

# Transformation of a Small Business Enterprise Towards Agile Enterprise Using DEMO Methodology

Eduard Babkin, Aleksey Sergeev

National Research University Higher School of Economics, Russia  
eababkin@hse.ru

**Abstract.** In the format of STARR case report this article describes prerequisites, the goal, the process and outcomes of a transformation project for a small business enterprise. During the project a combination of DEMO methodology and a transactions costs theory was applied to provide stakeholders with several alternatives of company's construction. The approach proposed can be useful for other similar transformation projects when an enterprise should be transformed to increase its "agility".

**Keywords.** STARR Case, Enterprise transformation, Agile enterprise, DEMO.

## 1 Introduction

We start this article from the description of the situation in which the case is positioned. This project is focused on a small private company which provides different car repairing services for individual car owners in a large industrial city (population is greater 1mln inhabitants). The market of car repairing services is highly competitive in the city, there is more than 1000 different general-purpose and specialized car services. Although during last five years the demand for this kind of service is steadily growing.

The target company LLC "STO" initially was a member of a large car holding "TCC" and has a role of an official car maintenance and repairing service for several local automotive brands. In 2009 LLC "STO" left the holding, changed the name to LLC "STO-AVTO" and became independent service provider. During the split-over process the newly created enterprise kept the premises of the station and equipment on the lease basis, received a loan in the form of auto parts that were at that time in the warehouse, and kept the working personnel. All previous servicing contracts were canceled and a large part of the clients was lost.

Due to the crisis, the founders were forced to take a bank loan for 2 years. By the time of the project began (year 2015), the company had practically paid off debts for

loans and wages, 22 people had worked in the organization. Thus, the position of the company has become quite stable in order to think about further development.

A choice of the proper direction of further development of the business became a critical problem situation. The management of the company needed a reliable method of supporting the decision-making. The management of the organization asked to consider alternatives to the company's transformation to determine the best option for the moment. The reason for this decision lies in the fact that the main business of the company can not grow further due to a number of restrictions, such as the lack of skilled labor, fierce competition. Thus, the owners of the company decided to optimize their costs and find opportunities to enter related businesses.

It was proposed to evaluate different alternatives of transformation using generic principles of so-called Agile enterprise [4] and DEMO (Design and Engineering Methodology for Organizations) methodology [1]. An enterprise that is able to react quickly to changing environmental conditions, including a dynamically changing structure, is called a "agile" enterprise [2,3]. An agile enterprise seeks to bring changes to the routine part of the organization's life in an attempt to increase adaptability to new opportunities and environmental conditions. In the framework of the agile enterprise the most important aspect is broad and vague formulations of the roles of employees, which leads to dynamic decision-making structures. Planning the structure of an "agile" enterprise is often reduced to choosing the best option for enterprise transformation. However, at this stage, there is a lack of quantitative methods that could simplify the assessment of possible alternatives for changing the structure of the enterprise.

According to the STARR case structure the article describes our results as follows. In Section 2 we explain the task that have been conducted. Section 3 describes the approach taken. Section 4 describes the results of the project. We conclude the article with a reflection on the case.

## **2 The Task that has been conducted**

This section describes goals and objectives of the project, its budget and timelines, special requirements, the roles of the various stakeholders. The transformation project aimed at design and evaluation of several alternative transformation scenarios for LLC "STO-AVTO", which will straighten its position on the market, open new business opportunities, and increase the financial indicators. The budget of the project included salary of one business-analyst. The project last seven months with average occupancy of the business-analyst about 12 hours per week.

Initially the management of the company determined two general development strategies with the greatest priority:

- Simplification the enterprise structure. This includes the separation of some structural units into independent legal entities to reduce risks and costs, the closure of some departments as unprofitable and irrelevant, or the abandonment of certain functions in favor of concluding a contract with a third-party firm that could perform these functions more qualitatively or with less costs.

- Complicating the structure of the enterprise. This strategy implies merging with another company and the opening of a new structural unit with new business functions.

According to the general strategies specified the management of the organization wished to analyze a high level impact of several options for changing the structure of the company. After a number of meetings with the representatives of the company the business analyst had to provide a list of all development opportunities, rank this list in order of decreasing priority. Then the top management of the company will be able to choose those options that seem most feasible under the given conditions.

### **3 The Approach taken**

This section provides readers with information about the method used, the various steps in this method, the paradigm or underlying philosophy of the approach/method, the work products and deliverables that were produced, the way in which the project was planned and managed, the risk management approach and the tools used. Given the objectives of the project a combined method was proposed to transform the present structure of LLC “STO-Avto” towards an agile enterprise. The basic idea of the method is to use a combination of DEMO methodology and the theory of transaction costs [5] to build a single quantitative method that could be used by decision makers at the enterprise to choose the best alternative for choosing the transformed structure of an enterprise. Unlike other existing methods, the proposed method is quantitative, which simplifies its practical application in enterprises. In the current case the cost of labor contributes greatly to the company's costs, therefore, first of all, it was decided to estimate the costs of the actor roles. For this, it is proposed to add a new table to the standard notation of the DEMO methodology, called the E-function role table. Under the functional role, we mean the positions of employees specified in the employment contract. The actor role has the standard meaning of the DEMO methodology. In addition, we need to estimate the costs for each of the transactions. For this, it is suggested to add a new table into the DEMO notation - the Transaction Cost Table. To reduce modeling and evaluation risks the following actions were taken:

1. The costs were estimated by two independent expert groups, after which their assessments are compared. In case of significant discrepancies, the experts work together until consensus is reached.
2. Statistical data were used to estimate costs using the tools of mathematical statistics.
3. A few of simple simulation techniques were used to create an enterprise model for cost estimation.

After filling out the above tables, we can add the information to the Actor Transaction Diagram or the Organization Construction Diagram. Next to each actor role we indicated the corresponding costs. Similarly we did it for each transaction. At the border of the enterprise the corresponding costs of transformation. Thus, an extended ATD (and extended OCD) were produced, which show all incurred costs - both for transformation and for the continuing operation of the organization.

After finishing the design principles of the method, the next steps were taken to practically involve stakeholders of the enterprise to the design and evaluation of the transformation scenarios. At the first step, a meeting was held, in which 8 representatives from the organization participated. It was decided to organize a brainstorm to determine the ideas for restructuring the company. After a creative roundtable discussions, a list of 9 possible changes in the structure of the company was compiled:

- taking the role of an auto insurance agent;
- opening of the auto parts store;
- exclusion of car washing from the services set of the enterprise;
- start selling used cars;
- start services on aerography of cars;
- providing services for gluing surfaces with a film (including a dashboard and hood);
- providing services for the overhaul of the car engine;
- opening of a small gas station;
- providing services for placing advertisements on cars.

On the second step the evaluation of the proposals was performed by the owners of the company. Four people evaluated and selected proposals. In the result 4 variants were selected for detailed modeling and analysis:

- exclusion of car washing from the services of the enterprise. Despite the fact that car washing is a mandatory step before the repair, the owners of the company are considering the option of removing this function from the boundaries of the company due to extremely high costs. The fact is that central water supply has not been carried out to the car service building, so the company is forced to buy and bring water independently, which costs a lot of money and leads to a low quality of car washing. The idea is to find a partner organization that is not far from the car service location and with which it would be possible to conclude a car washing contract on a regular basis. In this case, it is about simplifying the structure of the enterprise;

- becoming an auto insurance agent. Due to the fact that the car service works with a lot of clients, while having regular interaction with insurance companies, it seems logical to assume the role of an auto insurance agent to additionally receive a commission from insurance companies for each insured car owner. The owners of the company would like to assess how this transformation will fit into the current model of the enterprise. This variant of change means the complexity of the structure of the enterprise by adding a new function;

- the opening of an auto parts store (which may imply obtaining the status of an official dealer from any auto parts manufacturer). At the moment the organization sells auto parts indirectly, including them in the cost of repairing a car. We considered the option to start selling auto spare parts directly to customers, without the obligatory condition of repair. This change may require the conclusion of new contracts with manufacturers and suppliers of auto parts, hiring new people, etc. The management of the company would like to assess how easily such a change can be integrated into the structure of the enterprise, and what costs can arise in this case. Thus, such a variant of the company's transformation leads to complication of the structure of the enterprise;

- Start selling used cars. Although this option is close enough to car service (because the car service works exclusively with used cars, most of which are in poor condition, so the owners are happy to sell them), it is risky and expensive. Thus, the owners of the company would like to estimate the costs of implementing this option. This alternative leads to the complexity of the structure of the company.

On the next step the DEMO ontological model of the current enterprise's construction was designed (the AS-IS model, fig.1). The Actor Transaction Diagram was developed at first hand, and it became the primary analysis tool.

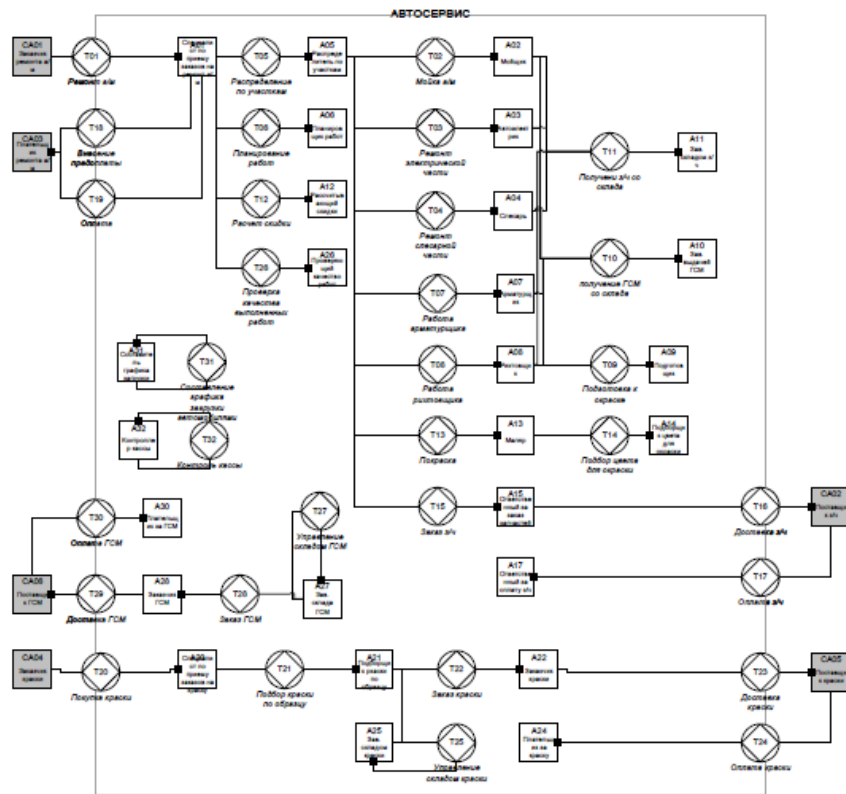


Fig. 1. ATD Diagram of the AS-IS construction enterprise model

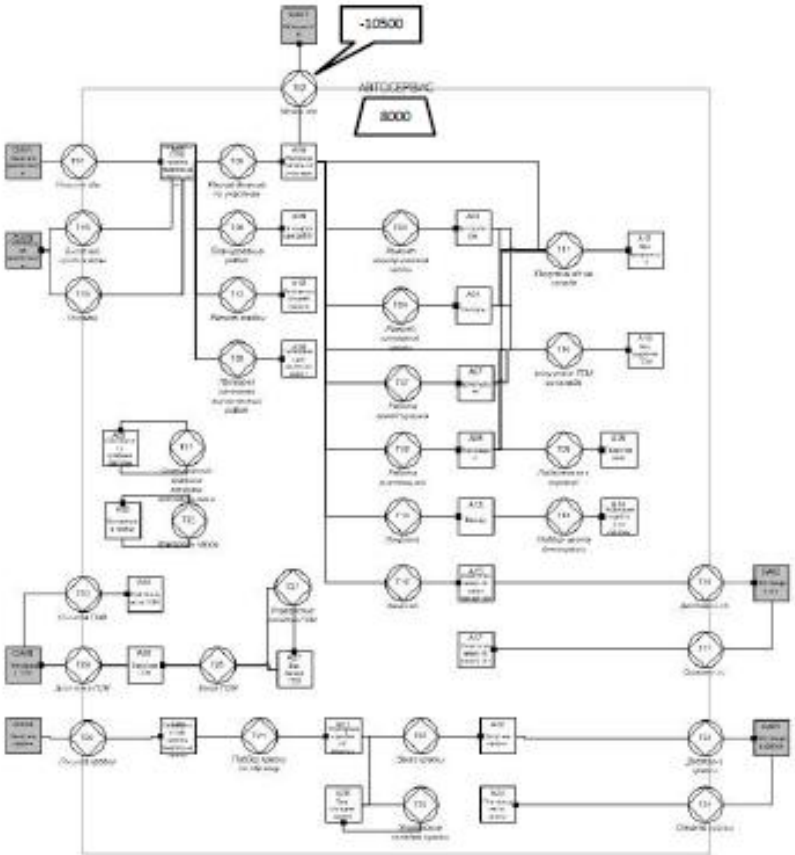
After examining each possible option for transformation and communication with companies operating in the affected segments (car washing, insurance, auto parts store, car sales dealers), for each of the possible options the ontological models of the transformed enterprise were designed (the TO-BE models, fig. 2).

For correct estimation of incurred costs, a specific study was conducted which used publicly available statistical data on the market segments of repair, insurance, car sales and sales of auto parts. In addition, meetings were held with representatives of a car wash, an insurance company, a store of auto parts and auto dealers. As a result, Restructuring Cost Table was compiled for estimating restructuring costs and Trans-

action Cost Table was produced for estimating transaction costs for restructured transactions, as well as extended ATD diagrams for each of the restructuring option.

In the project the business analyst used a set of generic-purpose computer tools. For design of DEMO diagrams MS Visio tool was used. Costs calculations were produced in MS Excel.

The resulting tables and diagrams were presented to the company's management. As a result of the meeting, the forecasts of some types of costs were slightly adjusted, and the final versions of the models were taken for the selection of the best transformation variant.



**Fig. 2.** An extended ATD Diagram of one of the variants of TO-BE construction enterprise model

**4 The Results of the project/efforts**

As a result of discussions with the company's management, the following decisions were made regarding each of the options:

- implement transformations needed for providing the service an auto insurance agent. This option was recognized as the simplest in execution and has the lowest implementation costs. The estimated increase in revenues was 8%.The implementation began on September 1, 2016;
- Opening of the auto parts store. This option was considered acceptable. It is planned to begin implementation from December 1, 2016;
- Exclusion of car washing from the services of the enterprise. This option was declared inadmissible due to high transaction costs;
- Start selling used cars. This option was deemed unacceptable due to high implementation costs (restructuring).

## **5 A Reflection on the case**

In general, the results of cost estimation using the proposed approach were recognized as qualitative and acceptable. The meaning of the concepts and the abstraction levels of DEMO methodology were fully accepted by the company stakeholders. However for the purpose of the project the stakeholders decided to limit the modeling at the level of ontological DEMO models.

During the project, from the modeling point of view two typical situations were noticed that occur during the transformation. The first is that after a transformation involving many transactions and the actor roles, usually a new transaction appears in the enterprise model - "maintaining the enterprise activity in accordance with the DEMO model". It is understood that after the transformation, it is necessary to spend some effort and time to monitor that the enterprise's construction actually fits the corresponding DEMO model. The second situation is that when transferring an internal transaction to a border or excluding from the organizational model (which means the emergence of a new interaction between internal and external actors), new risks arise, and as a consequence, new transaction costs, such as the risks of litigation, the risk of loss of partners, etc.

In the result of the project a reusable method was created to modernize the structure of an "agile" enterprise. In comparison with other approaches, the described method uses quantitative metrics in estimating costs for restructuring and further functioning of the enterprise, which leads to a better understanding by the management of the enterprise and more precise planning of the changes. To create a reliable decision-making tool for the management of this company, we used Enterprise Ontology and modeling with the help of DEMO, along with the results of the theory of transaction costs. As a result, additions to the notation of the DEMO methodology were proposed and a method for estimating costs was developed when the structure of the enterprise was changed.

At the end of January 2017 the company successfully implements the transformation option chosen, implying the provisioning of the functions of the insurance agent. The constructional changes occur in accordance with the proposed ontological model of the enterprise after the restructuring. The costs of restructuring are very close to the predicted values..

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