

MODELING OF THE MODERN ORGANIZATION INNOVATION AND SUSTAINABLE DEVELOPMENT ON THE BASE OF THE PROCESS APPROACH

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Abstract

Since the beginning of the century the concept of sustainable development became a forceful reference point for fast-growing and learning organizations not only because it is operating on any economic level (from international and national levels to the level of small businesses and entrepreneurs), but also because it disposes a powerful methodological support in the form of Sustainability Reporting Guidelines. However, the concept is based on three components that characterize the result of organization activities – economic, environmental and social ones, and it does not touch upon the question of the main resource of modern organizations, through which they are received – innovation and knowledge. From this point of view, on the one hand the necessity for modeling of the innovation and sustainable development of the organization emerges, on the other hand – the possibility of such a modeling, based on a process approach, appears and ensures their comparability. The article clarifies the theoretical foundations of the process approach for modeling the process of sustainable development planning and management process of innovation development.

Keywords: process approach, sustainable development, innovation and knowledge

Jel Classification: B410, M21, O440

1. Introduction

Critical changes in the economic situation in the world as never require modern business innovation, flexibility and tolerance “at the speed of thought”. If in the past century, the organization has focused on the production, its suppliers and consumers, the new century has significantly expanded the boundaries of the organizations themselves, diversifying activities through the management of quite different objects – change, innovation, energy efficiency, risk management, sustainable development, etc. Bulkiness of the functional approach to management is obvious. Process approach to management, as the basis for the modeling and analysis of

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modern organizations, is becoming one of the most effective tools for improving business performance. Numerous very differently oriented views on its implementation, both theoreticians and practitioners demonstrate its relevance and require a generalization. From this perspective, the concept of TQM, implemented in the family of standards ISO 9000, has become a unique platform on which new knowledge is generated on the process approach (Mekhantseva, 2007).

2. Standart's Review

The standard ISO “Quality management systems. Requirements” is the base in the 9000 family of standards and provides understanding of the process approach, as well as a model of quality management system based on the process approach (ISO 9001: 2008, 2008). The current version of the standard (the fourth), was published in 2008. Three previous versions published, respectively, in 1987, 1994 and 2000, respectively. This fundamental change in the document has undergone a conceptual level in 2000 – the category of “quality” of the economic turned into Economics and Statistics due to the new definition, a 22 element of quality management system were replaced process approach.

Released in 2014 version of the DIS ISO 9001: 2015 (DIS EN 9001: 2015, 2014) develops the idea of the essential process approach, as reflected in the following key changes:

- Management processes can be achieved with an overall focus on “Risk-based thinking”, aimed at preventing undesirable outcomes.
- Cycle PDCA is presented for a single process.
- The concept of “Context of the organization”, which is inextricably linked to the quality management system and its processes.

The structure of the section 8 “Processes” consists of seven sections: 8.1 “Planning and management of the processes”, 8.2 “Determination of requirements for products and services”, 8.3 “Development and design of products and services”, 8.4 “External management of the software products and services”, 8.5 “Preservation of products and services”, 8.6 “Output of products and the provision of services”, 8.7 “Control of nonconforming processes, products or services”. In accordance with the requirements of this section, the organization must plan, implement and manage the processes necessary for the quality system and to determine the required inputs and outputs for each process, their sequence and interaction. As part of the monitoring and assessment of the organization should maintain the necessary documented information in order to ensure full confidence in the fact that the processes are carried out as planned.

Also, according to the requirements of section 8 of ISO 9001:2015, the organization should define and establish the processes of interaction with consumers, the requirements relating to products and services and to carry out their regular review. To meet these requirements should be defined and established the relevant processes.

Paragraph 8.3 provides general requirements for planning design, design and development input, control methods, the output data changes.

The requirements of paragraph 8.4 “Management of external software of products and services” are similar to the requirements of section 7.4 of ISO 9001:2008 management procurement. The section contains general requirements for the management of external security requirements for the type and degree of control external security requirements for information management of external security.

Paragraph 8.5 prescribed requirements for managing finished products and services, in particular for the identification and traceability, preservation of the property of the consumer, or an external vendor, product protection and post-delivery activities, as well as change management products.

Paragraph 8.7 the organizations are determined by the necessary actions in the event of inconsistencies in processes, products or services.

Spot analysis of the ISO 9001:2015 shows that today's quality management system is evolving on the basis of the process approach. Now, not only system of the processes, but the process itself is based on the methodology of PDCA – “Plan - Do - Check – Act”, focusing on the workflow processes that are not mentioned in its definition. Then, from the perspective of the modeling of any process it is necessary to expand perceptions of the process approach and the key definitions, and process modeling can be realized by providing activities in the process step by step of PDCA Cycle.

3. Methodology

To construct a process model of the organization, we propose to add the term “process approach” and give it a statistical entity, an make it’s definition as a way to extend its definition groups (associations) with the help of dedicated facilities management functional approach to determine the connections that enable project-based approach to translate the organization as a system from one state into another, synchronizing the speed of its development with the environment.

In addition, we propose to identify the organization on the basis of the process approach in the form of processes network by which we mean a hierarchically related group of processes which, using processes resources to add value for all stakeholders of the organization, transforms inputs into outputs. For the best visualization of processes network, we adhere to the most common process classification and highlight the following three categories: strategic management process (understanding the context of the organization, its quality management system and processes, leadership, policy and responsibilities, processes for planning and consideration of risks and opportunities , processes for performance evaluation, processes for improvement); basic processes (operational processes related to customers and products and services); support processes (processes for support, including resources, people and information). The link between the identified components of each process is “inputs from other processes” and “outputs into other processes”.

To model the process as part of the organization process model, we offer the organization to clarify its definition as follows:

Process – a group of related operations, which, using resources to add value to the consumer, transforms inputs into outputs.

The group – a set of operations that make up a certain way (technology) to add value to the consumer. The Group determines the uniformity of the operations performed, the goal – its borders through the operations that lie both within the organization and outside it.

Operation – a single action or a limited group of interrelated actions aimed at obtaining private result within the framework of the problem solution.

Value – the ability to fulfill the requirements.

We have identified the following significant from the point of process modeling view its components:

1. Inputs from other processes.
2. Products and services (purpose and outcome of the process).
3. Interested parties of the process: the external consumers; directly involved in the process (the head of the process team); mediated actors (domestic consumers, domestic suppliers and partners, the owner of the process); external suppliers and partners; the owners of the organization; the staff of the organization (with the exception of direct and indirect participants in the process); society.

4. Process Groups (Mekhantseva, 2011).
5. The resources of the process: the workers; infrastructure; work environment; information; knowledge; suppliers and partners; natural resources; financial resources.
6. The outputs to all other processes.

4. Data and Empirical Results

The practice of Russian enterprises implementing a process approach in the construction of quality management systems, and not only them, is very extensive (Repin, Eliferov, 2013). Studies show (Skripko, 2011), that often process model consists of three process groups – basic (core) processes, support processes and management processes, while a few years ago met a division into two groups – adding value and does not add value. Analysis of integrated quality management systems shows (Khokhlacheva, 2015) that the group of management processes expands depending on the integration of systems built on the basis of complementary standards that are compatible with the family of ISO 9000. Then it is perfectly logical to include to the mentioned process group – management processes group – two processes “Sustainable development management” and “Innovation Management”.

Dedicated contact process “Sustainable development management” in accordance with BS 8900:2006 is an “opportunity for innovation” and therefore we consider it as a priority in the pair of processes “Sustainable development management” and “Innovation Management”. The process of “Sustainable development management” can be developed on the basis of BS 8900:2006, which set forth the requirements for implementing of the sustainable development principles based on the definition of objectives and their respective programs for sustainable development of the organization with the release of the parties involved and resources. There is an example of sustainable development maturity matrix for assessing the results of the management of sustainable development of the organization. In support of this standard may also serve the GRI Sustainability Reporting Guidelines (GRI, 2013), which “offer Reporting Principles, Standard Disclosures and an Implementation Manual for the preparation of sustainability reports by organizations, regardless of their size, sector or location”. The Guidelines also offer an international reference for all those interested in the disclosure of the environmental, social and economic performance and impacts of organizations. The associated Standard BS 8901:2009 states that “the organization shall identify, document, implement, maintain and improve the system of management of sustainable development in accordance with

the requirements, and identify ways to meet these requirements” that in the light of the implementation of the ISO 9001:2105 process approach allows to regard the “Sustainable development management” process as the best management decision. The most significant part of the process model in terms of its implementation, we have presented in Table 1.

Table 1. Modeling of “Sustainable development management” process

PDCA-cycle	Process groups
Plan	Identification of stakeholders and their needs; Formation of the (revision) mission of the enterprise; Development (adjustment or updating) policies; Development (adjustment or updating) an organizational development strategy; Development (adjustment or updating) of measurable goals for sustainable development, including the risks; Formation program for the sustainable development of the organization
Do	Deployment goals of sustainable development of the organization; Implementation of business (business strategy) and functional strategies; Implementation of medium-term projects; Development (adjustment or updating) a network of processes and the processes themselves;
Check	System monitoring measurable objectives of sustainable development, including the risks
Action	Formation of the (possible) registration of the report on the sustainable development of the organization

Source: own work.

Dedicated process of “Innovation management” is extremely popular for Russian companies as support for innovation remains one of the most pressing issues in the scientific and business environment, as well as at the state level. Implementation adopted in 2011 strategy of innovative development of Russia until 2020 (The strategy, 2011) has allowed Russia to rise in the rankings INSEAD (The Global Innovation Index, 2014) from the 52 place in 2011 to 49 in 2014, but the crisis of 2014 equated the issue of innovation management to the condition of the survival of Russian companies in the new economic conditions.

In contrast to the sustainable development management, the methodology of innovation management has at its disposal not only a rich history, but also a whole set of models – a model of technological push (Dodgson, Rothwell, 1994), combined model of the innovation process (Rothwell, 1994; Freeman, 1995), a chain model (Kline, Rosenberg, 1986), the Japanese model (Imai, Nonaka, Takeuchi, 1985), integration and networking model (Trott, 1998), innovation

stage-gate process model (Cooper, 2001), creating a new knowledge model (Trott, 2005) and others. However, the convergences of these advances have not yet occurred at the level of European standards (Hohlyavin, 2015). Claimed ISO series of standards in the field of innovation management is not developed yet, although its structure is defined and consists of 7 parts: Introduction and Terminology, Innovation assessment tools, Creativity management, Collaboration management, Guidance on the application of design thinking as a strategic methodology for sustained innovation, Intellectual property management, Strategic intelligence management. In the standard ISO 9001:2015 innovation is defined as a “process, resulting in a new or substantially changed object”, so the most significant part of this process, we are able to realize in the following sequence of actions (Table 2).

Table 2. Simulation of the “Innovation Management” process

PDCA-cycle	Process groups
Plan	Market research (known classification requirements); Market research (identification of needs); Creating a set of characteristics of the product (product), services (service), technology (technology), process (process) or the system (management system); Market research (classification of the identified needs); Creating a set of indicators
Do	Develop a proposal on the basis of innovation changes in the structure characteristics; Development of the project of introduction of innovation; Evaluating the effectiveness of the implementation of the project innovations, including the risks; The project is the introduction of innovation; Development of a trade policy; Establishing and defining the level of the dynamics of price changes; Development of the program of promotion; The development of marketing programs
Check	Analysis of indicators of quality, performance and risk; Identification of methods for analyzing quality indicators; Grouping of indicators of quality of product characteristics (product), services (service), technology (technology), process (process) or the system (management system)
Action	Establishment of normative documents on standardization and application of the rules, regulations and requirements to ensure the early dissemination of innovations in the organization; Improvement of the company at the level of sub-processes, processes, network processes; Final coordinating measures to improve the activity of the enterprise

Source: own work.

5. Conclusion and Discussion

Process approach at the present stage, taking place as a requirement for quality management systems, has become a recognized tool for the simulation activity of modern organization aimed at long-term success. Its application in previous versions of the ISO 9000 family of standards has evolved from the process models of production through a series of basic processes – the processes of the life cycle – before the system processes with a shift in emphasis in the latter on processes of management and thus the model organization (Mekhantseva, 2006). For the first time ISO standards, developed on the platform SL, allow not only the integration of the subsystems of management, but also on the basis of the strategic directions of development of the vision to extend the practice of modeling the processes of implementing the latest scientific and practical achievements in various fields of knowledge. Risk-oriented thinking on the level of planning can become an effective tool for filtering the above-mentioned achievements, which will help businesses avoid serious losses on the realization of the strategy of development.

From this perspective, the most pressing problems of process simulation will be:

1. Identification of the management processes in addition to regulated groups of standards harmonized with the family of 9000, which can now be referred to as “the processes of strategic management”, as this group is represented in the ISO 9001:2015 the largest number of processes.
2. Identification of the inputs and outputs of the processes of strategic management as the relationships to ensure the integrity of the processes.
3. Evaluation of the balance of the processes in terms of achieving the planned results.

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