THE FACTORS THAT INFLUENCE AN INTRODUCTION EFFICIENCY OF INFORMATION-COMMUNICATION TECHNOLOGIES (ICT)

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Opening new opportunities and increasing labor productivity, information-communication technologies (ICT) are widely used practically in all spheres of human activity:

- industry;
- medicine;
- trade;
- management;
- education, so on.

In all these cases, ICT application is directed on efficiency and profitability increasing within human resource cost reduction.

There is a threat of information outflow, distortion or loss that can result in economic damage and threaten all positive effects from ICT introduction.

Systems of computer systems safety, methods of attack and protection, spots and the means providing safety are described in the literature. However it is important to have the general system of an economic estimation of possible damage and to correlate it with application efficiency of different types of ICT-systems.

Received from ICT introduction effect appears as a result of workplace reduction and productivity increasing.

In general, the effect from ICT introduction can be presented as:

$$e = \frac{R}{Z};$$

(1)

Where R - the result / effect received from ICT introduction for some period (term of analyzed ICT prospective use);

Z - The total costs connected to ICT introduction and service.

$$R = R_1 + R_2;$$

(2)

Where R_1 - deceasing of the costs connected to workplace reduction. Can include wage reduction, decreasing of necessary floor spaces, etc.;

R_2 - The effect received due to productivity increasing of production (as a rule, due to new opportunities caused by ICT introduction).

Costs Z can be presented as the sum of ICT purchase and service costs:

$$Z = \sum Z_i;$$

(3)

Where Z_i - costs by kinds of works and expenses.

Among the basic costs can be named:

- expenses for purchase, delivery and installation of computers and other equipment for network service (uninterrupted power supply devices, printers, scanners, servers, cable, etc.);
- expenses for the computer basic software (operational system, a package of office applications, etc.);
- expenses for development, installation and adjustment of the specialized software;

- expenses for periodic maintenance service of the equipment;
- expenses for personnel training;
- expenses for software service;
- expenses for information safety.

Two groups of factors can influence reliability of information system: the factors caused by failure of device electronic units, and the factors dependent on the person:

1. *The Hardware factor.* Each automated system consists of unit sets which have the limited resource of reliability. Failure of any unit can suspend work of system, result in loss of the data, etc.

2. *The Human factor* is connected to deliberate or unintentional influence of the person on the automated system which can damage the enterprise activity.

2.1. Unintentional harm. Threat of unintentional harm arises when the level of personnel knowledge and skills is insufficient for work with a necessary set of programs.

2.2. Deliberate harm. Speed of safety systems development is comparable to speed of their breaking techniques development, and globalization in ICT sphere promotes the development of malicious programming as well.

2.2.1. Piracy, i.e. non-authorized use, copying and distribution of software. In this case the loss of profit from non-realized products is directly reflected in company's incomes.

2.2.2. Malicious programming (viruses), i.e. creation of programs for damaging, destruction or non-authorized using of the data, resources, and equipment of ICT users.

2.2.3. Spam, or distribution of the advertising on e-mail channels.

2.2.4. Espionage, or regular appropriation of ICT users' confidential information (the protected web-pages breaking, e-mail interception, use of transit servers, etc.).

With the help of this classification of information safety threats it is possible to create a technique of expense estimation for a safety and reliability of information storage and processing systems for decision-making of ICT introduction at the enterprise.