

ASSESSMENT OF MARKET-SIGNIFICANT INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE MANAGEMENT OF AN INDUSTRIAL ENTERPRISE

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Abstract. The study aims to identify ICT groups that support management functions of industrial enterprises and to assess their significance based on how they contribute to achieving management efficiency. The importance of ICT in enterprise management is defined as its ability to enhance management efficiency through influencing the quality of information, the decision-making process, and management functions. Supply Chain Management (SCM) systems are highlighted as a significant ICT category for industrial enterprises, designed to optimize the distribution network by delivering the right products at the right time and cost. SCM systems aim to improve logistics, demand forecasting, purchasing plans, and overall service for suppliers and consumers. The article assesses SCM's impact on management efficiency through criteria such as quality of information, decision-making processes, and control functions across different management levels.

Key words: ICT, management, industrial enterprise, efficiency, CRM, SCM

Annotatsiya. Tadqiqot sanoat korxonalarining boshqaruv funksiyalarini qo'llab-quvvatlovchi AKT guruhlarini aniqlash va boshqaruv samaradorligiga erishishga hissa qo'shishi asosida ularning ahamiyatini baholashga qaratilgan. Korxonani boshqarishda AKTning ahamiyati uning axborot sifatiga, qarorlar qabul qilish jarayoniga va boshqaruv funktsiyalariga ta'sir ko'rsatish orqali boshqaruv samaradorligini oshirish qobiliyati asoslangan. Ta'minot zanjiri boshqaruvi (SCM) tizimlari sanoat korxonalari uchun muhim AKT kategoriyasi sifatida ta'kidlangan bo'lib, ular mahsulotlarni to'g'ri vaqt va narxda yetkazib berish orqali tarqatish tarmog'ini optimallashtirishga mo'ljallangan. SCM tizimlari logistikan, talabni prognozlash, xarid rejalari va yetkazib beruvchilar va iste'molchilar uchun umumiy xizmatni yaxshilashga qaratilgan. Maqolada SCM ning boshqaruv samaradorligiga ta'siri axborot sifati, qaror qabul qilish jarayonlari va turli boshqaruv darajalaridagi nazorat funktsiyalari kabi mezonlar orqali baholanadi.

Kalit so'zlar: AKT, menejment, sanoat korxonasi, samaradorlik, CRM, SCM

Аннотация. Целью исследования является выявление групп ИКТ, поддерживающих управленческие функции промышленных предприятий, и оценка их значимости исходя из того, как они способствуют достижению эффективности управления. Важность ИКТ в управлении предприятием определяется как их способность повышать эффективность управления за счет

влияния на качество информации, процесс принятия решений и функции управления. Системы управления цепочками поставок (SCM) выделяются как важная категория ИКТ для промышленных предприятий, предназначенная для оптимизации распределительной сети путем доставки нужных продуктов в нужное время и по нужной цене. Системы SCM направлены на улучшение логистики, прогнозирования спроса, планов закупок и общего обслуживания поставщиков и потребителей. В статье оценивается влияние SCM на эффективность управления по таким критериям, как качество информации, процессы принятия решений и функции контроля на разных уровнях управления.

Ключевые слова: ИКТ, менеджмент, промышленное предприятие, эффективность, CRM, SCM.

INTRODUCTION

The market of information and communication technologies existing today is very diverse and is in constant development. At present, in fact, there is no longer a subject area for which there is not at least one application software product designed to solve problems in this particular functional area. However, as the experience of economically developed countries shows, the success of almost any company depends 70% on skillful management, and only 30% on everything else [1]. Even in the most unfavorable external conditions, company management can successfully conduct business, making maximum use of the possibilities of effective enterprise management, including through the use of advanced information technologies.

Thus, in accordance with the objectives of this study, from the entire variety of ICTs, it is necessary to identify groups of technologies designed to support the management functions of industrial enterprises and assess the degree of their importance for such companies. Significance can be interpreted in relation to target criteria as a contribution to achieving the main goal [2]. The importance of ICT in the management of an industrial enterprise can be defined as a comprehensive characteristic of ICT, reflecting the ability of ICT to influence the efficiency of company management.

LITERATURE REVIEW

According to C.J.Hamelink the global information society, coupled with modern innovative capabilities, contributes to the digital transformation of countries, industries, and individual companies. Due to digitization, economic growth is achieved, and the competitiveness of goods and services increases. Given the significant scale and pace of digital transformations that take place today, the speed of responding to their main trends is a significant competitive advantage. In common practice, one of the most successful tools of information and communication technologies determines digitalization. [2]

According to M.K.Abdullayev in modern management one of the most vital issues challenged by the management of a company of a voluntary character is the rational use of information systems in the development of management decisions. The level of rapid development of the economy requires from information systems to provide final users with the accurate and reliable information in a timely manner.[5]

The another article of M.K.Abdullayev discusses the organizational and economic aspects of regulating relations in the field of implementation and use of automated information systems using corporate information systems in enterprise management.[2] Modern tools, functional and structural support of the integrated enterprise information system were developed by combining production planning mechanisms and hardware and software in the enterprise resource planning and production process management system.

DATA AND METHODS

Assessing the significance of ICT in this case will consist of analyzing the capabilities of ICT to qualitatively and quantitatively influence individual components of the organization's management process, characterizing its effectiveness (efficiency criteria). Following categories as performance criteria that influence management processes from different sides:

–the quality of information is the primary or basic criterion that determines the quality of management, since the correctness of management decisions directly depends on the quality of the information used (generated);

–the decision-making process is a procedural criterion, i.e. a criterion characterizing the influence of the object under study on the procedure (its stages) of making an administrative decision by a manager;

–management functions - a criterion that describes the impact of the object being studied, in this case a specific group of ICT, on the main management functions - a functional criterion.

Here is the description of each criterion with a certain set of parameters that specify it(table №1).

Quality of information; used for management can be defined as its usefulness for making management decisions, and accordingly, described by the following parameters:

Table №1

Characteristics of information quality [3]

Utility criterion	Property	Measurement
Time	Timeliness	Providing information as needed
	Urgency	Prompt information update
	Periodicity	Availability of information about the past, present and future
Content	Accuracy	Reliability of information

Utility criterion	Property	Measurement
	Relevance	Matching information to specific user requirements
	Completeness	Providing all necessary information
	Brevity	Providing only the required information
Form	Clarity	Presentation in a simple and understandable manner
	Detail	Providing more detailed or summary information
	Representativeness	Presentation of information in descriptive, digital or spatially visual form

Thus, the impact of specific groups of ICTs on the quality of information in the general case can be measured by the number of qualitative characteristics of information they change and the degree of influence of the ICTs in question on each of them.

An effective decision-making process includes the following main stages [4]:

- 1) awareness of the need for a solution (identification of a problem that requires elimination or identification of opportunities to exceed current results);
- 2) diagnostics and causal analysis (assessment of the causes of the problem);
- 3) developing solution options that meet the needs of the situation and eliminate shortcomings;
- 4) choosing the best solution;
- 5) implementation of the solution;
- 6) evaluation of results and feedback (subsequent analysis of the effectiveness and correctness of the decision made).

Consequently, the influence of specific groups of ICTs on the process of making management decisions in the general case can be assessed by the number of decision-making stages that are influenced by certain ICTs, and the level of their impact on each of them.

However, the composition and number of performance indicators will be specific to each specific enterprise, therefore, at this stage of the study, without taking into account the data of specific enterprises and the set of functional capabilities of specific information and communication technologies, the analysis of the above parameters, in the author's opinion, seems sufficient to assess the overall level of importance of the ICT groups under consideration in industrial enterprise management.

The proposed tools for assessing the importance of ICT should be supplemented with such an assessment characteristic as the level of management at which the ICT groups under consideration influence the selected assessment parameters:

- senior (company management);
- average (middle management);

- lower level (operations personnel).

To simplify the analysis of the significance of ICT, the degree of influence of ICT of the corresponding group on a particular parameter describing the effectiveness of management will be measured at two levels: weak (insignificant) and significant or high (table №2).

The following is a brief description of the most relevant groups of information and communication technologies today, followed by an assessment of their importance for industrial companies using the proposed methodology. Also, to increase the practical value of this study, for each group of technologies the names of the most well-known software products related to the ICT category under consideration will be given.

ANALYSIS AND RESULTS

Supply chain management systems or Supply Chain Management (SCM) are designed to create a distribution network in which the right goods will be delivered to the right place, at the right time, at the lowest cost. SCM systems are aimed at creating optimal channels of interaction with distributors and end consumers. The entire supply chain is built on the “supplier-consumer” principle and can unite any number of enterprises.

Basic principles of SCM [8]:

- segment consumers based on the need for services;
- focus the logistics network on the client;
- closely monitor market demand and plan based on them;
- study consumer demand;
- strategically plan supplies;
- develop a supply chain strategy; [8]
- use methods of attracting (capturing) new distribution channels.¹

With the help of modern SCM solutions, the company is able to collect, process, store and analyze data on demand, changes in needs, and individual needs of customers. Based on this information, it is easier for managers to forecast demand, formulate individual purchasing plans for various suppliers and organize deliveries and logistics schemes so as to reduce all physical costs (storage and transportation costs) and intermediary costs (lost profits and unmet demand).

For suppliers and third parties, SCM solutions also provide benefits. Thanks to their use by the supplier, distributors receive better service, their applications are quickly processed and they have the opportunity to control the order formation process.

SCM is often perceived by companies as part of company automation and operational process management (ERP). Therefore, there are a number of solutions in which SCM is integrated as one of the elements. At the same time, a number of individual solutions are presented on the market. Using solutions integrated into a

common ERP system has its advantages and disadvantages. The advantage of such solutions is the use of a common system that allows you to combine data from various services - financial department, sales department, warehouse, etc. to create a common database and share customer information. The use of separate solutions allows you to avoid a number of problems associated with the implementation of ERP systems, for example, the duration of implementation. At the same time, individual industry solutions more accurately meet the needs of a specific enterprise.

Table №2

Assessing the importance of ICT for industrial enterprise management

ICT category name	Supply Chain Management (SCM) Systems			
Management efficiency criteria	Parameters describing the criteria	Level of management impacted by ICT		
		senior	average	lower
Quality of information	Time		X	X
	Content		X	X
	Form		X	X
	Proportion of positive answers in the total sample size	0%	100%	100%
Decision making process	Awareness of the need for a solution	X	X	X
	Diagnostics and causal analysis	X	X	X
	Development of solution options		X	
	Choosing the best solution		X	
	Implementation of the solution	X	X	X
	Evaluation of results and feedback	X	X	X
	Proportion of positive answers in the total sample size	67%	100%	67%
Control functions	Planning	X	X	X
	Organization		X	X
	Leadership (management)		X	
	Control	X	X	X
	Proportion of positive answers in the total sample size	50%	100%	75%

Note: X – significant or high level of influence, empty field – weak or insignificant.

The benefits of using SCM solutions are obvious, so we can predict the further development of the use of SCM by Uzbek companies, both when conducting business in traditional ways, and in cases where companies actively use web technologies for their activities.

CONCLUSION

Through a meticulous examination, the study identifies and assesses the importance of specific ICT groups, particularly focusing on their capacity to improve the quality of information, streamline the decision-making process, and augment the execution of

management functions across various levels within an organization. Among the ICT categories, Supply Chain Management (SCM) systems stand out as particularly influential, given their ability to optimize logistics and distribution networks, thereby ensuring that goods are delivered timely and cost-effectively while enhancing overall operational efficiency.

In conclusion, the study anticipates a growing adoption of SCM solutions among Uzbek companies, highlighting the crucial role of ICT in not only sustaining traditional business operations but also in facilitating new, web-based business models. This underscores the evolving landscape of industrial enterprise management, where the strategic incorporation of ICT solutions such as SCM systems becomes a cornerstone for achieving operational excellence and competitive advantage.

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