INFORMATION AND COMMUNICATION TECHNOLOGIES
IN TASK AND HUMAN RESOURCE MANAGEMENT

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This article aims to identify the importance of the use of information and communication systems in the enterprise, their role in human resource management, as well as the identification of the impact of information and communication systems on performance, whether these systems are crucial for successful management of an enterprise, the relevance of their use in the efficient human resource management. The problems of this topic are the uncertain potential of information and communication system usage, as well as the identification of prospects for the use of these systems. In the context of this paper there have been identified the main factors of influence of information and communication systems on performance, and have been specified the key forms of these systems application.

Key words: information systems, communication, management, information technology, human resource management, project management, enterprise.

Acest articol este elaborat pentru a identifica importanţa utilizării sistemelor informaţionale şi de comunicare la întreprindere, rolul lor în managementul resurselor umane, precum şi identificarea impactului sistemelor informaţionale şi celor de comunicare asupra performanţei, atunci când aceste sisteme sunt cruciale pentru managementul de succes al unei întreprinderi, relevanţa utilizării lor în gestionarea eficientă a resurselor umane. Problemele legate de acest subiect sunt potenţialul nedefinit de utilizare a sistemelor informaţionale şi celor de comunicaţii, precum şi identificarea perspectivelor pentru utilizarea acestor sisteme. În contextul acestei lucrări au fost identificaţi principalii factori de influenţă a sistemelor informaţionale şi de comunicare asupra performanţei şi au fost specificate formele cheie de aplicare ale acestor sisteme.

Cuvinte-cheie: sisteme informaţionale, comunicare, management, gestiune, tehnologii informaţionale, gestiunea resurselor umane, managementul resurselor umane, managementul proiectelor, întreprindere.

Целью данной статьи является определение важности использования информационных и коммуникационных систем на предприятии, их роль в управлении человеческими ресурсами, а также выявление влияния информационных и коммуникационных систем на производительность, в условиях, когда данные системы имеют решающее значение для успешного управления предприятием, актуальность их использования в эффективном управлении человеческими ресурсами. Проблемы данной темы заключаются в неопределенном потенциале использования информационных систем и системы связи, а также определение перспектив использования этих систем. В контексте данной работы там были выявлены основные факторы влияния информационных и коммуникационных систем на производительность, а также были определены основные формы применения этих систем.

Ключевые слова: информационные системы, коммуникация, управление, менеджмент, информационные технологии, управление человеческими ресурсами, управление проектами, предприятия.

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Introduction. In the age of advanced information progress, information and communication technologies of an enterprise are quite common and popular. The modern systems of enterprise management provide different categories of businesses from small to large-scale ones with the possibilities for successful business development in a wide range of economic sectors.

First, we need to define the very meaning of the term "information technology". Information technology is the resources needed for data collection, processing, storage and dissemination (ISO/IEC 38500:2008). In turn, enterprise management is essential in the administration and direction of all the tools and resources of the enterprise, starting with the labor force and ending with the human resources for meeting the enterprise goals and making profit.

The author proposes to divide the information technologies used in the enterprise into several categories, and namely:

1. Financial management systems;
2. Personnel management systems;
3. Project management systems;
4. Operations and quality management systems;
5. Sales and marketing control systems.

By the definition and, based on the nature of any kind of information systems we can say that all of these systems intersect and a separate information product can perform one of these functions or all of them at once.

Information and communication technologies, in this case, can fully represent this very kind of intersecting systems. The modern planning systems in enterprises, especially large enterprises that deal with software and information product development, can properly distribute a large amount of work among employees with subsequent collection of the necessary information on the progress of this work.

V.V. Tomilov, V.V. Trofimov and A.M. Burmistrov propose to consider the following as the criterion of ICT system efficiency:

- cutting time for data processing;
- reducing the number of administrative staff (technical executors);
- approaching new markets;
- increasing the customer base;
- strengthening business relations;
- improving sales effectiveness.

The overall objective of investing resources in information and communication technologies is to improve the activity of the enterprise. Specific objectives may be reducing the cost of information processing, improving the reliability and accuracy of information, tackling new economic issues [1, p.120].

Information and communication technology products help to increase the productive efficiency of enterprises, in particular small and medium-sized ones, attaining stronger business performance. However, the percentage of acceptance of these products by small and medium-sized enterprises in BRICS countries is very low [2].

Information and communication technologies, as a rule, are aimed at employee communication to perform complex tasks in the shortest possible time with minimum financial expenses. Information products aimed at staff communication can be defined as the general system of communication between employees through information telecommunications. One of the simplest examples of these communication systems is the e-mail. This communication system is participation of the employees' electronic mailboxes (disk space reserved on the mail server to store e-mails), as a means of communication by sending and receiving electronic messages through a computer network. [3, p. 244]

A computer network in this case does not necessarily mean a global network, it may be a local network of working computers. The messages may contain absolutely any information ranging from the textual one to tables, charts, and various types of images. This method of data communication in the enterprise is one of the most primitive, but, at the same time, it is the most common and it is often used in conjunction with classical verbal and material methods of communication. This speeds up the transmission of information, as well as the optimization of employee performance in terms of integrating the received communication information with working processes.

More complex systems of staff communication and information transmission are so-called "chat systems". These systems can combine the basic elements of communication between employees via e-

mail, but at the same time simplifying the process of communication between employees in the company. The most primitive representatives of this kind of chat systems are messengers. Examples of this type of system can be instant messengers as *ICQ*, *Bonjour*, *MSN* – these are information products that offer to the users the possibility mostly to send private messages in digest form to each other.

These forms of communication due to their simplicity can have a relatively high level of information security for protection against data interception by intruders. For example, an information protocol XMPP (Extensible Messaging and Presence Protocol) offers its users a data encryption system and an increased degree of protection against intruders' attacks, storing all the correspondence data on private computer systems without storing data on remote servers. In turn, some systems imply remote voice communication (*Skype*) that use discourse as an additional communication tool. The most effective method of using messengers is the creation of so-called *chat rooms* or *groups*, where several users can exchange messages directly with other users.

Some chat systems have this functionality as optional, while others have been designed precisely to implement this feature for users. One such an example is a corporate messenger *Slack*. This software supports individual message sending and the creation of the aforementioned chat rooms for discussion and adjustment of various tasks or projects. The correspondence in this case is located on the remote server of the information service provider. According to the provider of this service, the use of corporate messenger speeds up the work process in average by 32% compared to the time before using the service (Figure 1).
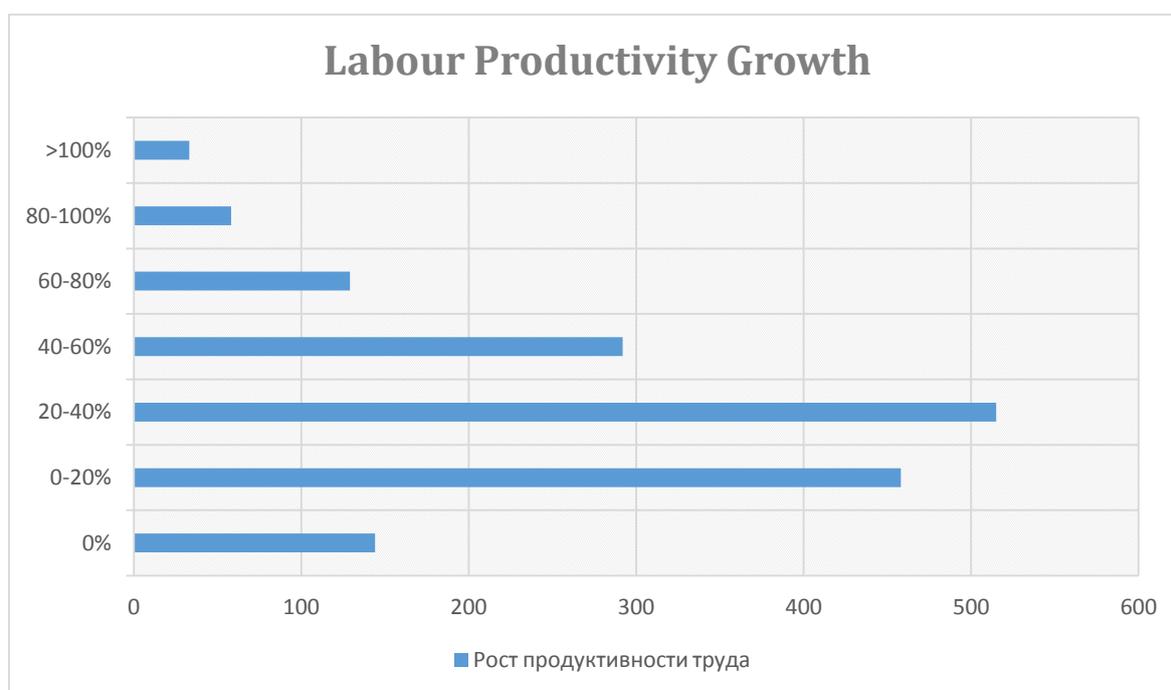

Fig. 1. Labour productivity growth due to corporate messenger Slack application
Source: Slack Survey of 13 July 2015[4]

Also, the use of Slack services has reduced the number of meetings and briefings by 25%, spending the saved time on carrying out current tasks, thus optimizing time resources of the enterprise (Figure 2). In addition, the use of Slack has made it possible to reduce significantly the amount of messages distributed via the corporate email system in favor of instant messaging, which also helps to speed up communication flows in the enterprise. Also, according to the same study, the entrepreneurs emphasized the influence of corporate messenger on the transparency in the company's activity.
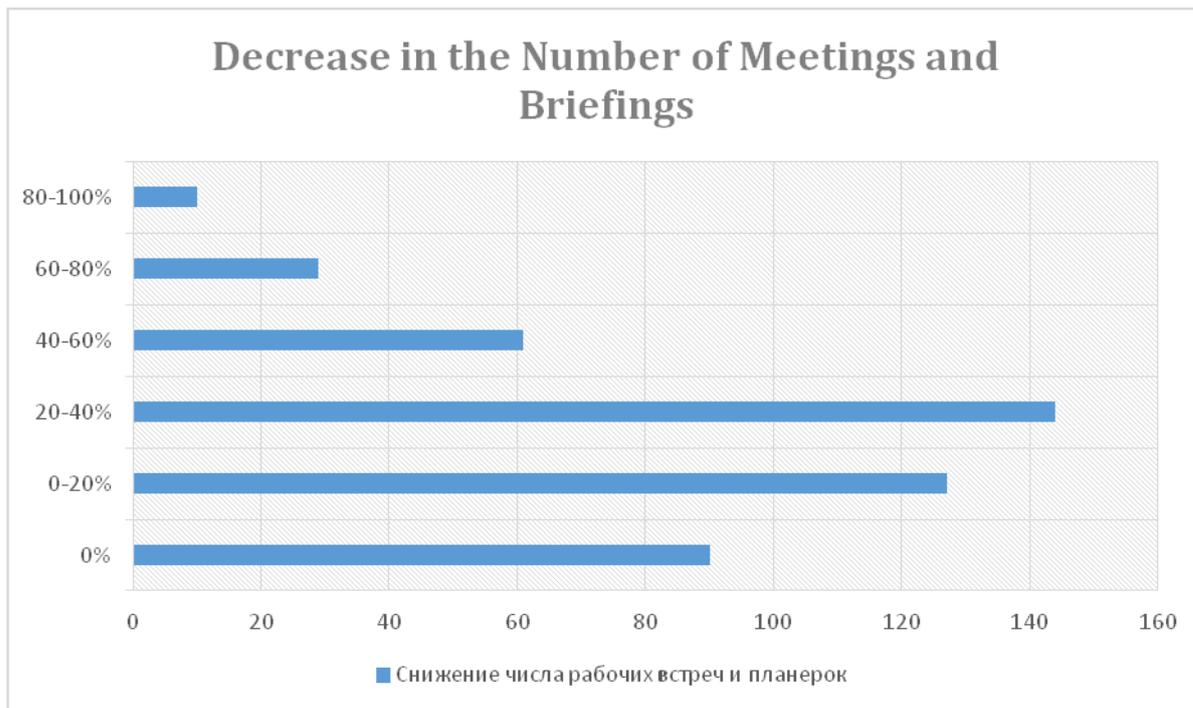
Fig. 2. Decrease in the number of meetings and briefings due to corporate messenger Slack application
Source: Slack Survey of 13 July 2015[4]

Another more complex category is the category of systems of task setting and supervision in the enterprise or task management system. These software products do not only create a system of communication between employees, but also organize the work on complex tasks. The design as well as separate functionality can vary from product to product but the basic principles of this kind of software remain the same.

The information on a task is recorded in the form of "tickets", which implies a complex task presented in report form with the possibility to use a wide range of information documents set by the task originator. The task originator, in his turn, may assign various roles to other employees when carrying out the task, and namely, executors, auditors, decision makers, etc. (Figure 3).
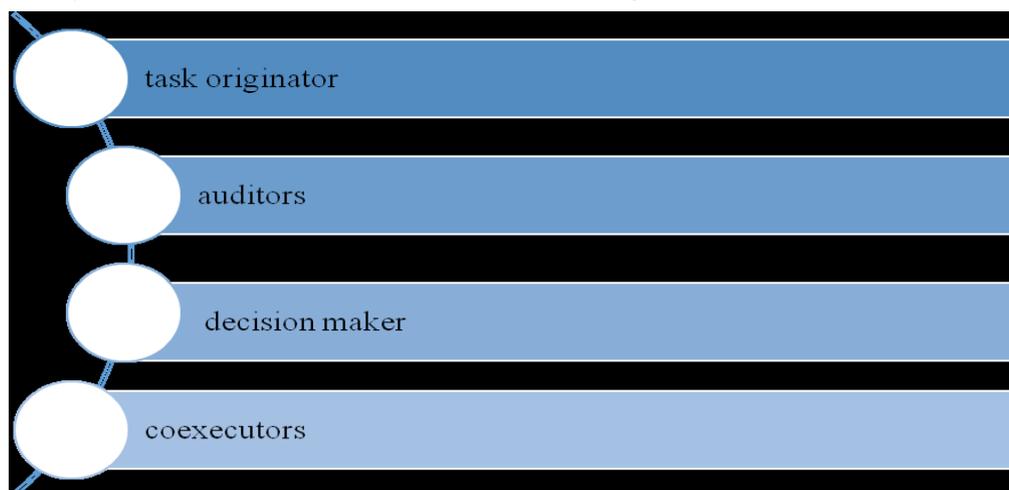

Fig.3. Standard example of a hierarchy in setting tasks in "Megaplan" system
Source: Developed by the author on the basis of the analysis of "Megaplan" system functionality

Further, under this "ticket" there is provided space for comments and discussion of a task by the employees who are to carry it out. Typically, these systems define the task status, the percentage of work performed. Upon completion of the task the "ticket" is closed, but its data remain to be stored on the service provider's servers or in the in-company repository. These systems may also contain an enhanced functionality for monitoring the remuneration of employees, sales control, customer contact, etc.

These data communication systems in the enterprise enable at once several employees to work simultaneously on tasks, regardless of the physical location of the employees. This advantage enables the company to minimize costs of working space renting by allowing the employees to work from home, the costs of labor, as freedom of movement of employees and their location enables one to hire a cheaper and no less skilled labor force from other countries. For example, according to the online agency of workforce analysis *Payscale*, a php-programmer from India receives 3,097 US dollars as annual income, while the same programmer in the UK has a completely different level of income – 38,588 USD per year. This difference in the cost of labor resources can reduce labor costs, and communication systems enable the head office to monitor remotely the tasks performed.

Information and communication technologies today play a major role in human resource management. Without these systems, even the simplest ones, it is difficult to imagine the efficient operation of a modern enterprise. If the enterprise management is committed to improving the performance, while minimizing costs, than the use of these systems is only a matter of time. Statistical studies of information and communication service providers confirm the extremely high efficiency of these systems in terms of improving the performance.

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