and commercial proposals are studied. Based on the analysis, the most profitable outsourcer is selected.
Stage 3. Determination of the relationship between sub-processes and their costs in case of transfer of the business process under consideration to outsourcing.
At this stage, a new scheme of the interrelations of business processes and the distribution of their cost is formed taking into account the conditions of the technical and commercial offer of the outsourcer.
Stage 4. Determination of the profit from the alternative use of the released premises, facilities, personnel.
At this stage, all possible options are considered for using the premises, production facilities, personnel freed up as a result of outsourcing the business process, and the most economically effective option is selected.
Stage 5. Determination of the budgeted cost of an outsourced business process.
The budget cost of the business process performed by the outsourcer is determined on the basis of a technical and commercial proposal.
Stage 6. Multicycle estimation of the costs of an enterprise when in case of transfer of the business process under consideration to outsourcing.
The multi-cycle calculation is carried out subject to the budget cost of the business process performed by the outsourcer; new budget costs of business processes of the enterprise; a new scheme of interrelations between business processes; the possibilities of alternative use of freed resources and enterprise capacities.
Stage 7. Do the estimated costs when transferring a business process to outsourcing exceed the costs when implementing a business process by own efforts?
The total costs of the enterprise spent for both outsourced business processes and performed by own efforts are compared. If the costs of outsourcing of the business process are lower, the enterprise shall proceed to stage 8. Otherwise, to stage 9.
Stage 8. Deciding to transfer the business process to outsourcing.
Stage 9. Refusal to transfer the business process to outsourcing.

3 Methods

The study applied the following methods:

1. A selective analysis of specialized literature with a high citation index for the topics indicated in the title of the article. In particular, information was collected on the methods of budgeting business processes, the specific features of large engineering enterprises.
2. The generated array of information was systematized for the purpose of further analysis. In particular, based on an analysis of the available methodologies a decision-making model was proposed on transferring a business process to outsourcing, its advantages and disadvantages were identified.
3. The authors interpreted the results of the study and made conclusions.

4 Results and Discussion

The most difficult and debatable in implementation are stage 6 of the proposed model. Analysts must understand the relationships between business processes and the volume of products delivered between them in order to correctly assess the total costs of an enterprise when outsourcing a business process.

In our opinion, it is necessary to conduct more detailed studies at the stage of "Multicyclic calculation of enterprise costs in case of outsourcing the business process under consideration", taking into account the specific features of a large industrial enterprise.

5 Summary

1. Existing methods of budgeting are analyzed, their advantages and disadvantages are revealed, including with an eye on the specific features of large machine-building enterprises.
2. The methodological problems of substantiating the feasibility of transferring business processes to outsourcing are identified. A conditional example is considered.

6 Conclusions

A decision-making model for the outsourcing of a business process has been developed, which differs from the existing ones given the complex cyclical nature of economic relations between auxiliary business processes and the ability to assess the impact of a potential outsourcing decision on the company's operations and its total costs.

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