

Investments in Information and Communication Technologies as a Factor of Ensuring Economic Security of a Business Entity: Accounting Aspects

Popov A.Yu.*

Ural State University of Economics, Ekaterinburg 620144, Russia

*Corresponding author. Email: prepopov@yandex.ru

ABSTRACT

The article is devoted to the peculiarities of recognition and assessment of accounting objects for investments in information and communication technologies (ICT) from the standpoint of ensuring the economic security of business entities. The role of ICT in ensuring competitiveness and strengthening the production and technical potential of organizations has been substantiated. The classification of ICT is considered, its clarification and compliance with the objects of accounting and financial reporting are substantiated. The basic principles of recognition and assessment of accounting objects of information and communication technologies as part of fixed assets, intangible assets, R&D results, reserves, costs and expenses from the standpoint of Russian and international financial reporting standards are disclosed. A methodology for identifying ICT by accounting objects is proposed, indicators of economic security are disclosed, provided by business entities through the use of ICT.

Keywords: investments, information and communication technologies, economic safety, assets, expenses,

International Financial Reporting Standards

1. INTRODUCTION

In order to manage, make tactical and strategic decisions, business entities rely on the information they have, which shall be processed, systematized and presented in a representative form. Complete and reliable information is a strategic resource that determines the competitive advantages of an economic entity, respectively, the need for timely receipt of this information predetermined the widespread dissemination of ICT (information and communication technologies). In the face of constantly changing market conditions, political situation, energy prices and other factors, modern enterprises need to have sufficient flexibility in order to quickly adapt to non-stop changing market conditions, external factors, new services and technologies. Ivanova V.I. notes that “design, production, control, procurement, ordering, sale of goods and services using ICT allow business entities to normalize their innovative activities, to be competitive both in the quality of products sold and in the promptness of reaction to changes in consumer tastes. They have become a daily necessity to support the development of innovative activities of economic entities”. [1] The integration of information and communication technologies into economic practice ensures the enhancement of traditional sectors of the economy, the development of new industries, services, and products, as well as meeting the constantly emerging needs of society. ICT is one of the tools for managing business processes that provide effective results for both individual business units and the economy as a whole. The works of domestic

researchers, in particular Potekhina I.P. [2], Gorbunova Yu.I. [3], Batkovsky A.M. [4], Orlova A.I. [5] et al. are devoted to the development and dissemination of modern information and communication technologies in order to ensure the efficiency of the organizational activities. A number of domestic economists, in particular Dodashev B.M. [6], Dudin M.N. [7], Vikhlyaev A.O. [8], Stenina M.V. [9] et al. link the development of information and communication technologies with ensuring and strengthening the economic security of enterprises, regions and the state as a whole. Corresponding Member of RAS Popov A.V. notes that “the priority task of ensuring economic security, which is especially noticeable in the rapidly changing conditions of the modern global world, is forecasting the challenges and threats of universal digitalization. The main problems of economic security include the problems of “digital inequality”, lack of own element base, changes in the labor market, industrial espionage, manipulation of personal data, etc.” [10]. In his opinion, the tools for solving the problems of a digital society are the creation and implementation of digital platforms, cloud technologies and enhancement of methods for processing big data. [10] The experience of foreign scientists regarding these problems, in particular I. Golyash [11], W. Clinton [12], Xi-hong [13] et al. is of particular interest.

When making investments in information and communication technologies, business entities face the questions of not only the choice, implementation and optimal use of these innovative resources, but also the assessment of the effectiveness of their use, as well as the

impact on the financial condition and financial results. On the one hand, the implementation of these investments indicates an innovative approach and orientation of the organization towards modern methods of production and management, on the other hand, a significant amount of these investments requires a significant outflow of funds, immobilization of resources, which can adversely affect the indicators of the company's economic security. In this regard, the issues of recognition, assessment and reflection in financial statements of investments in ICTs become important, especially in the period of transition to international financial reporting standards. The issues of using information and communication technologies in accounting are fully disclosed in the works of domestic scientists, in particular, Shitova T.F. [14], Gudkova O.V. [15], Sidorova M.I. [16], Ponomareva S.V. [17] et al. However, the issues of identification, recognition and evaluation of information and communication technologies themselves as innovative resources are not widely covered. Moreover, the Russian Federation has an ongoing Program for the Development of Federal Accounting Standards, whose main trend is ensuring the convergence with international rules, respectively, the above issues need to be considered from the standpoint of changes in legislative norms. These prerequisites substantiate the relevance of the issues considered in this work and determine its goal - a theoretical and methodological substantiation of the methodology for recognizing and evaluating investments in ICT as factors of the economic security of an organization.

2. METHODS

In the course of the work, the following general scientific methods were used to study the implementation of investments in information and communication technologies in order to ensure the economic security of business entities from the standpoint of accounting and

financial reporting: description, generalization, comparison, extrapolation, analysis, etc. Pursuant to the hypothesis put forward, investments in information and communication technologies are subject to correct and reliable recognition in accounting and reporting in order to assess the effectiveness of their application and strengthen economic security. The study is based on the works of domestic and foreign scientists, current regulatory legal acts, international standards, projects of domestic standards, and other sources.

3. RESULTS

Consideration of the features of accounting for objects of information and communication technologies requires a reference to the definition provided for by the Federal Law of the Russian Federation 149-FZ dated July 27, 2006, "On information, information technologies, and information protection". Pursuant to the Law, the "information technology is a set of methods, production processes, and software and hardware, combined in a technological chain, providing collection, processing, storage, distribution and display of information with the aim of reducing the labor intensity of the processes of using information resources, as well as increasing their reliability and efficiency".

Modern information and communication technologies are characterized by significant diversity. In the domestic literature, at the moment, a unified approach to the classification of objects of accounting for information and communication technologies has not been developed, and there is also no specialized standard dedicated to the recognition, assessment, and reflection in the accounting of these objects. Let us consider the positions of various scientists regarding this issue in Table 1.

Table 1 Approaches to classification of accounting items of information and communication technologies

Author and source	Objects of accounting information and communication technologies
M.A. Stefan, Accounting for IT expenses in accordance with Russian and international standards. https://www.hse.ru/data/2012/12/06/1301919302/	1) Computer technology; 2) Software; 3) Information, 4) Human capital.
S.A. Ratovskaya ICT spending. https://www.referent.ru/40/12143	1) Licensed software; 2) Local area network; 3) Payment for connection to the Internet network, subscription fee; 4) Purchase of individual items of fixed assets (computers, servers, etc.); 5) The cost of creating information systems and sites; 6) Rent of property in the field of ICT; 7) Maintenance and repair.
Skornyakova A.A. Accounting Problems Using Information and Communication Technologies, International Accounting, 9 (2011) 29-35	1) Information and communication equipment; 2) Communication equipment; 3) Software; 4) Information and communication products; 5) Information and communication services.

Based on the analysis results of the above points of view, in our opinion, the classification of accounting objects of information and communication technologies needs to be clarified. In particular, this classification shall be brought in line with the normative definition given in the above law and linked to the methods, processes and means of collecting, processing, storing, disseminating and

presenting information. Based on the considered chain of the interconnection of processes associated with information, we propose a classification of these objects, presented in Table 2. Herewith, all considered information and communication technologies can be grouped pursuant to the corresponding accounting objects, also presented in table.

Table 2 Clarified classification of accounting objects of information and communication technologies and its compliance with accounting objects

Technical means of receiving, storing, and processing information - (computer equipment)	Information and communication technologies	Accounting objects	Fixed assets
Storage media (flash cards, disks, USB tokens, electronic clouds, etc.)			Intangible assets
Directly information (arrays, databases, data processing results)			R&D results
Means for presenting information (interfaces, software systems, sites, etc.)			Inventories
Ways and methods for obtaining, storing, interpreting and processing information (software algorithms, languages, etc.)			Costs
Algorithms and methods of action for obtaining, storing, interpreting, processing, presenting and using information (independent work, attracting contractors, etc.)			Expenses

Technical means of obtaining, storing and processing information are mainly tangible objects of durable use, intended for operation over a long period of time, not intended for sale and capable of generating future economic benefits. Pursuant to the above criteria, these objects can be unambiguously classified as fixed assets both from the position of the current accounting standard PBU 6/01, and from the position of the Russian draft FSBU "Fixed Assets", planned to be put into effect starting from the accounting statements of 2021, and positions of the international standard IAS 16 "Fixed assets".

We will consider the main approaches to the recognition and assessment of these accounting objects primarily from the standpoint of international standards, since in the field of ICT, the task of modern economic entities is to enter international markets, use world experience and ensure global competition.

The key criteria for recognizing ICT assets as part of property, plant and equipment are the existence of a high probability of receiving future economic benefits from their use and the possibility of a reliable initial measurement of the asset. These items are initially recognized at historical cost, which is the amount of actual acquisition costs excluding VAT and other recoverable taxes. Herewith, in the case of the acquisition of ICT objects using state aid funds, this initial estimate can be reduced by the amount of subsidies, which will allow to reliably estimate the amount of net cash outflow for the analysis of the specified investment project. Herewith, in the case of the acquisition of these objects on the terms of a deferred payment or payment by installments, the initial cost shall include the monetary value to be transferred on the basis of immediate payment, and the difference

between the amount actually paid and the specified estimate is recognized as investment loan expenses accounted for in the Russian rules in accordance with PBU 15/08, and the international rules in accordance with IAS 23 Borrowing costs.

If the acquired or created ICT object does not have a tangible form, the organization has the ability to separate it from another asset, has exclusive rights to use it, assumes its operation for a long time for the purposes (and, if possible) of generating future economic benefits, as well as does not imply subsequent resale, the specified object shall be subject to identification and recognition as part of intangible assets in accordance with the current domestic PBU 14/07, expected to come into force from the financial statements of 2021 by the Russian FSBU "Intangible Assets" and the international IAS 38 of the same name. From the IFRS standpoint, the main criteria for recognizing investments in ICT as specified assets is compliance with the criteria for identifiability, control over the resource and the presence of future economic benefits. Classic examples of these objects are scientific or technical knowledge, design results and implementation of new processes or systems, licenses, intellectual property, computer software, patents, copyrights, customer bases, etc.

In the case of a separate acquisition of these types of intangible assets, their initial recognition under IFRS is performed at cost, which includes the purchase price, including import duties and non-refundable purchase taxes, after deducting trade discounts and rebates, as well as all costs directly attributable to preparing the asset for its intended use.

In the case of independent creation of these assets, it is important to divide the creation process into the research stage and the development stage, since only the costs incurred at the development stage are subject to inclusion in the initial cost. Costs incurred at the research stage are not capitalized, but relate to operating costs that reduce the profit of the reporting period.

This international approach runs counter to the domestic standard PBU 17/02 "Expenditures on the research and development and the technological development", declaring that if a result that can be demonstrated is obtained in the research process, it will be used for production or management activities, its use is capable of bringing economic benefits and, if it is possible to reliably determine the amount of costs incurred, the costs incurred in the research stage shall form a non-current asset "R&D Result" to be reflected in the balance sheet at its original cost as well. When assessing indicators of economic security, it is necessary to consider which approach the company adheres to when preparing reports: domestic or international, since the results of data analysis may have different meanings and, accordingly, interpretation.

If an ICT object is produced or purchased for subsequent resale, or purchased (manufactured) for its use in the production of goods, performance of work, or provision of services, as well as for the management needs of the organization, and also if the object meets the criteria for recognizing fixed assets, but its cost is lower the criterion established by the organization (usually RUR 40,000), then the specified asset can be accounted for as reserves in accordance with the current PBU 5/01, planned to be put into effect by the Russian FSBU "Reserves" and the IAS 2 of the same name.

Unlike other accounting and financial reporting standards, the Inventories standard does not provide criteria for their recognition, however, it prescribes their composition, valuation methods and other rules that are essential for accounting. When evaluating inventories, an approach is used pursuant to which the latter shall be produced at the lower of two values: cost price and net realizable value. The cost of inventories shall include all acquisition, processing and other costs incurred to maintain the required inventory status. By analogy with fixed assets, the cost of inventory is determined by summing the purchase price, considering discounts and bonuses, customs duties, transportation costs, loading and unloading operations, etc. In the case of self-manufacturing of ICT objects for subsequent sale, their cost traditionally includes direct production costs (cost of materials, remuneration of personnel directly involved in manufacturing), as well as distributed overhead costs. In this case, the inclusion of overhead costs in the prime cost of inventories is performed at rates calculated for the full utilization of production capacities, since if they are incomplete, the corresponding share shall not be attributed to the cost of production, but shall be written off to the expenses for reducing the financial result.

The calculated cost for accounting and reporting shall be systematically compared with the net realizable value, which is understood as the value that is potentially

obtainable from the sale of the specified assets in the ordinary course of business when the transaction is performed on a voluntary basis and when the transaction is commercially viable for independent participants. In this case, the indicated value is determined considering the costs of selling the inventory. Accordingly, if the cost of inventories turns out to be higher than the possible selling price, inventories, in accordance with IAS 2, are subject to depreciation and expense. The Russian standard proposes to form a reserve for a decrease in the cost of material assets from its value also to other expenses that reduce accounting profit.

Objects of information and communication technologies often do not have a material form. Moreover, an organization - an ICT consumer does not acquire exclusive rights to them, but only rights of use, for instance, the right to use an information base, the right to use software, an information resource, update programs etc. In these cases, the business entity shall make a decision on the recognition of this acquisition either as part of costs or as part of expenses.

At the moment, the definition of costs is not fixed, but most researchers understand by costs the resources consumed by business entities (material, labor, etc.) to achieve a certain goal. The specified goal may be the production of products that will be recognized as inventories, or the implementation of scientific research, which in the future will lead to the creation of an intangible asset. An important distinctive feature of the implementation of costs is their connection with the process of creating an asset, since in the absence of this connection, the expended resources are recognized as another accounting object - expenses.

Pursuant to the Conceptual Framework for Financial Reporting, "the expenses constitute the decreases in economic benefits during the reporting period in the form of disposal or "depletion" of assets or increases in liabilities that result in decreases in equity that are not attributable to equity allocations". A similar definition is given by PBU 10/99 "Expenses of the organization" currently in force in the Russian Federation. Herewith, it is important to distinguish the attribution of ICT objects to expenses in two cases:

- 1) Disposal of ICT objects that were previously other types of assets when they were sold, transferred free of charge, ceased to be used and in other cases of disposal - in this case, the value of these assets is taken into account either as part of the cost of sales or as other expenses in the amount of the book value of the asset being disposed of;
- 2) Undertaking ICT expenditures that do not lead to the creation of certain types of assets, for instance, updating the accounting software, maintaining or repairing a computer network, paying for Internet access, etc. These expenses are reflected in the composition of management or other types of expenses in the corresponding items of the profit and loss statement (statement of financial results).

The domestic standard PBU 10/99 specifies the following criteria for recognizing expenses:

- 1) Making an expense in accordance with the terms of contracts, regulatory legal acts, or business customs;
- 2) The ability to reliably determine the amount of expense;
- 3) The presence of confidence in the decrease in the economic benefits of the organization.

Based on the consideration of the classification of objects of accounting for information and communication

technologies, we propose the following scheme, which can be used to identify objects of information and communication technologies in order to reflect them in accounting and in financial statements, presented in table 3.

Table 3 Identification of ICT objects for recognition in accounting and reflection in financial statements

Basis of classification	Classification attribute	Object groups	Possible accounting objects
1. Purpose of acquisition, creation of ICT objects	Use in the activities of the organization	Assets other than products or goods, Expenses	Fixed assets, Intangible assets, R&D results, Inventories other than those held for sale, Costs, Expenses.
	Purpose for sale	Stocks	Finished products, Goods, Assets for sale
2. The period of use of ICT objects	More than 12 months or normal operating cycle	Fixed assets	Fixed assets, Intangible assets, R&D results
	Less than 12 months or a typical operating cycle	Current assets, expenses	Inventories, Costs, Expenses
3. Availability of material form	Available	Money	Fixed assets, Inventories
	None	Intangible assets, Expenses	Intangible assets, R&D results, Costs, Expenses

4. CONCLUSIONS AND DISCUSSION

The proposed classification of objects of accounting for information and communication technologies can be used by business entities for reliable identification of objects and their correct reflection in the accounting and financial reporting, as well as for assessing such indicators of economic security as the level of automation of production and management, the share of costs for ICT in the total cost structure, efficiency of investments in information and communication technologies, etc. Herewith, in connection with the development of information and communication technologies and the emergence of new products, methods

and methods of obtaining, storing and processing information, new objects may appear in accounting and financial reporting, the recognition of which will need additional consideration. In this case, the consideration shall be based on international experience, but with adaptation to domestic specifics. Moreover, one of the components of the economic security of an enterprise is information security, which shall be given close attention in order to optimally and effectively use the information to achieve strategic goals and ensure the sustainable development of enterprises and the economy as a whole.

REFERENCES

- [1] V.I. Ivanova, E.P. Mitrofanov, T.N. Polkanova, The significance and role of information and communication technologies in the modern economy and innovation, *Bulletin of the Chuvash University*, 2 (2013).
- [2] I.P. Potekhina, Development of information and communication technologies in the context of globalization, *Bulletin of the Saratov State Social and Economic University*, 2 (2012).
- [3] Yu.I. Gorbunova et al. Investments in the field of information and communication technologies, analysis of the main indicators of the development of the information and communication sector, *Economy. Innovation. Quality Management*, 3 (2014) 4-8.

- [4] A.M. Batkovsky et al. Analysis of the development of information and communication technologies in different countries of the world, *Questions of radio electronics*, 2 (2016) 102-113.
- [5] AI Orlov, Forecast of the development of information and communication technologies, *Polythematic network electronic scientific journal of the Kuban State Agrarian University*, 116 (2016).
- [6] B.M. Doshayev, Development of the market of information and communication technologies as a factor in ensuring the economic security of Russia, Moscow: State University of Management, 2011.
- [7] M. N. Dudin, N. V. Lyasnikov, Economic security of Russia and innovative technologies in education, *National interests: priorities and security*, 42 (2014).

- [8] A.O. Vikhlyayev, Application of information and communication technologies in ensuring the economic security of the member states of the Customs Union and the Common Economic Space, *Bulletin of the Russian Customs Academy*, 2 (2014) 97-102.
- [9] M.V. Stenkina, Information security as a factor in the economic security of an enterprise, *Economic, environmental and sociocultural prospects for the development of Russia, the CIS countries and neighboring countries*, pp. 199-204, 2015.
- [10] E.V. Popov, K.A. Semyachkov, Problems of the Economic Security of Digital Society in the Context of Globalization, *Regional Economy*, 14 (4) (2018).
- [11] I. Golyash, S. Sachenko, S. Rippa, Improving the information security audit of enterprise using XML technologies, *Proc. of the 6th IEEE Int. Conf. on Intelligent Data Acquisition and Advanced Computing Systems - IEEE, T. 2.*, pp. 795-798, 2011.
- [12] W. J. Clinton, Jr. A. Gore, Technology for America's economic growth, a new direction to build economic strength, EXECUTIVE OFFICE OF THE PRESIDENT WASHINGTON DC, 1993.
- [13] Y.I.N.Z.P.A.N. Xi-hong, W. Zi-mu, Strengthening Technological Innovation, Promoting Economic Growth, *J. of Central University of Finance & Economics*, Vol. 12, 2007.
- [14] T.F. Shitova, The Use of Advanced Information Technologies in Accounting, *International Accounting*, 22 (2012).
- [15] O.V. Gudkova, L.V. Ermakova, A.E. Melguy, The role of information technologies in building the accounting and analytical system of an enterprise, *Bulletin of Science and Practice*, 5 (6) (2016).
- [16] M.I. Sidorova, Information technology as an integral element of the modern accounting model, *Accounting. Analysis. Audit*, 3 (2015).
- [17] S.V. Ponomareva, Basic principles of information theory, management and accounting, their causal relationships, *University Bulletin*, 3 (2014).