References

1. Burdeniuk T. G. (2011) *Strateghichnyj analiz konkurentospromozhnosti pidpryjemstv* [Strategic analysis of competitiveness of enterprises] (PhD Thesis), Ternopil: Ternopil National Economic University.

2. Sheremet A. D., Sajfulyn R. S. (1995) *Metodyka fynansovogho analyza* [Methodology of financial analysis]. Moscow. (in Russian)

3. Izmajlova K. V. (2000) *Finansovyj analiz* [Financial analysis]. Kiev.(in Ukrainian)

4. Metodyka integhraljnoji ocinky investycijnoji pryvablyvosti pidpryjemstv ta orghanizacij[Methods of integral evaluation of investment attractiveness of enterprises and organizations] *State Privatization Newsletter.* no. 7. pp.12.

Emmanuel Hudson Valtaino Sawyerr

DATA ANALYTICS IN AUDITING PROCESS

Data analytics is a comprehensive term that encompasses many diverse types of data analysis. Any type of information can be subjected to data analytics procedures to get insight that can be used to improve effects. Data analytics techniques can reveal trends and metrics that would otherwise be lost in the mass of information. This information can then be used to optimize processes to increase the overall efficiency of a business or system [6].

Data analytics has been around in several forms for a long time, but businesses are finding more and more sophisticated and timely methods to utilize data analytics to enhance their operations. According to the opinion of Association of Chartered Certified Accountants (ACCA) 'data analytics enable businesses to identify new opportunities, to harness costs savings and to enable faster more effective decision making. Whether it is the ability to identify potential for new products and services or to detect the potential loss of clients in order to direct efforts to encourage them to stay, data analytics is everywhere in business today' [3].

Most researches, publications and web-resources contain the definition of Data Analytics like a 'science of analyzing raw data in order to make conclusions about that information. Many of the techniques and processes of data analytics have been automated into mechanical processes and algorithms that work over raw data for human consumption'.

The IAASB defines data analytics for audit as the 'science and art of discovering and analyzing patterns, deviations and inconsistencies, and extracting other useful information in the data underlying or related to the subject matter of an

audit through analysis, modelling and visualization for the purpose of planning and performing the audit' [5].

In general data analytics like a method is a new discipline for auditors. It involves a substantial investment in hardware, software, skills and quality control. It is a significant part of the response of larger and mid-tier firms to market demands in the larger-company audit market. Data analytics can be applied to a wide variety of assurance engagements, not just audit. Data analytics allows auditors to manipulate a complete data set – 100% of the transactions in a population – and for non-specialists to visualize outcomes graphically, easily, and at speed, and these are defining features of data analytics.

Data analytics has been developed with a view to improving audit quality. Audit quality does not lie in the tools themselves – although it clearly cannot be achieved without tools that are fit for purpose – rather it lies in the quality of analyses and judgements thereby facilitated. The value is not in the transformation of the data (however impressive), but in the audit evidence extracted from the conversations and enquiries that the analytics generates [4].

According to Institute of Chartered Accountants in England and Wales (ICAEW) rewiev, the following unique features of data analytics have the capacity, if used appropriately, to enhance audit quality significantly [4]:

1) the ability to graphically visualize results: data visualization is now a discipline in its own right;

2) sophistication, and the breadth of interrogation options;

3) ease of use by non-specialists; and

4) scale and speed.

Auditors can navigate much bigger external data sets much faster than earlier because the biggest current advances have been in the interfaces among client and auditor systems, software and data i.e., the interfaces that facilitate data extracting. These interfaces enable auditors to run the routines not just as substantive procedures, as in the past, but earlier during the audit at the risk assessment stage in understanding processes, and in work on controls.

There is no one universal audit data analytics tool but there are many forms developed inhouse by firms. These tools are generally developed by specialist staff and use visual methods such as graphs to present data to help identify trends and correlations [3]. The bigger audit firms and increasingly smaller firms utilize data analytics as part of their audit offering to decrease risk and to add value to the customer. Larger firms often have the resources to generate their own data analytics platforms whereas smaller firms may opt to obtain an off the shelf package. Many big auditing firms have had read-only user accounts within client systems with their own user names and passwords, to serve themselves with reports, for some time. In

jurisdictions in which a standard chart of accounts is used, this is a very effective method of producing information for audit purposes. This is not the same as the extraction or transformation of data, though. Auditors occasionally obtain the data themselves, but they sometimes use data that organization has extracted and validated. Auditors perform a set of controls testing around management's data extraction and validation processes, and then use what management has produced for their own analyses. Monotonous aspects of this work are moving offshore. In all cases, management has to perform extensive security and integrity checks before auditors do anything at all [4].

As mentioned by the specialists from ACCA, main examples of the use of data analytics in auditing procedures are [3]:

1) NRV testing – comparing the last time an inventory item was purchased with the last time it was sold and at what price;

2) Analysis of revenue trends by product and region;

3) Matching purchase orders to invoices and payments;

4) Segregation of duties testing by identifying combinations of users involved in processing transactions from the metadata attached to transactions.

For auditors, the main reason of using data analytics is to improve audit quality. It allows auditors to more effectively audit the large amounts of data held and processed in IT systems in bigger clients. Auditors can extract and manipulate client data and analyze it. By doing so they can better understand the client's information and identify the risks. Data analytics tools have the power to turn all the data into pre-structured forms/presentations that are understandable to both auditors and clients and even to generate audit programs tailored to client-specific risks or to provide data directly into computerized audit procedures thus allowing the auditor to more efficiently arrive at the result. Botez D. notes that other data analytics benefits can be [2]:

1) it increases the auditor's ability to collect audit evidence by analyzing a larger set, allowing the best risk-based selections to be tested;

2) widening and deepening the intervention interval of the auditor in the entity and its environment, which allows supplying the entity with additional information about its

3) own risk assessment and business operations.

As mentioned by Adrain A. there are five tasks of using audit data analytics [1]:

1) equipping auditors with the right skills;

2) entry barriers for smaller firms;

3) interaction of using audit data analytics with current auditing standards;

4) expectation gap;

5) data security, compatibility and confidentiality.

Botez D. in his study emphasizes that even if the benefits are clear, the auditors realize that there are limitations on data analytics use. Some examples are suggestive [2]:

1) Auditors need to understand clearly the data they are analyzing, particularly those data relevant to the audit. Analyzing data that is not relevant to the audit, which cannot be properly controlled, which is unreliable, and their source is not well understood, may have negative consequences for the quality of the audit;

2) considering the need for the auditor to exercise his professional judgment on accounting and auditing and also on the validity and completeness of the data, even if he can test 100% of the data set, it does not imply that the auditor can provide anything other than a reasonable assurance or that he can change its meaning;

3) in the financial statements, in most entities there are significant values and presentations that are direct accounting estimates or are based on accounting estimates or contain qualitative information. Professional judgment is necessary to assess the reasonableness of accounting estimates and presentations. Data analytics cannot replace this reasoning;

4) effective use of technology can support the auditor in obtaining sufficient and appropriate audit evidence. Technology should be used cautiously and not be overly trusted.

The conversion to the future of Data analytics in auditing process won't happen immediate. It's a huge 'jump' from traditional audit approaches to one that fully integrates big data and analytics in a seamless manner. Eventually, the audit in the future might look quite different from the today audit. Auditors will be able to use bigger data sets and analytics for well understanding the business, identify key risk areas and deliver enhanced quality and coverage while providing more business value [7]. But to achieve this conversion, the audit profession will need to work closely with key stakeholders, from the businesses they are auditing to the regulators and standard-setters.

References

1. Adrain A. Audit data analytics: Rising to the challenge, URL: https://www.icas.com/professional-resources/audit-and-assurance/audit-data-analytics-rising-to-the-challenge

2. Botez D. Recent Challenge for Auditors: Using Data Analytics in the Audit of the Financial Statements, BRAIN. Broad Research in Artificial Intelligence and Neuroscience, 2018, v. 9, n. 4, p. 61-71. URL:https://www.edusoft.ro/brain/index.php/brain/article/view/864.

3. Data analytics and the auditor, URL: https://www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p7/technical-articles/data-analytics.html

4. Data analytics for external auditors: International Auditing Perspectives, An International Accounting, Auditing & Ethics initiative, URL: https://www.icaew.com/-/media/corporate/files/technical/iaa/tecpln14726-iaae-data-analytics---web-version.ashx

5. Exploring the growing use of technology in the audit, with a focus on data analytics, URL: https://www.iaasb.org/publications/exploring-growing-use-technology-audit-focus-data-analytics

6. Frankenfield J. Data Analytics, URL: https://www.investopedia.com/terms/d/data-analytics.asp

7. How big data and analytics are transforming the audit: EY Reporting URL: https://www.ey.com/en_gl/assurance/how-big-data-and-analytics-are-transforming-the-audit

8. Melnyk N. Peculiarities of audit at the international level, in "Economic crisis: factors, models and mechanisms of overcoming: monograph", Dnepropetrovsk: NSU, 2015, 143-152.

Monongi Nioyi Marly

ECONOMIC ANALYSIS OF EMPLOYEE BENEFITS

A sufficient level of available resources of the enterprise is a prerequisite for its effective operation. Therefore, a full economic analysis of the use of labor resources, increasing productivity, including analysis of labor costs is necessary to make rational management decisions on the optimal use of personnel of the enterprise.

To effectively conduct an economic analysis of employee benefits, the first thing to do is to choose the subject of the study. The subject can be an employee of the enterprise or an external analyst. Next, for the analysis it is necessary to determine the object of diagnosis and, depending on the object to form the task of analysis. The object of diagnosis is the staff of the enterprise and its educational level; the costs of the enterprise to increase the value of human capital; return on human capital; loss of working time; quantity of manufactured products (performed works, provided services).

The main tasks of the analysis of employee benefits are:
– finding out the provision of the enterprise in the required educational level of personnel, jobs, divisions of the enterprise with labor resources;
– study of the cost effectiveness of the enterprise to increase the cost of