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N. Morozov
Omsk State Transport University

THE PROCESS APPROACH TO THE MODELING OF THE SYSTEM OF QUALITY MANAGEMENT AND COST ACCOUNTING FOR THE QUALITY OF THE UNIVERSITY

У статті розглядається застосування процесного підходу при організації системи менеджменту якості (СМЯ) освітніх установ професійної освіти. Запропоновано авторське бачення причин впровадження СМЯ в управління освітньою організацією, дано розгорнутий опис процесної моделі системи менеджменту якості освітньої установи. З точки зору процесного підходу розглядаються витрати на якість послуг освітніх організацій і виділяється їх значущість при формуванні систем управління якістю.

Процесний підхід, система менеджменту якості, освітні установи, ABC-модель

In today's financially-oriented society, the effectiveness of the company measured by the value of profits, and in the case of educational institutions, the demand for the services provided by customers and consumers — states, industries, companies and students. The increasing competition between universities leads to the fact that educational institutions need to confront the level of training to improve the quality of graduates, in order to justify the investments undertaken by the customer and provide a stable position for the future and, at the same time, it is vital to monitor the economic performance of the organization. And the fact that The European Union, the World Trade Organization and the General agreement on trade in services view education as a major area of international services [1] that, in the internationalization of education at the same time increases the importance and responsibility for any educational organization providing these services.

The problem of the quality of educational institutions is an important factor that indirectly affects the economic, social, political and ecological situation in the country. The quality of educational services is a complex phenomenon, which characterizes the effectiveness of all aspects of activity: policy development, organization of educational process, relationships with customers and consumers. And if the university wants to work successfully in a market, it must systematically organize the educational process and system to control quality.

The main reasons for implementing a QMS in the management of educational organization, in our opinion, are:

intensification and increased competition between universities in the education market and the labor market;

offer new forms of technology and learning — distance learning, consulting services, receipt of additional (second) profession;

need to improve the quality of educational services for the formation of practice-oriented skills that are appropriate to the needs of the economy and society as a competitive specialists;

efficiency and internal coordination of the university;

the personification of justice;

development of a system of internal control;

optimization of costs through effective and efficient use of resources.

These factors are closely related to the construction of the basic principles of process systems, namely the unification of procedures, unbroken, natural and appropriate sequence of process steps, the presence of the owner of the process, providing a single point of contact; autonomy of choice and justice the perpetrators, the horizontal (the consumer) control, the systems (integrity) management (especially in the areas of costs) [2].

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In the world practice of quality management in education there is a fairly large number of models (universal and industry), quality management systems, which are based on the requirements defined in ISO series of standards, models, EFQM, or represent a creative combination of these materials and requirements, with the basis of their put a process-oriented approach. It is noted the presence of certain difficulties in the implementation of ISO standards in education — "has a lot of differences in comparison with the production company. It is not easy to identify who is customer, what is product of the university, but lots of principles are the same" [3]. It should also be noted that in the literature on quality management often enough, in the analysis of the processes the organization uses the term «process model», but, with rare exceptions, does not provide a meaningful description and definition. L. Skripko was formed by the process model as a representation of a chain of interacting processes, each of which affects the functioning of other processes as well as the whole system [4]. This definition, in our opinion, requires to expand and refine the modeling of processes in education, because of the special mission of educational institutions to build the culture of the society is recognized as a model of behavioral and quality of the results of creative activity with an emphasis on practice-oriented product to the consumers of educational services.

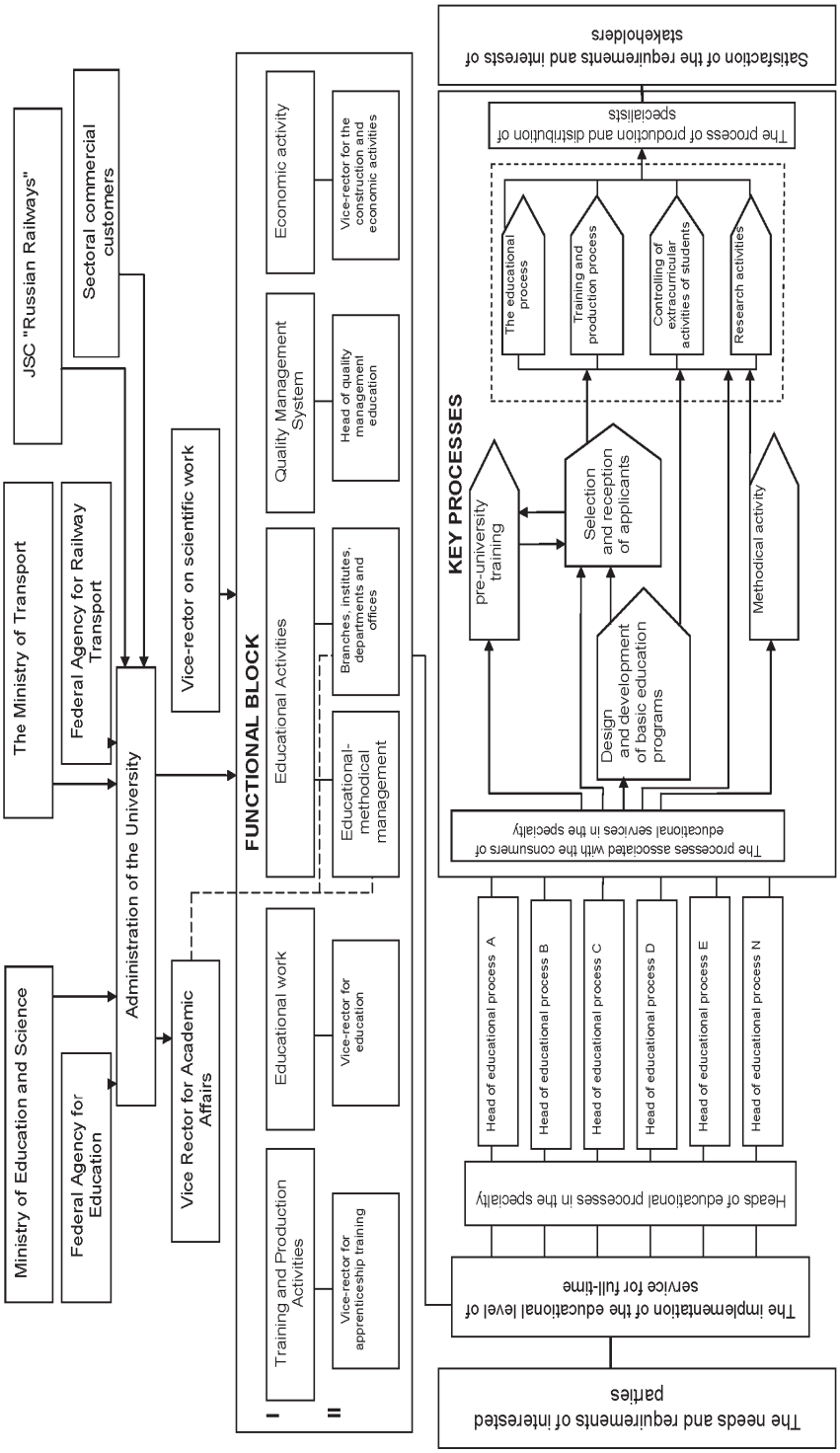

Figure 1. A process model of quality management system of educational organization

On this basis, we formulate the concept of «process model of quality management system of educational institutions» as based on values, principles, goals and culture of the quality of the ordered set of interrelated and interdependent processes documented, organized to achieve the required results by means of conversion of resources to create a practical value for consumers of educational services (see Figure 1).

Process-oriented management is aimed at eliminating miss-match characteristics of services, the educational process, the quality management system requirements established by the organization, its customers and other interested parties, as manifested in the measurement of the effectiveness and efficiency of processes, cost accounting for each process. K. Isikava noted that «it is impossible to determine the quality, not knowing the cost ...Even if a sufficiently high level of quality products whom can not satisfy the customer, if it is set too high a price. In other words, it is impossible to determine the quality, not including the price. Quality management is impossible without regulation of prices, revenues and expenses, cost control and quality management — are two sides of one coin. For effective control of costs necessary to effectively manage the quality» [5].

Provision of educational services, as well as the output, followed by cost of production and services, including to ensure their quality, which, naturally, requires a more perfect systems of quality management. The cost of quality assurance production are part of the overall costs of an educational institution to prepare and issue a specialist.

In quality management, there are several basic approaches to the classification of quality costs: PAF-model, the Japanese approach to the cost of quality and cost model for quality, implemented in the ISO standards.

The very first time a model – PAF model (*prevention – appraisal – failure*). Was proposed by J. Juran and A. Feigenbaum in the mid-20th century and comprises three groups:

prevention costs – the costs of prevention (prophylaxis), the possibility of defects, i.e. costs associated with any activity that reduces or completely prevents the appearance of defects or loss;

appraisal costs – the costs of identification and confirmation of the achieved level of quality;

failure costs – costs due to internal failures – it costs because of inconsistencies or defects discovered within the organization at any stage of the loop to the quality of transmission products from supplier to buyer. Costs due to external failures – it costs because of inconsistencies or defects discovered after delivery to the customer (consumer).

Japanese experts, developing a classification J. Juran and A. Feigenbaum, offered the basis for the classification of quality costs to put the principle of utility costs, dividing them into two groups:

the cost of the work on quality assurance;

losses caused by poor work in the field of quality.

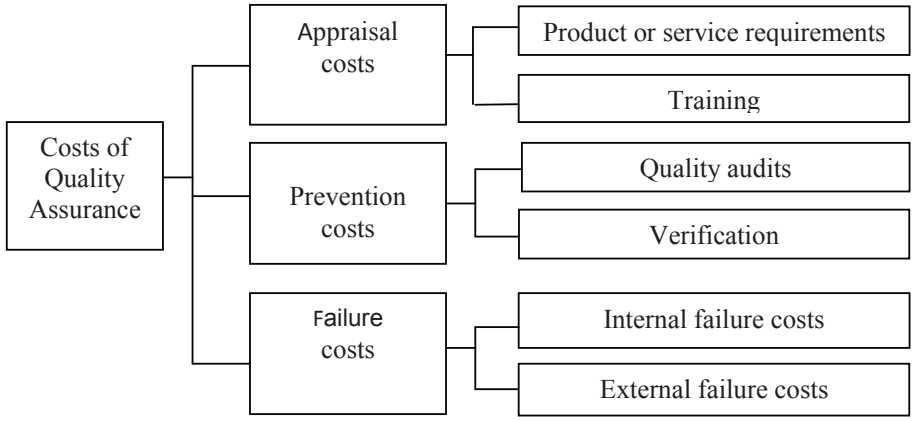

Figure 2. PAF model

The model used in the ISO series of standards was proposed by P. Crosby and received practical application in the British Standard BS 6143:1992 «Quality Guidelines for the economy. Part 1. Cost model for the process». According to her all the costs are divided into two groups:

cost of conformance — «the costs necessary to comply with all established and prospective customers' needs (consumers) in the absence of defects (faults) in an existing process» [6];

cost of nonconformance — «the costs incurred by the organization as a result of deficiencies in the existing process» [6].

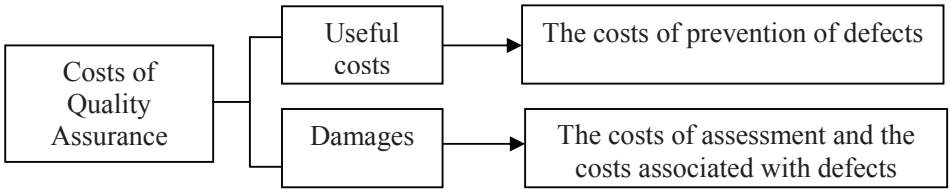

Figure 3. The Japanese model of quality costs

The first act as productive costs. These may include all costs, which is achieved through the implementation of functions related to maintenance, improvement and quality management. These are the minimum costs for the specified process.

The latter are non-productive expenditures — those that are unnecessary or redundant.

In general, these approaches, there are no obvious contradictions — they share all the costs of the necessary (inevitable) and the costs that need to minimize and eliminate.

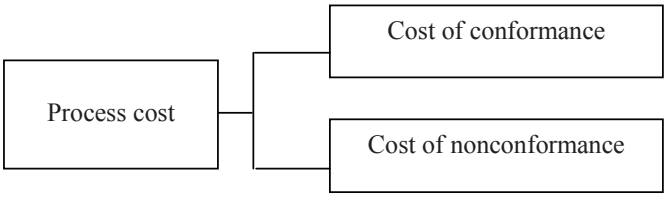

Figure 4. Cost model for the process

In practice, the management of organizations is primarily used Direct costing, dividing all expenses into direct and indirect. This model adequately perform the evaluation function (especially in consideration of direct costs), but the management function is implemented in a way it insufficient because it does not pursue an objective of detail processes, and the fact that the share of indirect costs increase reduces its effectiveness. And there seems to be promising in modeling the cost of quality in educational institutions to use the Activity based costing (ABC-model).Its advantages are:

high degree of detail — activities can be determined with much greater detail than the cost items, so the change in volume of activity when the amount and quality of educational services can be calculated more accurately than the change in the line item cost breakdown;

consideration in kind — the changes are taken into account in-kind — in the form factors of cost and use factors, which allows you to separate the changes in resource consumption from changes in prices of these resources.

accounting data — cost factors and the factors are determined not supposed to use as criteria for allocation of costs in the model of direct costs, and the like — on the basis of credentials, which significantly improves the accuracy of allocating indirect costs.

Direct costing assigns costs to products issued and services rendered, based on the attributes of a unit of production, such as the number of man-hours of direct labor spent on the production unit, the number of days spent on the provision of services. Distribution, therefore, directly dependent on the volume of production, cost of goods sold or days spent on customer service. ABC focuses on activities required for the production of goods or services.

ABC monitors overhead distribution moves to products or services, identifying resources, activities, their costs and the amount required to produce a specific output. To calculate the cost of each operation, a unit of production (for example, the cost of training a specialist). The cost is tracked by product or service by determining the number of units of output consumed by each operation for a period of time. This allows the use of ABC-method not only in industry but also in services such as educational services.

ABC is a powerful management tool to overcome the inefficiencies of traditional approaches to accounting and cost management. ABC is not just a university can help accurately determine the cost of educational services and the educational process itself, but also to obtain financial and non-financial information

necessary to identify opportunities to reduce costs and improve the functioning of the educational organization.

The introduction of the process model management and educational organization on the quality of cost accounting, to evaluate the effectiveness of the university, the system of quality management in the process approach, you will reveal its strengths and weaknesses. Only with the help of the quality of economic education organization can get the expected result from the creation of a quality management system — to improve the competitiveness of high school in the educational market, to minimize the number of claims, to improve its image, the quality of services and reduce their costs.

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ПРОЦЕССНЫЙ ПОДХОД К МОДЕЛИРОВАНИЮ СИСТЕМЫ МЕНЕДЖМЕНТА КАЧЕСТВА И УЧЕТА ЗАТРАТ НА КАЧЕСТВО В УНИВЕРСИТЕТЕ

В статье рассматривается применение процессного подхода при организации системы менеджмента качества (СМК) образовательных учреждений профессионального образования. Предложено авторское видение причин внедрения СМК в управление образовательной организацией, дано развернутое описание процессной модели системы менеджмента качества образовательного учреждения. С точки зрения процессного подхода рассматриваются затраты на качество услуг образовательных организаций и выделяется их значимость при формировании систем управления качеством.

THE PROCESS APPROACH TO THE MODELING OF THE SYSTEM OF QUALITY MANAGEMENT AND COST ACCOUNTING FOR THE QUALITY OF THE UNIVERSITY

The article considers the application of the process approach in the organization of the system of quality management of educational institutions of vocational education. This paper offers the author's vision of the causes of the introduction of QMS in the management of the educational organization is given a detailed description of a process model of the quality management system of the educational institution. From the point of view of the process approach considers the cost of the quality of services of educational institutions and distinguished by their importance in forming quality management systems.

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О.С. Мельник

Глухівський національний педагогічний університет ім. О. Довженка

РОЗРОБКА УДОСКОНАЛЕНОЇ СХЕМИ ЕЛЕКТРОХІМІЧНОГО ОЧИЩЕННЯ СТІЧНИХ ВОД ДЛЯ ПІДПРИЄМСТВ З ОБОРОТНИМ ЦИКЛОМ ВОДОПОСТАЧАННЯ

Розглядається принципово нова технологічна схема очищення стічних вод гальванічного виробництва, в основу якої покладено завдання створення замкнених систем ресурсообороту. Запропонована схема дозволяє очищувати стічні води до нормативних показників з мінімальними енерговитратами та отримувати на виході електрогенерованих шлам зі стабільними структурними характеристиками.

Стічні води, гальванічне виробництво, електрокоагуляція, технологічна схема

Сьогодні особливої уваги науковців і виробників потребує проблема порушення балансу водного середовища. Витратні виробничі схеми водокористування, незадовільний стан очисних споруд, застарілі матеріаломісткі технології обробки стоків призводять до загострення екологічної ситуації в Україні. Значного забруднення зазнає гідросфера від підприємств гальванічного профілю. Гальванічне виробництво відноситься до категорії найбільших промислових водоспоживачів. Вода в цехах гальванопокриттів витрачається на приготування електролітів, знежирювальних і травильних розчинів, на промивання деталей, охолодження ванн і випрямлячів струму [3].

Найбільш небезпечними є стічні води хромових гальваноліній. Трансформуюча активність шестивалентного хрому обумовлює його токсичність і значний міграційний потенціал у природному середовищі.

Для захисту біосфери від хромовмісних сполук гальванічного виробництва перспективним вважається електрокоагуляційний метод знешкодження стоків [1], який дає можливість одночасно проводити відновлювальну деструкцію шестивалентного хрому й осадження його у вигляді суміші гідроксидів. Електрогенерований осад-шлам відрізняється стабілізованими структурними характеристиками, що забезпечує стійкість хрому до вилуговування в навколишнє середовище при тривалому зберіганні таких шламів на території підприємства або використанні як вторинної сировини для будівельної, металургійної, автодорожньої промисловості. Серед основних причин, що перешкоджають широкому впровадженню електрокоагуляторів у виробництво — технологічна складність процесу та відносно висока собівартість очистки.