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Conceptual system in the modern information management

S.Yu. Eroshkin^a, N.A. Kameneva^a, D.V. Kovkov^b, A.I. Sukhorukov^{a*}^a Plekhanov Russian University of Economics, 36, Stremyanny lane, Moscow, 117997, Russia^b Peoples' Friendship University of Russia, 6, Miklukho-Maklaya str., Moscow, 117198, Russia

Abstract

The report provides an overview of the basic concepts of internationalisms in international information management. Systematization of the conceptual and categorical apparatus that is disclosed on the example of the use of information systems in management according to their hierarchy is proposed. There is justified the creation of a unified conceptual and categorical apparatus of information management, summarized in a logically connected international system, which will enable the manager to navigate the numerous international abbreviations.

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1. Introduction

In the 70-es of XX century, an international concept of information management as a special section of self-management in the economy was formed^{1,2}. Even though there is no strict definition of information management, but its essence lies in the title is information management in order to achieve targets. Taken into consideration the current state of the information society and the rapid growth of information technologies in the early twenty-first century, we can assume that the information management is the present and future of the world economy³. At this stage in the history Information management provides a permanent transformation of the business environment and identifies a successful business, i.e., core revenue growth of most companies⁴. Information management is the basis of the emerging concept of network economy, electronic or e-economy, i.e. such economic activities that are carried out via the control information electronic networks (digital telecommunications).

* Corresponding author. Tel.: +7-909-161-0956; fax: +7-499-237-8791.

E-mail address: Eroshkin.SY@rea.ru; Sukhorukov.AI@rea.ru

Currently one of the urgent topics in this sphere can be considered the creation of a unified conceptual and categorical apparatus of information management, summarized in a logically connected international system, which will enable the Manager to navigate the numerous international abbreviations, and will not just use their literal translation, and to understand correctly the essence. A hierarchical classification of systems of information management in accordance with their functionality will make it possible to consistently build the logic of the management of the company (model, paradigm) and according to the general rules to accompany its development in a formalized way with the help of modern information systems.

Practical importance of the proposed systematization of the conceptual and categorical apparatus is disclosed in the article by analyzing the information flows in the investment and construction business that is increasing share in the macroeconomics of Russia. Due to the specificity of this area of the economy, based on performance-oriented approach, as one of the most effective modern approaches to management, the main tendencies of development of systems management of construction projects in the General system of the global network economy are specified. For example, construction design introduces relevant concepts of the international system, discusses the various levels of such automated control systems, the relationship between the individual systems, their advantages and disadvantages.

The Russian science of management has always kept pace with the development of world science and has long had its own terminology. Currently, the borrowed abbreviation-internationalisms are increasingly used in the Russian language, which in the era of network economy make the conceptual apparatus available to the public and, in the opinion of marketing experts, provide domestic developers of various automated control systems with the best competitive opportunities in the international market.

2. Conceptual system in the information management

For the modern manager in the era of a global networked economy, along with such basic concepts as: information, binary arithmetic, digital technology, computer programs, programming languages, text and table processors, databases, visualization software and image processing, video, sound (multimedia), electronic mail services and electronic means of World Wide Web communication, highly specific management information English terms and international terms become commonly used.

First, these are modern concept, methodology and approaches used in modern information management:

- BPM (Business Process Management) is the concept of process management organization, or management of business processes;
- BPM (Business Process Modeling) is the concept of modeling business processes. Has the same abbreviators with the concept of "Business Process Management", but is only part of it;
- TQM (Total Quality Management) is total quality management, all-organization method of continuous quality improvement of all organizational processes;
- BPR (Business Process Reengineering) is an approach of revolutionary changes to business processes, reengineering of business processes;
- CPI (Continuous Process Improvement) is an approach of continuous improvement of business processes;
- BSC (Balanced Scorecard) is the methodology of strategy maps or the balanced scorecard". The mechanism is sequential bring to staff development strategies the company's goals and control their achievement through key performance indicators (KPIs, Key Performance Indicator).

Second, these are the systems and tools, through which modern concepts, methodologies and approaches are implemented:

- BI (Business Intelligence) is system "business intelligence" that implement on the basis of personal computers, components of DSS (Decision Support System - support systems decision-making) is obsolete and is gradually disappearing concept. In scientific literature one can find even more early name for this class of systems, out-of-circulation – EIS (Executive Information Systems - information systems Manager). BI systems use tools such as OLAP (Online Analytical Processing) – multidimensional analytical data processing and Data Mining – data mining function, which is sometimes also denoted by the term KDD (Knowledge Discovery in Databases) – intelligent knowledge discovery in databases;

- BPMS (Business Process Management System) is the management of business processes, ensuring the implementation of the concepts of BPM, TQM, and using different notations and languages to model business processes;

- CPM (Corporate Performance Management) is the performance management system of the Corporation. The term came from IDC analysts, and the company of Hyperion has a similar concept of EPM (Enterprise Performance Management), i.e. performance management system of the enterprise. In scientific literature one can find another version of this concept –BPM (Business Performance Management) – performance management system business. This abbreviation is found for the third time on the list, but has its own concept, which leads to some confusion;

- PPM (Project Portfolio Management) is the project management system and portfolio. The variant only project management (PM systems);

- KM (Knowledge Management) is the knowledge management system necessary for successful implementation of business strategies.

Thirdly, there are the information system of operational management: ECM (Enterprise Content Management) – Management of information resources of the enterprise, the domestic analogue of the concept of "electronic document management system (EDMS) PM (Project Management) – project management; CAD (Computer-aided Design) – computer technology in the design, analogue systems computer-aided design (CAD); OLTP (Online Transaction Processing) transaction processing system transaction processing in real time; and technological control systems such as:

- ERP (Enterprise Resource Planning) – enterprise resource planning;
- CRM (Customer Relationships Management) – customer relationship management);
- SRM (Supplier Relationships Management) – relationship management with suppliers;
- SCM (Supply Chain Management) – supply chain management;
- MES (Manufacturing Execution System) system operational (shop) control of production processes (production - maintenance);
- WMS (Warehouse Management System – warehouse management system;
- CMMS (Computerized Maintenance Management System) – computerized maintenance management (repairs);
- EAM (Enterprise Asset Management) – transformation of CMMS systems, EAM implementing the strategy (reducing the cost of maintenance, repair and logistical support without compromising reliability or the operational parameters of the equipment without increasing costs);
- SCADA (Supervisory Control and Data Acquisition) – Supervisory control and data acquisition, programs for automated control of technological processes, analogous to the automated control systems of technological processes.

Fourth, the notation and modeling languages that implement the concept of BPM (Business Process Management):

- BPMN (Business Process Model and Notation) is a graphical notation for modeling business processes;
- IDEF (abbreviated abbreviation ICAM (Integrated Computer Aided Manufacturing) and Definition) is a standard program of automation of industrial enterprises, from which came a methodology for functional modeling and graphical notations IDEF0, IDEF3, intended for formalization and description of business processes;
- EPC (Event-driven Process Chain) is the event-driven process chain. Graphic notation, the type of chart that is used for business modeling;
- UML (Unified Modeling Language) is a standardized object-oriented modeling language;
- BPEL (Business Process Execution Language) is an XML-based language for the formalization of the business processes and interaction protocols between them. It is the notation for the execution of business processes.

Fifth, it is modern and advanced management concept-product, or facility construction, taking into account their full life cycle:

- PLM (Product Lifecycle Management) is the lifecycle management of the product production;
- BIM (Building Information Model) is the construction designing taking into account their full life cycle;
- BLM (Building Lifecycle Management) means managing the life cycle of the building).

3. The hierarchy of management information systems company

It should be noted that shown above modern conceptual apparatus changes all the time. There appear new concepts and technologies, completely replacing, or transforming old, appear and disappear whole classes of information systems and specific software products⁵. Sometimes abbreviations are the same, but the concepts have a different meaning. Table 1 shows the hierarchical structure of information systems in management, which covers the entire spectrum of automation tasks of the company from strategic management to the levels of control of technological processes of production (construction) and product management (feature) production (construction) throughout the life cycle. These systems can be based on different methodological approaches, making the proposed structure is quite flexible.

Table 1. The hierarchy of management information systems company

Functions and users	Types of Information Systems
Strategic management and marketing (top management and marketing)	BI, BPMS, CPM (EPM, BPM), GRC, PPM, CRM
Tactical management and financial management (functional units)	ECM, ERP, CRM, SRM, SCM BPMS, PM
Operational production management (production managers)	MES, CMMS, EAM, WMS
Automated control of technological processes (line managers workshop managers)	SCADA, CAD
Management of the product throughout its life cycle (all production users plus consumers of the product and operator)	PLM, BIM, BLM

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