Innovative Approach to Starting of Outsourcing Company

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Introduction

In the modern uncertain and instable economy, companies with fractal business processes (fractals) seem to be more sustainable. The structure of fractals is similar to the structure of the company (having a common concept); while, the degree of freedom in decision making is higher than in a usual business procedure (Warnecke, 1996).

For large corporations, fractal business processes can be spun off into outsourcing subsidiaries, independent in terms of financing and dependent in terms of contracts for production and supply of goods and/or services. However, such spin-off in instable economy requires preparation of risks reducing measures, optimization of the spun-off business process and establishment of economic relations among the outsourcing company and the parent company. In available research papers outsourcing has an ambiguous interpretation. This article relies upon the idea that an outsourcing company is a subsidiary of the customer. Outsourcing is actively used in business, and a financial role of such cooperation can be assessed by D. S. Kurbatov's method (Kurbatov, 2020). As a rule, a suitable business partner and/or contractor is selected by multiple criteria, considering not only a financial benefit, but also a possibility of doing the work under the required standards and before a certain deadline. The customer has a range of requirements to the outsourcing company in terms of business protocol, management, etc. Large companies have their own standards, such as the IWAY protocol for IKEA procurement, or the international quality management system ISO 9001, etc. A large company is interested in cooperating with a reliable business partner that, on the one hand, can

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deliver high-quality products and/or provide high-quality services on time, and on the other hand, will work sustainably under the increased external risks. If the outsourcing company is not a startup, there may be certain difficulties in meeting requirements of the customer; and cooperation with a startup bears risks of delayed delivery, poor quality of services/products, etc. Meanwhile, the outsourcing company spun-off from the parent company for a fractal business has necessary competencies due to previous experience and developments. Thus, in fact, a new outsourcing company can be treated as a subsidiary startup, but with accumulated practical experience.

To speed up and ensure efficiency of creation of an outsourcing company (spinning-off a fractal business process into a separate small business), the authors propose that the parent company should create a digital twin of the spun-off fractal business process. Application of a digital twin is aimed at ensuring quality and increasing economic efficiency of the supplied goods/services; it will contribute to a rapid launch of a outsourcing company, increase reliability of forecasting and improve management of the created startup (Gault, 2019). Incorporation of a BPO company will trigger innovative development of small businesses and improve internal business processes of large businesses (Khmelnitsky, 2008), and will become an additional source of income. In particular, expanded access to innovative technologies of a large business will increase innovative potential and competitiveness of a small subsidiary. As a result, it will improve sustainability of small businesses, ensure innovative transformation of the economy and improve socio-economic conditions of the public (Bukh & Heeks, 2018). Also, it may reduce corruption, since there will be no room for political intra-corporate conflicts in the parent company. Basic information about business processes is displayed in such information systems as ERP, CRM, BPMS, for instance, details about orders, logistics, transactions, audit results (Lee et al., 2020). CRM system is a database of orders and customers, and stores information about documents accompanying transactions, customer contacts and order statuses. ERP synchronizes work of departments, business units, controls and monitors sales and other company processes. The authors believe that it is imperative to use database of those systems from a spun-off fractal business process in order to form and develop a scenario for processes interaction in the business model of an outsourcing company.

Materials and Methods

The article uses methods of comparative and scenario analysis, synthesis, synergistic and systematic approaches, as well as methods for creating a digital twin for online promotion as described above (Lugert, 2020). For an outsourcing company, it is recommended to make a 3D visualization of a digital twin for clarity and transparency of management (Kupriyanovsky et al., 2020), but it is not necessary. The difference between a digital twin of a company and a digital twin of online promotion is that the former requires combining all existing processes and developing a

scenario for interaction between management and production processes (Halenar et al., 2019). It should be pointed out that formalization of decision-making is not possible for all procedures (Garanin, 2018), this paper only considers modification of a business process suitable for formalization.

Results

Business scale is a traditional indicator to increase profits. Centralization of management is a forced measure that ensures business sustainability. Concentration of control at the top of the business process hierarchy hinders quick identification of problems at lower levels and impedes operational flexibility and effective management. Creation of a management chain based on the vertical structure threatens large businesses with high inertia in forecasting and decision-making. Actually, such form of control system obstructs three requirements of the modern market: reduction of decision-making time, reduction of decision-fulfillment time, and quick launch of products to the market (Warnecke, 1996). This drawback of a vertical management system is fueled firstly, by the need to develop and implement a set of rules governing the management process, and secondly, by the need to organize a complex control system.

The situation with unidentified fractal business processes is especially problematic. These may be departments that perform their functions independently of other company clusters but are located inside another business process and remain concealed from the upper levels of management. Fractals are formed due to various factors:

- Delegating part of the workflow.
- Forced differentiation due to the problematic sector.
- Need for an innovation cluster.

Due to widespread innovative technologies, means and tools, as well as current digital transformation of the economy, competitive corporate development is only possible with effective innovation policy (Götz, 2019), aimed at increasing innovative potential. Such policy includes:

- Intellectual property ratio, defined as a share of intangible assets in the total amount of non-current corporate assets.
- Innovative growth ratio, defined as a share of costs for innovative activities in the total cost of the corporation.
- Innovative share products, defined as a share of innovative products in the amount of sales of the corporation.

These indicators characterize innovative corporate activities and can be treated as factors of innovative potential (Kunin & Tarutko, 2018).

Creation and implementation of innovative materials, ensuring quality of materials and components require new laboratories and business branches (Nikulina,

2019). Therefore, in order to keep together intellectual and material resources and concentrate on solving main development objectives, large businesses should delegate the work on related developments to third-party companies.

Decentralization of large business management can be reached due to cooperation with outsourcing companies, which can be either third-parties or spin-offs from internal fractals. International experience shows that major market players can control quality of labor and management of third-party partners. If a company has introduced a certain quality management system, it must check its partners for compliance with the QMS protocol. This makes additional difficulties due to loss of time for verification, increase in the control staff and dissatisfaction of partners who put a lot of effort to go through the process. Therefore, it seems wise to spin off an outsourcing company, and provide a software solution for business processes management and technological work regulation. A fractal has an inherent potential for self-improvement (Olifir, 2021), therefore, an outsourcing company spun-off from the fractal has good prospects for development. The fractal structure can also be used for other processes, that is, it can be applied in other production, if necessary. (Hlushak & Nykyforchyn, 2018). It should be pointed out that digital twins of key business processes have a universal shell that ensures their application for many companies, by setting parameters to adapt to characteristics of a company. Therefore, construction and practical application of such digital twins shall not require large investments and shall pay off due to optimization of business processes mastered on such digital twins.

Modern technologies ensure creation of a digital twin for the whole company. If a company consists of fractals, the authors propose to delegate a fractal business process to a BPO company together with a digital twin, which should contain required management protocols, management quality standards and technologies.

Creation of a digital twin is directly related to a conceptual model of interaction within the company and presents a multi-level architecture (Qamsane et al., 2021).

Development of a conceptual corporate model is a team work (Godager et al., 2021) aimed at building a structured description, the so-called “corporate model”, which represents basic principles and relations of corporate business.

Figure 1 shows a general example of a conceptual model of an outsourcing company. Main interactions occur between process resources, control and transformation of input and output data. Based on the transformations, reporting documents are generated, then the data is checked (analyzed), after which feedback and subsequent information and process management is received.

In the proposed model, relationships are classified by priorities; arrows indicate relations between main elements. Ontology of an outsourcing company is based on the data from the CRM system of the previous fractal business process. The input and output data used in the conceptual model are described in details, these data are digitized. The ontology code generation is made by using formal languages OWL, KIF.

The described outsourcing company model contains components integrated from the previous fractal business process, such as: resources, documentation, logistics,

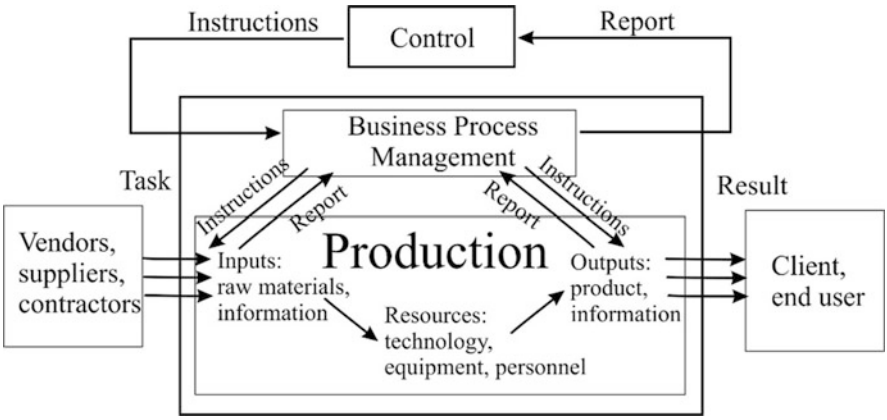

Fig. 1 Example of a conceptual model for an outsourcing company

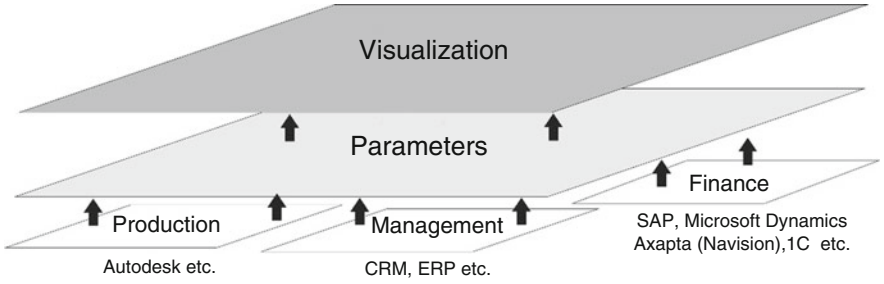

Fig. 2 Information blocks for creating a digital twin

production, etc. A digital twin gives a chance to the outsourcing company owner to gain knowledge and experience.

In order to form a digital twin, it is necessary to digitize blocks of corporate activities and display parameter values either as numerical values or as visualization. Figure 2 shows an example of blocks that contain basic information about corporate business, which may be included in a digital twin. It should be pointed out that each block has auxiliary programs, applications for conducting business that are successfully applied in various industries. For example, using the Autodesk program, you can describe and define technical parameters of produced equipment. The above described CRM, ERP systems help to manage the company. There are also various accounting programs for financial and accounting reporting. Thus, a company that integrated these programs into its will be available create a digital twin both technically and financially.

Creation of a digital twin should be started with programming one block, for instance, the “Production” block. The cost of digital twin development depends on its modification—it can be a 3D rendered object that repeats and interprets

parameters of many sensors in production, or an interpretation of numerical parameters obtained by calculations during forecasting.

It should be pointed out that it will be most effective to delegate fractal business processes to BPO subsidiaries—companies that maintain close relations with the parent company even after their spin-off. Since the digital twin is an effective tool to optimize business processes, when a subsidiary outsourcing company is spun-off the digital twin should be applied as follows:

- Creation of a digital twin of the business process.
- Optimization of the business process using a digital twin.
- Spin-off a fractal business process into a subsidiary outsourcing company.
- Transfer of a digital twin to the subsidiary on preferential terms.

Let's consider an example of using a simple digital twin, which can simulate operation of a press with numerical parameters.

We consider financial costs of operating a small vertical press making bales from loose waste paper with and without a digital twin. The manufacturers declare the following characteristics of the press (we use parameters that are directly relevant for this article): temperatures from +40 °C to −40 °C, number of bales produced in 1 hour is 2–4 pieces, weight of a bale depending on raw materials is 250–550 kg, there is no need for commissioning, the equipment is ready for operation, the warranty period is 1 year. The press is operated outside under a canopy, which is an acceptable condition, according to the manufacturer. In the first year of operation in summer-autumn it forms 3 bales per hour on average. In winter, at sub-zero air temperatures, productivity of the press fell to 1 bale per hour, with maximum winter temperature not lower than −10 °C in the first year. In the second year of operation in the warm season, productivity increased again, and in winter with temperature of −15 °C, the press went out of order. It turned out that for uninterrupted operation of the press at sub-zero temperatures, usual oil must be changed to a special one, but productivity still remains 1 bale per hour. In the third year, the concrete slab on which the press was installed collapsed. The cost of the slab is 50,000 rubles, downtime is 1.5 weeks.

Application a digital twin identifies problematic areas in operation of the press in advance; and develops preventive measures to avoid downtime risks or reduce operating costs.

Figure 3 shows that, despite rather high costs of creating a digital twin, its use is rational in terms of finance, as confirmed by statistics of subsequent years of operation. Knowing in advance how the press would behave at low temperatures, the production site should have been placed in a heated room, despite the cost of rent. Production downtime could also have been avoided by prompt oil change and fabrication of the concrete slab in advance. The cost of creation of a digital twin to forecast the work of the press is comparable to the cost of the press itself. Digital twins that do not require lengthy installation and study of various equipment operations are financially affordable for small industries.

Spinning-off a subsidiary outsourcing company from a fractal, on the one hand, is accompanied by a decrease in fixed costs due to reduced employee salaries and

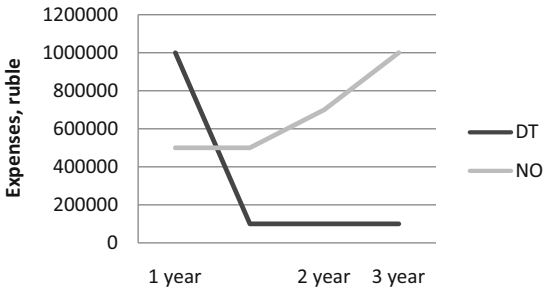

Fig. 3 Graph of press maintenance costs by years with and without the digital twin (DT) and without it (NO)

reduced cost of operating and maintaining equipment, and on the other hand, is accompanied by additional fixed costs associated with paying for services of a BPO company.

Condition for spin-off profitability looks as:

$$|\delta FC_1| > |\delta FC_2|, \tag{1}$$

where.

$|\delta FC_1|$ and $|\delta FC_2|$ respectively, are absolute values of reduced fixed costs and additional fixed costs of the parent company in spinning-off an outsourcing company.

Fulfillment of condition (1) entails an increase in profit from sales and profitability of sales of the parent company, the relative value of the increase is equal in absolute terms to the resulting relative decrease in fixed costs.

$$\Delta_\delta = |\delta FC_1| - |\delta FC_2|$$

The resulting expression should be interpreted as a condition for a cost-effective spinning-off a fractal process into an outsourcing company. By formalizing this condition in the digital twin algorithm, we can automate the decision-making process about spinning-off a fractal into a separate company.

Discussion

The main objective of this research was to develop a concept for a digital twin of a partner outsourcing company, state the reasons of its use and promote its use. The digital twin simplifies creation and ensures high-quality functioning of a startup due to accumulated experience in the fractal business process. An innovative approach to creating an outsourcing company by creating a digital twin, proposed herein, offers a new form of business cooperation through transparency in forecasting, automation of control and interaction with the parent company.

Also, a digital twin can help find the most suitable partner from the market players, for instance, by compliance of management quality with a certain protocol, standard, etc., if there is no need to spin-off a subsidiary outsourcing company.

Before creating an outsourcing company or spinning off a fractal into an independent subsidiary it is recommended to analyze the process of interaction with the parent company. It should be pointed out that creation of an outsourcing company is not an ultimate goal in modernization of a large business. It is necessary to ensure that outsourcing companies do not become monopolists in goods/services, since it can rise an unacceptable level of dependence of large businesses on outsourcing. The digital twin is reconfigurable software that can be used in other related areas. Therefore, the cost of creating a digital twin can be reimbursed by selling or renting the shell to other companies.

Conclusions

The article proved reasons for spinning off a fractal business process into a separate company for further mutually beneficial partner cooperation. The paper also formalized a condition for economic efficiency of spinning off a fractal into a separate outsourcing company. The main processes of an outsourcing company were identified, and a conceptual model of resource interactions was created. The paper proved that creation of an outsourcing company contributes to motivational expansion, that is, new goals for innovative development and implementation of innovative solutions due to high flexibility of a small business start-up. The authors formulated a condition for economic efficiency of spinning off a fractal into a separate outsourcing company; they also showed practical application of a digital twin in order to reduce costs caused by economic risks, and effective use of a digital twin in transformation of business relations when spinning off outsourcing companies.

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