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## **IMPLEMENTING KNOWLEDGE ECONOMY STANDARDS FOR QUALITY MANAGEMENT DEVELOPMENT OF ORGANIZATION**

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Quality management is an integral part of the management of any organization. It includes effective management of all resources of the organization, including knowledge. For the digital economy, knowledge becomes the most valuable resource. The volume of intellectual assets and their management efficiency largely determine the success of the organization. Digital technologies are able to process large amounts of data, effectively structure and process them, as well as protect data from unauthorized access. These technologies will certainly be useful for various branches of modern management. Quality management is one of the most important branches of modern organization because of the ever-increasing expectations and demands of consumers, as well as competition and globalization. Thus, knowledge management is becoming an increasingly important task for every Russian enterprise. International and domestic standards offer recommendations for knowledge management, but they are not widely implemented. Many organizations have a need for knowledge management as an element of quality management of the organization, as well as a mechanism of its management. The purpose of the study is to analyze the existing international and Russian regulatory framework for knowledge management and to determine the possibility of using knowledge management technologies for the development of quality management of the organization. In the course of the study the following methods were used: analysis and synthesis, study of normative documents, modeling. Results: the research studied international and national standards of the Russian Federation for knowledge management and identified process-oriented knowledge management for the development of quality management of the organization. This process combines the approaches of quality management and human resource management and is aimed at providing the necessary level of knowledge of employees and systematization of knowledge of the organization. Directions for further research: the formation of the domestic methodological base for knowledge management, training in knowledge management and the use of knowledge management in the practice of Russian enterprises.

**Keywords:** digital economy, digitalization, knowledge management, knowledge, quality management

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## **ПРИМЕНЕНИЕ СТАНДАРТОВ В ОБЛАСТИ ЭКОНОМИКИ ЗНАНИЙ ДЛЯ РАЗВИТИЯ МЕНЕДЖМЕНТА КАЧЕСТВА ОРГАНИЗАЦИИ**

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Менеджмент качества является неотъемлемой частью менеджмента любой организации. Он включает в себя эффективное управление всеми ресурсами организации, в том числе знаниями. Для цифровой экономики знания становятся самым ценным ресурсом, и успех организации

во многом определяется объемом интеллектуальных активов и эффективностью управления ими. Цифровые технологии позволяют обрабатывать большие массивы данных, эффективно их структурировать и обрабатывать, а также защищают данные от несанкционированного доступа. Данные технологии безусловно будут полезны для различных отраслей современного менеджмента. Менеджмент качества является одной из самых значимых отраслей современной организации. Это обусловлено постоянно растущими ожиданиями и требованиями потребителей, а также конкуренцией и глобализацией. Таким образом, менеджмент знаний становится все более актуальной задачей для каждого российского предприятия. Международные и отечественные стандарты предлагают рекомендации по менеджменту знаний, но внедрены они далеко не везде. Многие организации имеют потребность в менеджменте знаний как в элементе менеджмента качества организации, а также в механизме его ведения. Цель исследования: проанализировать существующую международную и российскую нормативную базу по управлению знаниями и определить возможности применения технологий управления знаниями для развития менеджмента качества организации. В ходе исследования были применены следующие методы: анализ и синтез, изучение нормативных документов, моделирование. Полученные результаты: в ходе исследования были изучены международные и национальные стандарты Российской Федерации по менеджменту знаний и был выявлен процессно-ориентированный менеджмент знаний для развития менеджмента качества организации. Данный процесс комбинирует подходы менеджмента качества и управления персоналом и нацелен на обеспечение необходимого уровня знаний сотрудников и систематизацию знаний организации. Направления дальнейших исследований: формирование отечественной методической базы по управлению знаниями, подготовка специалистов по менеджменту знаний и применение менеджмента знаний в практике российских предприятий.

**Ключевые слова:** цифровая экономика, цифровизация, управление знаниями, знания, менеджмент качества

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## Introduction

Digital transformation of economy and industry is the most relevant topic of modern scientific and commercial discussions. Digital technologies penetrate every person's life through different roles and tasks. The government and business also face the need for effective use of the tools of digitalization in their work. According to KMDA, a consulting company for digital strategy and business transformation, only 9.1% of the surveyed companies are not engaged in digital transformation, while the rest are already at various stages of research, development and implementation of new technologies [1].

Knowledge management and digital transformation were addressed by A.V. Babkin [2, 3], E.A. Gromova [4], E.S. Balashova [5], A.E. Karlik [6] and other.

The digital transformation of the economy and industry has influenced changes in the regulatory framework: there are a number of international and national standards governing the application of its capabilities. The study covers aspects of knowledge management.

## Purpose of research

This study is aimed at studying the knowledge economy, the determination of the place of knowledge management in this process and the identification of opportunities for applying technologies of knowledge management for the development of quality management of the organization.

To achieve this goal, the following issues have to be considered:

1. learning the concepts of digital transformation of the economy and knowledge economy, its current state and the main drivers, the impact of digital transformation of the economy on the development of management systems, in particular quality management;

2. analyzing the existing international and Russian regulatory framework for knowledge management;
3. study of process-oriented knowledge management for the development of quality management and digital transformation of the economy.

The object of the study is the quality management system of organization, we consider the subject of knowledge management within its framework.

### Method of research

To achieve these goals, the study analyzed the existing regulatory framework for knowledge management and quality management, also using the methods of synthesis and modeling, comparative analysis.

### Obtained results

In the research of the Sretensky Club, digital economy is an economy in a hybrid world [7]. Hybrid world is understood here as a fusion of the real and virtual world.

Digital transformation is implemented as a part of economic development: mechanization, convection, digitalization, platforming. Digital platforms and information and communication technologies are of great importance for digital transformation. However, the competence of the digital economy includes information technology (big data, blockchain, etc.), economics (macroeconomics, microeconomics, business models, marketing, etc.) and management (asset management, functions, processes, people, resources, project approach, etc.) [8]. Thus, information technology forms the infrastructure and tools, but people remain to be the owners of the processes. This can explain the apparent spread of modern startups, when entrepreneurs were at the same initial level, but the creativity and aspirations of a few individuals gave them entrepreneurial success. Knowledge, its volume and efficiency of use are the most important criteria for the success of most organizations, regardless of the form of ownership and the number of personnel, and knowledge management is becoming one of the most important tasks of management.

Management of the organization covers different scopes, including quality (products, services, business processes). This is a system concept.

Quality management system is one of the tools for the organization development. The quality management system is a management system for the management of the organization in relation to quality [9]. To date, the vast majority of Russian enterprises are building their work on quality management in the form of a quality management system that meets the requirements of national standards of the ISO series. This series of standards covers all areas of management of the organization and is aimed at ensuring compliance of products and processes of the organization with the declared requirements. The latest edition of the National standard GOST R ISO 9001-2015 focuses on knowledge and risk management, emphasizes the importance of human resources of the organization and their role in its sustainable success [10]. In particular, the standard contains the following requirements for knowledge management (KM) of personnel (Table 1).

**Table 1. Requirements of GOST R ISO 9001-2015 related to knowledge management of the organization**

Standard section	Contents
4. Environment of the organization	Values, culture, knowledge as factors of internal environment
7.1.6. Knowledge of organization	The objectives of the organization are to determine the knowledge needed for the functioning of its processes and to achieve conformity of products and services; to ensure their availability and sufficiency. The organization should also assess the current level of knowledge and determine how to obtain or provide access to the necessary knowledge and its necessary updates.

7.2. Competence	The organization must: a) determine the necessary competence of person(s) performing work under its management, which has an impact on the performance and effectiveness of the quality management system; b) ensure the competence of these persons on the basis of appropriate education, training and (or) experience; c) where applicable, take actions aimed at obtaining the required competence and evaluate the effectiveness of the actions taken; d) record and retain relevant documented information as evidence of competence.
7.4. Exchange of information	The organization should determine the procedure for the exchange of internal and external information related to the QMS.

Standard GOST R ISO 9001-2015 provides an initial point for the work on the knowledge and competence of management employees. Following this standard gives the organization the first developments, but does not provide an understanding of knowledge management as an integrated system or practical recommendations for the implementation of such.

Many theories and approaches have been developed for the implementation of knowledge management processes in the world practice [11]. The experience of implementing systems and processes of knowledge management organizations is also great, but their study is complicated due to the fact that knowledge management data, as well as the knowledge itself, are a competitive advantage of the company and kept secret.

From the point of view of management, knowledge is an object of management and personnel management, as well as quality management. Recently the study of knowledge acquired an independent discipline, knowledge management.

In international practice, we can find a set of standards for knowledge management CWA 14924:2004 (Table 2). This guide to established knowledge management practices includes five standards dealing with different aspects of knowledge management [12]. These standards were developed on the basis of the analysis of the activities of a number of foreign companies and do not take into account the Russian specifics.

**Table 2. European knowledge management standards**

Standard Number	Title
CWA 14924-1:2004	European Guide to good Practice in Knowledge Management. Part 1: Knowledge Management Framework
CWA 14924-2:2004	European Guide to good Practice in Knowledge Management. Part 2: Organizational Culture
CWA 14924-3:2004	European Guide to good Practice in Knowledge Management. Part 3: SME Implementation
CWA 14924-4:2004	European Guide to good Practice in Knowledge Management. Part 4: Guidelines for Measuring KM
CWA 14924-5:2004	European Guide to good Practice in Knowledge Management. Part 5: KM Terminology

In response to the need for guidance on the organization of the knowledge management process, a number of national standards have been developed. Some of them are theoretical and serve as a basis for initial discussions [13], others contain a set of specific actions on knowledge management. It is important to note the absence of references in the documents to national experience in knowledge management. The subject of the study is closely related to corporate culture, mentality and state institutions, so it is advisable to include Russian experience in these standards. An example is the website “How to manage knowledge” containing a number of articles by the Russian expert on knowledge management Maria Marinicheva. It reflects the national experience and practical recommendations for knowledge management implementation [14].

The following national standards for knowledge management are currently in force (Table 3).

**Table 3. National knowledge management standards of Russian Federation**

Standard number	Title
GOST R 54875-2011	Knowledge management. Guide to the established practice of implementing a knowledge management system
GOST R 53894-2016	Knowledge management. Terms and definitions
GOST R 57132-2016	Knowledge management. Relationship with organizational functions and disciplines. A guide to best practice
GOST R 57127-2016 / PAS 2001:2001	Knowledge management. A guide to best practice
GOST R 57133-2016	Management of organizational culture and knowledge. A guide to best practice
GOST R 57134-2016	Knowledge management. Mastery of knowledge acquisition. A guide to best practice
GOST R 57319-2016	Knowledge management. Guidance for the successful achievement of small business goals
GOST R 57320-2016	Knowledge management. Application of process-oriented knowledge management in small and medium-sized enterprises.
GOST R 57321.1-2016	Knowledge management. Knowledge management in the field of engineering
GOST R 54874-2016	Knowledge management. Best practices guide for the public sector
GOST R 57325-2016 / ISO / IEC Guide 17: 2016	Knowledge management. Guidance on the incorporation of micro, small and medium-sized enterprise (MSME) requirements into standards)
GOST R 57331-2016/ PAS 1063:2006	Knowledge management. Guide to the practical application of knowledge management in small and medium-sized enterprise networks

Analysis of the above standards in the field of knowledge management indicates that the effective implementation of knowledge management in the organization carries the need for appropriate corporate culture and attitude to knowledge, support from management and the priority of business goals in the strategy of knowledge management. Close cooperation with the departments of personnel, quality and information technology will give a powerful impetus to the development of this area of management.

We should note the specifics of these standards: most of them are only the basis for initial discussions and demonstration of the benefits of the future implementation of the KM in enterprises.

The national standard GOST R 57320-2016 “Knowledge management. Application of process-oriented knowledge management in small and medium-sized enterprises” plays a special role. This document is a methodology of well-established practice of consistent implementation of knowledge management in enterprises. The standard aims to introduce process-based knowledge management (PBKM) in small and medium-sized enterprises (SMEs). The peculiarity of SMEs is a relatively small resource base. It implies, on the one hand, cost-effective implementation solutions, and on the other, mandatory testing of the effectiveness of innovations, for small companies need only specific working tools, and the budget for general training and motivational activities is usually cut. The presented approach can be applied independently of the industry and should be considered as a guide [15]. Consistent implementation of the KM systematizes processes and information flows, provides an up-to-date regulatory framework and streamline data on product quality.

The knowledge management process is divided into the following phases: initialization, analysis, pilot phase, implementation and sustainable development phase.

Table 4 shows the initial data, main tasks and results of each phase. Each phase as a process has its own input (source data), a set of tasks and control points of the result. Thus, it is possible to track the status of the process, evaluate its effectiveness and, if necessary, adjust the process or allow for errors in subsequent cycles. The gradual implementation of the PBKM is also important as gradual implementation from process to process increases the efficiency of individual processes, is of interest to employees and eliminates the formal implementation.



**Table 4. PBKM implementation algorithm**

Phase	Input	Main tasks	Results (check points)
A. Initialization (start-up initiatives)	Environment of the organization Management's view of the KM	Setting specific achievable goals and checking the conditions for the possibility of implementing the PBKM	PBKМ goal Project team
B. Analysis	Culture and processes of organization	Culture analysis, process selection and in-process analysis of the five main activities of the KM	The strengths and weaknesses of the culture of the organization for the development of KM are determined The most important processes of the organization are identified Pilot process is selected
C. Pilot phase	Pilot process and knowledge areas of the organization	Process description Knowledge representation and structuring Evaluation of results The decision to implement	The process is optimized, the effect is approved Decision to implement the KM process made
D. Implementation	Pilot process	Removing possible obstacles Qualification of employees Consistent implementation (repetition of phases B and C)	Interest in PBKM among employees The increase in the number of PBKM processes
E. Sustainable development	Resources	Creating the structure of continuous improvement	KM is an integral part of daily work

Identification, creation, storage, dissemination and application of knowledge are the main activities of the KM [16]. This activity can relate to both external and internal knowledge of the organization, which affects its competitive advantages and relationships with partners.

This approach fits into the popular process approach of the quality management system PDCA (Plan-Do-Check-Act): there is a process of setting the task, the mechanism of its implementation, evaluation of the effect and proposals for improvements [17]. As a result, the PBKM will have a positive impact on the quality management system of the organization and make it more popular among employees, as knowledge management affects the organization of their workplace, optimizes their work and creates a friendlier atmosphere of cooperation and continuous improvement.

According to E.A. Balashov, the main obstacle in the implementation of the KM will most often be the low culture of Russian organizations and the low level of the use of information technologies [18]. The digital transformation in the form of the use of modern digital technologies, as well as the development of business on network technologies will help to overcome these obstacles. Franchising is a successful example of such cooperation. According to this business model, knowledge takes the form of work standards and is translated into franchisee firms. This is how the system of partnership is built, and a larger scale of business gets the opportunity to introduce more expensive systems and technologies that are not available to individual small and medium-sized enterprises [19].

Thus, the following results were obtained during the work:

1. The international practice of knowledge management aims to link the tools of information technology, personnel management and quality management of the organization into a single system.
2. The Russian practice has developed a base of standards for knowledge management, however, they have not yet been widely used.
3. In the research we studied process-based knowledge management using the quality management approach. When embedding process-based knowledge management in the quality management system, the latter receives a powerful development. Knowledge management takes the form of a subsystem, based on existing information and communication and administrative resources. For enterprises, it is a method of implementing knowledge management to improve the quality management system of the organization,

form of a more powerful culture of building knowledge of the company and optimize the knowledge used in various business processes of the organization.

### Directions for further research

Further development of knowledge management in the enterprise may consist in the optimization of knowledge management software under the approved architecture, as well as the development of internal criteria for measuring knowledge. The crucial purpose of Russian government is the formation of the domestic methodological base for knowledge management. The training of specialists in knowledge management is also important. The American Productivity and Quality Center notes the following competencies required by knowledge management professionals: systems thinking, collaboration and communication, strategic planning, and change management [20]. The demand for change management expertise is not surprising given the ubiquity of digital transformation initiatives and the accelerating pace of change in general.

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