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Organization of Big Data in Accounting

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Abstract-The article is devoted to theoretical research and the solution of actual scientific problem the accordance of methodological and organizational principles of accounting to theoretical and methodological aspects technologizing of economic and information systems development through development of proposals concerning modification technologies of formation and update of accounting data. Forming the base of accounting information is proposed to carry out based on the concept Big Data that is a new direction development of technologies of processing, transmission and storage of data. Organizing expanded technological base for accounting process is developed to innovative development of accounting provision of managing an enterprise.

Keywords-*Accounting, Innovative Technologies, Big Data System*

I. INTRODUCTION

Information technologies are a tool transforming social, administrative and economic systems in modern multimedia society. To information systems are put forward higher requirements that implies processing of different types of dynamic data with different levels of structuring. Big Data Systems are new solution for organizing socio-economic relations with the development of professional competencies as a basis for optimization of modern information and analytical provision of managing. Big Data as an expanded analytical application of global information environment is widely used for processing large amounts of information. The results of such processing are mostly used to evaluate changes in social systems and are less common in economic environment, particularly in accounting. So if Big Data is new effective direction development of technology of analytic applications, their functionality is appropriate to use for development of accounting provision of managing. Big Data are registered in various formats and difficult structured that is their characteristic feature. In traditional bases the data are organized and structured that is effective for use in accounting. Therefore the question arises whether the Big Data is an effective tool for accounting development and also whether it is possible to extend professional competencies through increase level of analyticity at information processing in internal and external environment of enterprise. Big Data is significantly influence on modern socio-economic relations and could provide new opportunities for development of professional competencies in accounting. Necessity of substantiation of organizational and methodological bases of functioning of accounting system through the use of Big Data is special urgency, because trends of information technologies development and prospects of Big Data are defining new direction in development of accounting functions.

II. LITERATURE REVIEW AND PROBLEM STATEMENT

The issue of Big Data is relevance and has become a major at development of proposals for the improvement of data processing technologies. Traditionally, studies of Big Data were carried out along two directions – as universal analytical information system and network data of different formats and structures. In scientific research basic attention is given to Big Data as element of global information process. At the same time the actuality issue of Big Data is conditioned by necessity of harmonizing with accounting system for provision of developing methodological level of accounting process based on the use advanced information technologies. Implementation of comprehensive approach to updating accounting provision of managing will increase professional competencies and modify information processes.

III. THE AIM AND THE TASKS OF THE STUDY

Aim of the article is substantiation of organizational and methodological provisions of accounting system development through the use Big Data with modernizing information processes and expansion of relevant data base.

Tasks of the study are resolved to achieve the goal:

- Genesis of Big Data category is investigated, substantial filling and structure of its definition is theoretically substantiated;

- Importance of Big Data in system of information management is determined;

- Big Data impact on development of accounting is substantiated;

- Organizational aspects of information processing for making decisions are deepened.

IV. THE RESULTS OF STUDIES

Technological modification of forming information provision of managing is carried out individually for each enterprise with considering the permissible amounts of new

information from various sources that not limited to information, which is obtained during ordinary activities. Advisability of predominance in the information environment of new information as a form of reflection business process of enterprise and results of its relations with external environment is substantiated to management systems.

Big Data is valuable research information which is inherent novelty and its implementation in accounting process contributes to formulation of right conclusions for activation of enterprise activity and to strengthen its competitive positions. Big Data is new generation of information in planetary scale of its processing, transmission and storage.

Various technological and communication projects that contributed to increasing level of information quality, its productivity and efficiency of processing, transmission and storage of data are suggested for modern stage of business development. Necessity of timeliness forming relevant information is caused by speed that accompanies business, economy, technology and society. This all is significantly different from traditions of the past, when balance and reasonableness were a trend, and time is not considered as economic development factor.

Technological and communication servicing of information contributes to effectiveness of using Big Data. Data are «Big» not only concerning number, but also according to their variety, transfer rate and complexity. The advantages in external economic environment are inherent to companies, which earlier than other will have technologies for processing, analysis and transmission of Big Data [1].

Big Data is a group of methods and means to data processing with different structuring that are used for increasing substantiation of managing decisions. It's an efficient alternative to traditional database management systems with increasing effectiveness and speed processing of data.

Data analysis technologies are developed rapid pace with swift accumulation of information. If a few years ago the segmentation of customers into groups was carried out according to similar preferences, today is possible build a model for each customer in real time and in accordance with his interests of makes concrete proposals [2]. Organizing information with using Big Data System is carried out for increase its performance, analyticity and significant time reduction without loss of quality indicators [3, P. 35].

In summary, Big Data technology is analytics direction that involves statistic, data analysis, gain knowledge and prediction of events [4]. This concept was developed at the time of no computer data processing, because it's allowed to expand the boundaries of planning through global external information environment.

Using of Big Data contributes to increasing analyticity of information through its segmentation that stimulates development of different scenarios of managing decisions and increases opportunity to consider and evaluate alternative of development enterprise activity. Multivariate and flexibility of scenarios business processes contribute to quality of activities and, therefore, increase efficiency of management decisions and development projects. Future development of economy depends on Big Data and today due to developed information and communication technologies there are no problems with their search, processing, transmission and storage.

Big Data System as trend of innovative business development is effectiveness on enterprise of IT-sector. Reasons of their slow application in companies activity of other sectors has identified based on studies of effectiveness Big Data for business: management does not understand the very concept of Big Data and does not see instantaneous financial return; middle managers do not trust to conclusions and predictions that based on analytics of Big Data; established business models and internal processes make inefficient changes based on analytics of Big Data [5]. Liquidation of these reasons and effective management policies contribute to new level of using different information.

Concept of Big Data is to not in processing large amounts of information from different databases and in analytical work with regulated information systems that are coordinated by based on pre-designed mechanisms of processing, transmission and storage of data. This concept is ineffective at unorganized information base, in which cannot be traced integration and achieve balance between intellectual and technological decisions in processing, transmission and storage information. Established internal processes, a weak point of which is slow at reaction to new decisions and excessive caution in changes within the enterprise have to evolve. Concept of Big Data has identified new direction developing technologies of analytical applications, particularly two traditional classes of corporate applications – Business Intelligence (BI) and Enterprise Information Integration (EAI) of Big Data; associated with transformation of data from different sources, and therefore with the means Extraction, Transformation, Loading (ETL), Data Cleansing or Master Data Management with coordination in system the integration components [6].

Management function by Big Data is important to develop for modern business, because it allows you to effectively predict activity and minimize risks.

Functionality of modern accounting system are implemented not only through information function but also are expressed by communication function that provides integrated process of importing, processing, synthesis, evaluation and data transmission by request of different users. Intelligent side of communication involves the implementation of collective work during the generation «cumulative knowledge» that available for transfer and exchange.

Information boundaries of accounting provision of managing are considerably expanded and optimized through introduction of innovative technologies that became the basis of structural changes in accounting process. Changes have affected not only methodological basis, and also technical part that connected with servicing information and its transformation in accounting and analytical resource for using in decision making process at all levels enterprise activity. Developing information and communication technologies contributed to these changes.

Implementation of new information systems and software technologies, reassessment of dominant and priorities concerning quality managing an enterprise, changing of information value – all this requires comprehensive approach to accounting organization [7, P. 59]. Forming comprehensive computerization system of accounting provision of managing involves the integration of components of enterprise information system, elements of infrastructure, communications and technologies, legal and methodological regulation of accounting and reporting that is subordinated to impact of requirements and factors of internal and external environment with forming developed accounting provision of managing for effectiveness using information according to requests of different users [8, P. 171].

Basic configuration of innovative accounting technologies has functionalities that are identical to traditional accounting with difference that provides: unified structured base and history of relations with partners and counterparties; account of contractual relations; account of cash flow, purchases, sales, resources in real time; planning and account of enterprise activity; registration and distribution of incoming primary documentation; operational monitoring of actual financial condition; tax accounting; development of financial and management reporting and analysis of data; interaction with other financial systems, modules of management and marketing, systems of business intelligence; introducing a unified integrated information system and provision of information channels coordination; minimizing risks that associated with errors, distortions and loss of information; convenient import and export of data; transfer reporting data to supervisory authorities [9, P. 334].

Programs are supported formats of documents with clear and weak structure, unstructured documents and documents with applications in image format. Processing of documents with bar codes, labels, etc. has become possible [10, P. 40]. The only thing that is controversial – control functions in automated systems of information processing. Methods of automated control in systems are used not enough to control of data entry from paper carriers [11, P. 249]. Computerization of accounting process contributes to promptness and analyticity information, but thus decreases management control function [12, P. 279]. This is continuous information monitoring that operator should implement with performing control functions on stages of processing, identification and export data. Controller should provide monitoring and to respond quickly to any risks to protect enterprise information system from possible negative consequences of technical information processing.

«Manufacturing» method of forming final information seems reasonable at large volumes of activity and, therefore, significant amounts of information that are formed at all levels of business processes. Complicated information processing system is economically irrational to form at low amounts of information load: these actions can execute accountant without the need for considerable organizational and technological changes at the level of information and business processes.

Traffic data, definition of recipients and senders, control inputs and outputs of information, monitoring flow of information and regulation of communication centers are stipulated at information infrastructure of accounting provision of managing. Organizational and methodological provision is focused on build architecture of business processes, establishing rules and standards of exploitation system, analysis of results of information process, identify «weaknesses», construction of information-logical data model for each objects of system and appropriate staffing that is intellectual part of servicing of enterprise information system.

Development of accounting provision of managing based on innovative technologies is contributed to qualitative change of its properties in the direction of continuous processing of big amounts of data [13, P. 35]. Most existing accounting software that automates accounting - spreadsheets that independently carry out only account registers [14, P. 215]. Accounting system adapted to logical data exchange between the levels of accounting process according to possibilities of innovative technologies that is basis of managing impact at certain period of time according to business processes.

Technologies servicing of accounting information have to carry out functionality of automated enterprise information environment. Implementation strategy of project managing information system should be considered at organizing accounting process to provision of effectiveness forming automated information process.

Simultaneous strategy – parallel functioning of enterprise system and managing information system with relevant decisions. Managers choose this strategy in case if fully integrated system is functioning, but computerized mechanism of forming accounting database that is needed for analysis, planning, control and activation enterprise activity is underdeveloped. Concurrent using systems occur in short time, after which the system is fully transformed according to software decision of management system of ERP class (Enterprise Resource Planning).

Strategy of substitution – transformational replacement of functioning system on new management information system and its adjustment in the process of enterprise activity. Using new software decision is associated with high risk, because adaptation of system to needs of the database organizing implies a high level of information provision of managing.

Strategy of element – gradual adaptation of system through partial using management information system to individual processes with simultaneous analyzing efficiency of formation of information database. Such strategy may be assessed as most safe because it allows reducing risk of inefficient servicing of system.

Choosing strategy implementation of management information system is affects on organizing accounting provision of managing an enterprise, because software algorithms have to be synchronized to improving efficiency of processing, transmission and storage of information. Accounting system can be expanded by data that are necessary for servicing primary information concerning enterprise activity according to its individual characteristics. Data are not limited to accumulated information from documents, registers and forms of financial reporting. Special part is non-financial

information with reference to methods, principles and procedures accounting organization and reporting. This contributes to forming developed database accounting as informational and reference component that adapted to internal «regulator» (accounting policy) and external «controller» (normative legal acts).

Expansion of accounting database can be defined in different ways, depending on result that will expect according to objectives of enterprise activity. Improving economic situation in business to some extent dependent on the level of systematic approach to organizing and expanding accounting database [15, P. 280]. This means to change the traditional view concerning processing, transmission and storage of data.

Information is expanded both the input and output data. This is typical for system management decisions, for which economic information is used that is formed based on accounting indicators. Expansion of information in accounting system is typical for data output (export) that makes it possible to increase of general result from use of reporting information. Users of data are different and expect to gain information that is needed to making decisions and generate management strategy [16, P. 49]. Users of information make decisions based on enhanced indicators, because it contributes to «move beyond» of informational fact and to substantiation of managerial decisions in time context. Modified accounting system is able to make decisive informational impact on processes, methods, principles and procedures of managing an enterprise at innovation-technological manifestation. When developing scenarios of future development is necessary to be guided by different alternatives that are defined based on accounting data for managing an enterprise. Indisputable advantage of accounting information in comparison to other information resources is forming integrated information system based on technologies of business intelligence that contributes to development, forming competitive advantages, financial stability [17, P. 83].

Each business entity is forming system of information links according to characteristics of organizing its activity and information environment with modernizing accounting process.

Cumulative information effect that is obtained as a result of adaptation of accounting system to new requirements of internal management system and multifaceted changes in external environment and has ambivalent (double) effect - from getting economic results to development of intellectual resources that are suitable for reproduction and increasing business value.

Forming accounting provision of managing an enterprise based on information and communication technologies has expanded analytical possibilities work with economic information. Integration of accounting technologies with information technologies had different impact on organization and methodology of accounting and development of technological decisions, because necessity of develop accounting software became the beginning of developing a new direction for technologies. Software products had to meet organizational and methodological aspects of accounting, result of which is new approach to their servicing.

Appointment of accounting in general terms is identical to any information-technology products: processing, store and transmit information. Information processing in accounting system requires additional knowledge concerning to theory and methodology, technologies of primary accounting information processing that recorded in documents and regulatory requirements, which regulating the procedure of organizing accounting and reporting.

Accounting provision of managing is other (modified) according to conditions of developing modern economic systems that is subordinated to «network rules». Technological provision of organizing accounting provision of managing includes search, filtering, synthetic and analytical processing, rapid movement and performance, systematization, compilation, publication and archiving of information in all forms that should be regulated by relevant internal and external standards of legal and organizational-methodical character. Improve the efficiency of information processes in general and in particular accounting process was made possible by using information and communication technologies that contributed to reducing time necessary to organizing accounting.

Accounting information is characterized by complex multi-level relations with multifaceted internal organization; its characterized by much massiveness and volume that directly dependent on object of management, development of which is carried out simultaneously with general transformations in external economic environment. In this context management process is based on provision of accuracy of accounting process results and timeliness information for making decisions.

Proposals for informatization of accounting provision of managing an enterprise were developed for: continuity of processing accounting information regardless of its volume in real time; organizing cycle of processing accounting data from input array of information to its output as accounting reporting; simplify the processing of large amount of information taking into account different criteria with forming multifaceted information; efficient synthesis of information during its circulation at different levels of management; operative transformation of accounting indicators in convenient form for users. Conclusions concerning organizational and methodological aspects informatization of accounting provision of managing an enterprise will contribute to increasing timeliness of forming information for management with convenience of its decoding (interpretation) with increasing efficiency of substantiation and implementation of management decisions.

Expansion of opportunities processing different data, organizing information culture and art of information management are modern factors quality of accounting process. Large amounts of information are important not only to use and also for modernizing accounting system.

Organizing accounting should be made as complex methods, principles and procedures concerning information management with increasing analytical possibilities of

accounting process. This is interfunctional approach to processing, transmission and storage of data with prevalence of innovative technologies. Organizing accounting should be formation of professional information complex with integration of accounting methodology, functionality technologies and information as a factor of production.

New technologies are associated with new data and new analysis, which make adjustments in organizing information processes and promote complexity of information decisions for management.

Managing an enterprise envisages continuous processing of large volumes of various information [18]. Category new information is characterizing more quality level of rational knowledge and allows forming new knowledge as key elements of enterprise management. New information (for which data are forming) is information that is able to make changes to structure of social and individual thesauruses (sum of knowledge) [19, P. 21]. New information actualizes management decision according to spatial and a time context that affects on enterprise activity within the framework chosen strategy of development and substantiation of activity motivation.

Rationality of information provision at generating new knowledge should include complete group of relevant data necessary for development of professional judgment, based on which decisions are made. Deficiency one of information resource causes the corresponding reduction quality of forming accounting provision of managing – basics of enterprise activity. Firstly, necessary to forming information, which stimulates individual development that includes not only economic data but all information resources, which can be useful for cognitive activity and development of irrational thinking. Information concerning professional judgment of an individual, but not highly specialized, such as covering the whole field of knowledge is needed to further complete development of knowledge. Significant proportion of information that interesting for specialist is professional information: information needed to complete the task, and information for professional development. Information that allows to identify impact factors and prediction of dynamic developing enterprise with substantiating management decisions according to realities of business activity in market environment that is changing being influenced becoming of information economy is needed for specialist to increasing core competencies of enterprise. System of managing an enterprise requires substantiated conclusions and recommendations (new information), important and substantial facts (relevant information) that comprehensively provide generation of knowledge (through new information) and substantiate it with prove of reality and feasibility (through relevant data).

Impact on enterprise activity through professional judgment, based on which is determined by amount of relevant information, carried out its evaluation to forming several alternatives, the effectiveness of which is determined by qualitative and quantitative parameters of management information are characteristic feature of decisions.

Convergence of accounting information with analytical applications of Big Data System allows to increasing the level of quality parameters of relevant information and promotes increase of information potential and also management quality.

V. CONCLUSIONS

Individual model of information links that manifested in organizing information and analytic provision of managing, which is forming according to some combination of data that provide for its distinctive features and characteristics with evaluation of enterprise business model and complex of its managerial patterns and development scenarios is inherent for each enterprise.

Technological paradigm of accounting is developed through results of trend technologies and forming another type of thinking in the information society that influenced on updating conceptual and categorical apparatus and methodology of accounting science. Beginning of transition on new methodological level is characterized by introduction of information and communication technologies with modification of accounting provision of managing an enterprise as flexible, complex, semi-open system of generation and dissemination of relevant information among economic agents.

Construction of integrated automation system of accounting is carried out through integration of enterprise information system components, elements of information infrastructure, communications and technologies, regulatory, methodical and professional provision that regulates procedure of forming database for different users to making decisions.

Forming the base of accounting information is necessary to make based on Big Data Concept that is the new direction of modification technologies of servicing of forming, transfer and storage data. Organizing expanded technological base with actualizing accounting process is appropriate. Using Big Data is potentially effective tool for increasing analyticity of information through its segmentation that stimulates dynamic of accounting process to provision of multivariate and flexible managerial scenarios for implementing decisions. This are newly created competitive technologies of creating conditions for servicing accounting information with actualizing processing, transmission and storage of data with qualitatively new level to developing organization and methodology of accounting.

Approximation of Big Data Concept is potentially effective for increasing analyticity of information that is modifying accounting process with forming relevant information for various scenarios of management. Expanding base of accounting information will develop its qualitative parameters according to the need making different decisions that envisages processing large arrays of information, which is characterize internal and external environment of enterprise activity.

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