Informational platform of the digital accounting

M V Shumeyko*, G V Sagamonova, E V Sagamonova
Don State Technical University, 1, Gagarina sq, Rostov-on-Don, 344010, Russia

E-mail: mshumeyko@mail.ru

Abstract. The article discusses the background and the need for transition to digital technologies in the economy at the global, macro, meso and micro levels. The necessary and sufficient conditions for creating a microeconomic platform for digital accounting are analyzed. The complex of problems of their creation and the ways of their solution are investigated.

Introduction

In the global economy, the introduction of digital technologies began in the 70-s of the last century and takes place at the global, macro, meso and micro levels.

The population of our country, as well as many business structures, along with banknotes, already use electronic systems of financial turnover. Thanks to the development and introduction of digital technologies, new opportunities have appeared, today in many cases, individuals and legal entities can do without intermediaries. The use of digital tools increases the turnover and generally has a positive effect on the economic development of the country.

Integration with the digital environment of world economies will allow our country to integrate into the world community, which will certainly open up new opportunities, provide a new quality of life, business and government services.

The digital revolution affects all areas of human activity. In practice, concepts such as digital calculations, accounting, auditing, analysis are used; digital money, commerce, as well as digital society, digital state, digital civilization, digital wars, etc.

The objects of the digital economy - people, business, things, cover almost all activities. As in previous industrial revolutions, many industries will undergo tremendous transformations in the coming decades. The social, economic and geopolitical consequences will be colossal.

The expected results from the digitization of the Russian economy are as follows:
- increase in labor productivity;
- acceleration of economic development;
- improving the competitiveness of organizations;
- management of economic processes of organizations, including financial results, financial risk zones, safety margin;
- management synergy.

Information platform of digital accounting at the micro level

For the successful development of a digital economy at the state level, it is necessary to create basic conditions: the presence of a super-competitive environment; developed information infrastructure;
environment favorable to the development of technology and digital platforms; cyber-security; regulatory framework; qualified staff. According to experts, the Russian economy is at the peak of its digital development.

The task of transition to digital technological processes has been set for Russia by President of Russia Putin V.V.: “Russia needs to create its own digital platforms that are compatible with the global information space, this will allow to establish production processes and financial and biological services in a new way.” [1] According to him, Russia has all the opportunities for the quick introduction of the fifth-generation data networks. And he is right in this, because Russian scientists have created a considerable reserve in this area.

In Russia, digital accounting technology appeared more than twenty years ago. The founder of this direction is the honorary professor of the Don State Technical University V.I. Tkach who successfully attracted his students to this process and formed the scientific school “Engineering Accounting and Management at the Micro Level”. More than 500 scientific papers have been published on this topic, more than one hundred patents and computer software copyright certificates have been registered.

According to V.I. Tkach digital economy is a large-scale structured space, including people, business and things, aimed at sustainable economic development of gross domestic product at the global, macro, meso and micro levels with a focus on the use of intellectual capital in the context of widespread use of digital platforms, algorithms, cloud infrastructure in the conditions of changing socio-ethical aspects of society, developing security management and synergies. [2]

Modern trends in the development of science and practice in the field of information technology, economics and management can provide the tasks of digital systems integration of accounting, management of economic processes and effective control, strengthening their functions and transition of the accounting system in Russia from the level of accounting and analytical support to the level of accounting financial management.

The basis of the digital economy are digital platforms created for each type of activity and representing in total a certain business technology with management programs embedded in it.

Digital technologies and engineering mechanisms based on platform solutions provide control of any subject area in a multi-level aspect in real time manner.

A digital platform is a set of digital data, models (logic) and tools (methods, tools) that are informationally and technologically integrated into a single automated functional system designed for the qualified management of the target subject area with the organization of interaction of interested subjects. [3]

Information platform of digital accounting at the level of institutional units are packages of intelligent information systems, conceptually integrated by system integration. This scientific paradigm differs in that it sets a fundamentally new course in the development of innovative accounting, based on digital tools in the form of design architectonics, algorithmic solutions, using accounting aggregates and aggregated entries, a chart of accounts built on the basis of multilevel structuring, innovative secondary balance sheets, qualimetric diagnostics and evaluation. The considered scientific approach allows to organize the design and construction of accounting and management systems that according to its characteristics meet the needs of economic realities.

Qualimetric criteria of the platform organization include: algorithmization; unified information environment; scalability; multilevel; multifunctionality. [4]

The basis for creating a platform are algorithms. Algorithmic procedures for the interaction of platform participants are determined and implemented within the framework of the established algorithm. The sheer number of these interaction procedures is limited and described.

The rapid development of digital systems in the economy, occurring in the world and in Russia, fully changes the possibilities of accounting, delegating to it the functions of managing economic processes. Mechanisms of accounting engineering are based on advanced modern methods, presented by models, system complexes of algorithms and a set of secondary balance sheets activated depending on the tasks set (monitoring, immunization, hedged, gradual, etc.). The use of digital technologies in accounting allows to conduct financial, managerial, tax, strategic, transactional and other types of
accounting simultaneously. The system control built with the help of digital tools, based on the preservation of all transactions of financial structures, makes it possible to ensure the preservation of the value of enterprises from unpredictable changes in the economy in the context of the global economic crisis.

Building a digital accounting platform at the micro level begins with accounting architectonic design. Accounting architectonic design is the process of creating an accounting system that covers all types of accounting in an organization (financial, managerial, tax, strategic, transactional, etc.), performing its functions in different modes (integrated, disintegrated) and solving the problem of adapting accounting and analytical ensure and manage economic processes under all sorts of conditions.

The basis for creating an architectonic-structured chart of accounts, choosing the totality and combination of economic aggregates that determine the initial and final operators of computer engineering accounting and management programs is based on a set of design procedures proceeding at the level of structured architectonics. Design in the framework of integrated architectonics is responsible for ensuring accounting by type of activity, cost centers, responsibility centers, etc.

Planning at the level of aggregated architectonics involves the definition of accounting aggregates, mega-accounts, the formation of economically united accounting entries, projecting the definition of indicators in the form of aggregated and disaggregated indicators of property in a market and real valuation.

The logic of accounting and control actions, a method for generating accounting results and management with the necessary formulas for calculations, sequential conditions, relationships for controlling the accuracy of the final results is created at the stage of engineering algorithmic architectonics, which includes a set of mathematically reliably stated rules defining the transformation of valid basic reference data (initial operators) to the desired result (final operators) in a finite number of iterations, as well as the corresponding database, legal and tax regulations, computer programs.

Algorithmic architectonics should design all situations that may arise in the process of accounting and analytical support and management of economic processes. Algorithmic architectonics is distinguished by a number of mandatory properties: certainty, uniqueness, discreteness, finiteness, effectiveness, language formalization, mass character.

Engineering instrumental architectonics defines a set of necessary accounting engineering mechanisms that provide integrated management and strategic accounting.

Instrumental architectonics allows, based on the use of accounting engineering tools, to provide management of a wide variety of objects and economic processes:
- financial situation management;
- solvency management;
- management of innovations and venture capital management;
- financial results management;
- management of the enterprise backup system;
- risk management;
- reorganization management;
- economic situations and changes management;
- subsidy management;
- guarantees and pledges management;
- human capital management;
- management of pools, mortgage, securitization, etc., in total about 200 kinds.

The design of qualimetric control architectonics is based on the transformation of qualitative indicators into quantitative ones.

The control methods used are determined by discursive, instrumental, final, managerial, comparative qualimetry.
The complex of control methods used can be divided into three groups: traditional, engineering and digital.

Traditional methods of control include inventory methods (inventory of assets and liabilities); linking tables (linking indicators of reporting forms, general ledger, analytical tables, etc.); accounting control points.

Engineering control methods include a system of zero and specialized secondary balance sheets.

Digital control methods include specialized control programs, network methods: statistical, analog, hierarchical, evolutionary computations, etc.

The basic postulates of architectonics, its laws, requirements, and the results obtained allow it to be used in modeling digital accounting, analysis and audit systems, including:

- adaptation of various processes of accounting management of economic processes;
- opportunity to take into account the costs related to adaptation;
- application in the accounting process of computer programs and databases;
- creation of a single information field for accounting and management;
- use of information flows in real time manner;
- wide use of integrated programs of transaction and engineering accounting;
- orientation of engineering accounting to the property change;
- development of an engineering structured chart of accounts;
- determination of the economic risk zone;
- accounting management of economic processes.

According to Professor Daily, the use of an architectonic-structured chart of accounts creates the ability to budget, take into account and create effective management accounting systems. [5, p. 127]

In the complex, a system of design solutions of an engineering-architectonic type creates a foundation for constructing digital architectonic-structured plans of accounts, which are used as an information accounting platform. V.F. Paliy believes that accounts and a chart of accounts form the basis of any information system. [6, p. 21]

An important parameter of an architectonic-structured chart of accounts that determines its capabilities and advantages is the dimension, that is, the number of gauges embedded in the working chart of accounts at the design stage. For a long time, only two gauges were used in the world, known since the double entry occurred - this is time and evaluation. With the development of accounting, the number of gauges that formed the basis of the chart of accounts has increased significantly, with this, the information content of accounting data has increased. Such gauges as facts, situations, events, fractals of time, points of value creation of products appeared, while the chart of accounts retains an organic unity and provides an opportunity to get instant analytical information about the organization. An architectonic-structured chart of accounts, as an engineering accounting tool, can be configured for specific accounting methods for a financial result — an assessment method, a cash method, and a modified one.

Engineering architectonic-structured chart of accounts is designed using one of three opticians: production; financial or specialized.

In architectonic-structured charts of accounts and accounting systems, the choice of optics of accounting depends on several circumstances:

- priority directions of development of the state economy;
- orientation of the country's economic development towards the interests of certain groups of market participants;
- orientation of the accounting system to individual indicators. [7]

The main conceptual difference of the digital chart of accounts from the traditional one is as follows:

- architectonic-structured construction of the chart of accounts; engineering algorithmic, engineering instrumental and qualimetric control;
- tight binding to the organizational structure of the enterprise;
the core of the chart of accounts is mega accounts, i.e. aggregated accounts, allowing to organize engineering management of a complex of economic processes and indicators;
functioning in real time manner of an unlimited number of engineering accounting mechanisms;
multi-level management;
multifunctional management;
management of economic processes;
synthesis of financial, tax, management and other types of accounting, operating on the basis of economic aggregates, “embedded” in a structured chart of accounts [8]

The engineering chart of accounts allows the use of digital accounting and control mechanisms in combination with any information systems. In general, the information platform forms an analytical database of several levels:
- megaccount (first, second and third orders);
- accounts;
- subaccounts (first, second and third orders);
- analytical accounts (from first to fifth order) [9]

Summary
Architectonic-structured working plan of accounts allows to organize solutions to the most complex and non-standard accounting and management tasks reliably and in optimal time.

Obtaining timely, reliable information for accounting and analytical, control and management needs, as well as in the preparation of qualimetric accounting and analytical indicators, on the basis of which the only correct, verified and reasonable decision on the management of the enterprise and its property can be taken to eliminate risks.

The multi-tier architectonic-structured working plan of accounts makes it possible to organize instant accounting at various levels: by responsibility centers and costs, by economic elements, by type of activity, by situations, events, by temporary fractals, by facts of economic activity, by areas of strategic activity, by external and internal segments in terms of functions.

The use of digital platforms in accounting allows the management of an organization to focus on previously undetectable indicators, which are however important in terms of assessing the value of an enterprise or business:
- net liabilities in adequate estimates;
- financial risk areas;
- forecasting the results of activity.

References
[1] Putin V V 2018 Presidential Address to the Federal Assembly by the RF President V.V. Putin (the 1st of March 2018)
[2] Tkach V I 2018 Digital economy and management (DONSTU, Rostov-on-Don).
[3] Becker B E, Huselid M A 1998 High performance work system and firm performance: A synthesis of research and managerial implications (Research in Personnel and Human Resources Management) 16 53-101.
[4] Tkach V I 2019 Digital behavior economy: technologies and platform solutions (DONSTU, Rostov-on-Don).
[5] Daily J 2004 Effective pricing - the basis of competitive advantage (Williams, Moscow).
[6] Paliy V F 2007 The theory of accounting: Modern problems (Publishing house «Accounting», Moscow).
[7] Shumeyko M V, Sagamonova G V, Sagamonova E V 2018 Improvement of Engineering Accounting and Control System in Construction on the Basis of Accounting Engineering Tools
(Materials and Technologies in Construction and Architecture, Materials Science Forum) 931
1194-1199.

[8] Shumeyko M V 2013 Engineering theory of accounting, monograph, Rostov State University of
Civil Engineering (Rostov-on-Don).

[9] Shumeyko M V, Sagamonova G V 2017 Management of investment and construction activities
on the basis of engineering accounting simulation (Business Economics) 4 (2).