Recent Challenge for Auditors: Using Data Analytics in the Audit of the Financial Statements

Daniel Botez
Vasile Alecsandri University of Bacau
Faculty of Economic Sciences
Calea Mărășești 157, Bacău 600115, Romania
Phone: 0234 542 411
daniel63331@yahoo.com

Abstract

Data analytics is the process of examining data sets in order to draw conclusions about the information they contain, increasingly with the aid of specialized systems and software.

Many organizations began using this process in their activities.

A particular domain is the audit of financial statements. The quality of this audit can be enhanced by the use of data analytics. the use of new technology and software solutions change fundamentally the attitude regarding this audit.

The use of data analytics in audit is at the beginning. But the near future requires that auditors respond to this provocation.

Keywords: Data Analytics; Audit of the Financial Statements; Professional Accountants.

1. Introduction

We live in a constantly changing world, where challenges have become something usual. Our future evolution depends on the way we understand and respond to them. In most cases, these challenges refer directly to Information Technology (IT) or to other areas where the input of this technology is essential.

Today, human activity can not be conceived without the use of digital devices. Having skills in information technology has become a basic requirement for most occupations and for obtaining professional qualifications in different professions. Even though, in many cases, basic computer skills are required, they are rapidly developing in practice.

Digital information is widely used. Their impact has significant effects in the social and economic environment. Recent examples confirm this impact and show the extent of it. Using personal information from Facebook users has led to serious investigations in the USA. In the European Union, on May 25th, a regulation on the protection of individuals with regard to their personal data being processed and freely distributed has entered into force.

In the economic environment, the impact is stronger. Many countries have developed strategies regarding the impact of artificial intelligence (AI) on economics and education. Private companies invest in research programs leading to projects and ideas based on artificial intelligence. A huge economic effect based on productivity growth is considered. Romania is a favourable environment for this industry. There are university centers which educate countless IT specialists.

The growth rate of digital information is doubled every two years. An article in Forbes magazine mentions that digital information (data)[5] is increasing so fast, that before or in 2020, 1.7 megabytes of new information will be created every second for every man on the planet.

The way in which different countries will develop and follow research and application strategies for artificial intelligence will determine how they will ensure their competitiveness in Europe and if they will withstand other competitors, reducing existing gaps.

2. What does the concept of Data Analytics (DA) mean?

We have collected some definitions from the literature. Data is the fuel for succes for any size organization. (SAS Institute - The Statistical Analysis System)

[5] We use the term ”data” and ”information” with the same meaning of ”digital information”

Data analytics (DA) is the data review process performed to establish the conclusions about the information it contains, increasingly using specialized systems and software applications.

DA technologies and techniques are widely used in commercial industries to enable organizations to make business decisions on a much more informed basis and to allow scientists and researchers to validate or reject scientific models, theories, and assumptions. (http://serchdatamanagement.techtarget.com)

DA is the activity to extract what is significant from raw data using specialized computerized systems. These systems transform, organize and model information to draw conclusions and identify their model (pattern). While DA activities can be viewed as simply as possible, today the term is mostly used to describe the analysis of a large amount of data and / or with a high speed, that contains unique computer-related and manipulation of information challenges. Professionals with DA skills, who generally have a high level of expertise in statistics, are called data scientists. (www.informatica.com)

DA is not a term used for big data only. DA is a general term for any type of processing that involves historical information that has been used over time, but with the increase of the amount of information, this term develops in favor of the systems capable of processing large data.

The big data period radically changed the requirements for extracting significant information from the vast bulk of business information. In the database world, administrators easily generate reports that contain business information, but they provide little or no intelligent business solutions. In this respect, they use external data storage solutions, but, generally, these can not solve the problems related to the actual cost of the big data. While data warehouse is certainly a relevant form of DA, data analytics acquires step by step the ability of analyzing information of a very high volume, diversity and speed.

Thus, the DA field is growing rapidly, in line with a market where systems that meet the major big data requirementsare developing, as well as with all the people who have the skills to manipulate data and interpret the results.

The issue of training the DA specialists through education is essential for strategies that foresee the implementation of new technologies. In the United States, I have noticed actual academic concerns regarding the training of these specialists. We can give the example of Dakota State University, which has initiated a master degree programme named "Master in Data Analytics". The course is organized in two forms: either face to face with the professor, or online distance learning. The disciplines studied are striclty specialized:

- Data Warehouse and Data Mining
- Programming for Data Analytics
- Big Data Analytics
- Statistical Programming
- Modern Applied Statistics

But this is not the only university with such concerns. In a top of Master of Science (MS) master programs (http://www.mastersindatascience.org/schools/top-masters-in-analytics), specializing in Business Analytics Programs or Data Science, we meet prestigious universities such as the American University, Syracuse University, Southern Methodist University, University of California - Berkeley, George Washington University or Harvard, all of which offer on-line study programs.

The situation is similar in Europe. Universities in the UK, Germany, Ireland, or Spain offer students master degree programs in this field as well.

There are software offers on the market which provide Data Analytics or Data Analysis solutions. On a simple search, it can be seen that the specialists have also established a classification of those.

Thus, one of the specialized sites (www.pcmag.com/business/directorydata-analytics) presents the classification of 26 software that contain DA applications. These are the top five of them:

1. Looker
2. Microsoft Power BI
3. Tableau Desktop
4. Domo
5. Qlik Sense Enterprises Server

Another one (www.predictiveanalyticstoday.com/top-predictive-analitycs-software) makes a classification based on 52 softwares, the top five being:

1. Rapid Miner Studio
2. KNIME Analytics Platform
3. SAP Predictive Analytics
4. IBM Predictive Analytics
5. Dataiku DSS

Specialized articles attempt to delimit terms or concepts used in the vocabulary specific to new technologies. For example, there is a need to delimit the concepts of Data Science, Big Data and Data Analytics (Mannoppa, 2018).

Data Science is the field that includes everything about processing, compiling and analyzing information. Data Science is a combination of statistics, mathematics, programming, problem solving, data gathering through ingenious ways, the ability to look at things differently, and the activity of compiling and analyzing them.

Big Data - refers to a very large volume of data that can not be processed with traditional applications. Big Data processing starts with raw data that is not aggregated and which is impossible to store in the memory of a single computer. A fashionable word used to describe the huge volume of data, both structured and unstructured, Big Data floods businesses everyday. Big Data is a concept that can define discerning analysis of the best decisions and strategic business moves.

Data Analytics is the science of examining raw data in order to draw conclusions about that information. DA involves the application of an algorithm and an extraction process from the inside. For example, it may be used in the health system, transportation, game theory.

3. Concerns of the Association of International Certified Professional Accountants

The IAASB [6]set up a DAGW-Data Analytics Working Group in 2015 to inform IFAC about how and when to respond to technological developments of public interest.

In September 2016, this group launched a document entitled "Exploring the Growing Use of Technology in the Audit with a Focus on Data Analytics," requesting comments by February 15, 2017.

We present and comment briefly on this document.

In an environment where the volume and complexity of data increase constantly, the use of technology and DA gives auditors the opportunity to gain a more effective and appropriate understanding of the entity and its environment, increasing the quality of the audit risk assessment and the response to it.

The DA procedure, when used to obtain evidence in the audit of financial statements, is the science and art of discovering and analyzing patterns, deviations and inconsistencies, and extracting other useful information from underlying data or relating to a subject that is an audit problem by analysis, modeling and visualization (representation) for planning or performing the audit.

The audit of financial statements is a professional engagement of the auditor with the objective of expressing an opinion regarding the extent to which they present a true and fair view of an entity's financial position and performance and that it is prepared in accordance with the applicable financial reporting framework. The audit of the financial statements is part of the wider category of assurance engagements. Because it is a public interest mission, it is based on mandatory professional standards and uses specific specialized terminlology. One of the particular features of

[6] International Auditing and Assurance Standards Board –IAASB an independent standards body and at the same time, the managing body of the International Federation of Accountants - IFAC

this mission is to perform it with professional skepticism. An essential asset of professional accountants is the widespread use of professional reasoning to plan and perform the mission, and to draw the conclusions from which their opinion is formed.

Another feature of the audit of the financial statements is the collection of audit evidence from selected samples from the total set of information contained in the financial statements. After testing these samples, the conclusions are extrapolated to the entire population from which they were extracted. This traditional technique will be significantly modified by the use of DA.

The application of professional skepticism and professional reasoning is amplified when the auditor has a proper understanding of the entity and the environment in which it operates.

Other DA benefits can be:

- It increases the auditor's ability to collect audit evidence by analyzing a larger set, allowing the best risk-based selections to be tested;
- 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 own risk assessment and business operations.

The use of DA in determining the size of information relevant to the audit is more comprehensive than in traditional analytical procedures. DA can be used for the same procedures which the auditor usually applies: risk assessment; analytical procedures; substantive procedures; control tests.

Even if the benefits are clear, the auditors realize that there are limitations on DA use. Some examples are suggestive:

- 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 can not be properly controlled, which is unreliable, and their source is not well understood, may have negative consequences for the quality of the audit;
- 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[7] or that he can change its meaning;
- 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. DA can not replace this reasoning;
- 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.

An important issue is the concerns regarding the DA use. International Standards on Auditing (ISAs) will have to be modified to allow connection to new technologies. ISAs standards neither prohibit nor encourage DA application. However, the standards welcome the use of the technology by the auditor in conducting the audit by using CAATs. [8] At the same time, it is understood that they have evolved significantly and that now we are speaking of the DA.

However, standards need to remain relevant in a rapidly developing environment and be able to support the auditor's performance under different circumstances, including the use of DA tools and techniques.

In fact, DA makes the auditor's activity more effective. Technological solutions reduce the time required to manually apply a procedure, allowing the auditor to use more time for professional reasoning. Furthermore, DA use involves faster identification of relationships between data and nonconformities, helping the auditor to maintain professional skepticism at a high level.

[7] Reasonable assurance is a high but not
absolute conclusion that the financial statements are not materially misstated.
[8] Computer Assisted Audit Technics - CAATs

A common question is whether ISAs should provide for DA use. It is true that standards need to be constantly reviewed, considering the fact that technologies are changing and developing. However, several realities must be taken into account:

- DA use allows the auditor to be more effective, but the efficiency and effectiveness of an audit engagement requires the auditor not to use his time in low risk areas at the expense of high risk audiences;
- ISAs standards are designed to harmonize professional practices globally, but technologies are developing differently in different countries;
- The risk of using new techniques, for which clearly defined concepts in standards must exist, needs to be considered;
- Consideration should be given to the points of view of supervisors operating in different jurisdictions;

Discussions on how developments in technology are increasing the quality of the audit should be attended by auditors, supervisors, standards-producing bodies and other interested parties. It is certain that the standards will have to include future developments, especially those concerning new technologies.

DA use in audit is influenced by the circumstances and factors that optimists have to consider:

- The data acquisition process is a challenge related to the existence of a large database that the entity must transfer to the auditor so that it can apply the DA, which involves data security and confidentiality issues, as well as the existence of a storage space;
- Conceptual challenges-an audit involving the use of DA implies asking for data and addressing questions that have not been requested in the past, which may create issues related to the attitude of the audited entity;
- Legal and Regulatory Challenges - it is a concern regarding the security and confidentiality of data in different jurisdictions and the movement of data between them;
- Availability of resources - DA model requires the existence of people with ccertain skills to support the audit team;
- The way in which supervisors and regulatory bodies can maintain their supervision under a rapid change of circumstances;
- Investments in preparing and creating auditors' qualifications (skills) to gain knowledge, abilities and experience in DA use.

The document highlights that, at the same time, some questions have to be answered:

- IT generic controls - DA triggers more questions about IT controls, especially about the minimum level tested, the impact of the test results, and the impact of any deficiency in IT controls when the auditor believes he can rely on the IT system (the data provided by the IT system is reliable);
- The data used is produced in the majority of the entity and the auditor should reassess its attitude to meet the requirements of sufficient and adequate data acquisition standards;
- Consideration of the relevance and reliability of data outside the entity, i.e. data obtained from third parties for which completeness, accuracy and reliability can not be established;
- What is the nature of audit evidence obtained through DA procedures when initially using a Risk-Based Approach procedure;
- Based on the assessed risk and the response to it, how does the mission team sort the samples obtained from DA? What are the differences in risk assessment procedures, testing controls and background procedures when using DA? What is the role of controls testing if the auditor looks at 100% of transactions in a particular audit area?
- What is the nature of the audit evidence obtained from DA in response to the identified risks? Using DA does not deny the pattern, but it changes the way it is implemented. How does the auditor document?

- What is the appropriate level of the auditor's activity for the identified exceptions? In the current procedure, the auditor extrapolates the findings on the selected population at the level of the whole population (at the level of the financial statements as a whole). By using DA, the auditor can identify many deviations, test each one , or test a sample to reduce deviations on a significant level;
- Risk assessment - what is the implication of DA use in assessing the risk of particular assertions?
- Changes to mission documentation requirements when DA applies. What are the information the auditor needs to document when applying DA? Is additional documentation required?
- Changes in quality control procedures - when the auditor uses DA tools and techniques, but also when the auditor calls on third parties to conduct DA technologies.

Specific situations are encountered when auditors audit Small and Medium Sized Entities (SMIs) in the sense that they typically use professional accountancy services, including the use of cloud computing. DA use is advantageous in this case because it is possible to collect more qualitative evidence in accordance with the size of the entity.

Another specific situation is when auditors themselves are Small and Medium Sized Practices (SMPs), in the sense of lack of resources and experience to transform the existing model.

They cannot internally develop tools as large entities can, but the specialized market can offer solutions.

DA is not included in the auditor training program today.

After receiving comments on the publicly released document in January 2018, DAWG published a document summarizing the comments. (IAASB, Jan 2018)

51 respondents commented on the document, out of which 31 IFAC member bodies, 19 audit firms, 14 national standardization bodies, 12 supervisory and regulatory bodies, as well as academics, investors, individuals and others.

The key messages resulting from these comments were synthesized as follows:

1. Respondents expressed strong support from DAWG;
2. ISAs standards remain basic principles, but should reflect the digital era in application guides. There is a requirement for practical guides on DA application;
3. Applying professional skepticism when using DA is of major importance.

DAWG will continue working with the other IAASB bodies, monitoring the AICPA's (American professional organization) activity refering to Evidence Task Force, interacting with the Public Company Accounting Oversight Board (PCAOB), and will also continue the dialogue with Data Analytics Advisory Panel and will include aspects of DA use in the IAASB strategy for 2020-2023.

4. Other attitudes in the sphere of the accounting profession and in the economic environment

IAASB is not the only body in the accounting profession concerned with the use of DA in professional accountancy missions. American Institute of Certified Public Accountants – AICPA, the US professional body, has published a document aiming to gain a future perspective. (AICPA, 2015). In this paper, an essay deals directly with the subject of our discussion.

It mentions that DA applied in auditing financial statements is the art and science of discovering and analyzing patterns, identifying anomalies and extracting other necessary information from the underlying data or by observing the topics of an audit by analyzing, modeling, and visualizing with the purpose of planning and conducting an audit.

DA contains methodologies on:

- identifying and analyzing patterns and significant deviations;
- mapping and visualizing financial performance and other data related to operational units, systems, products or other references to address risk-based audit;
- building statistical models or other predictive methods that explain the data in relation to other factors and identify significant deviations from the model;

- combining information from separate analyzes and different data sources in order to obtain additional information.

DA can contribute to each step of the audit, starting with the time of the preparatory work of the mission when deciding to accept it, continuing with the planning, understanding of the entity and its environment, risk assessment, assessment and testing of internal controls, application of substantive procedures and detailed tests, and ending with the conclusion and reporting phase.

ICAEW (Institute of Chartered Accountants of England and Wales), the largest professional body in Europe, has also published a document dealing with this issue. (ICAEW, 2016).

It is brought up that DA is a new discipline for auditors. It requires substantial investment in hardware, software, skills and quality control. It is an important part of the auditors' response to market demands. DA can be applied to a wide range of assurance missions, not just to the audit of the financial statements.

DA allows auditors to manipulate a complete set of data, that is, 100% of a population, and for non-specialists to visualize results in a graphical form, easily and quickly. Auditors did not invent DA. Entity management, risk management, and compliance monitoring, that are used by large companies, include developed systems such as Oracle, SAP, and RSA Archer. Oracle and SAP have intelligent archive-based business applications. Lavastorm, Alteryx, and Microsoft's SQL servers provide advanced tools for specialists and non-specialists. These platforms typically use large, integrated systems, large and medium consultancy firms, and data analysis specialists. Companies such as CaseWare and Validis provide DA service to small and medium-sized businesses, giving them the opportunity to provide DA service for their own customers.

Technology companies who develop DA have their roots in software developed in the early 2000s for extracting data in the banking and retail sectors, and for design in financial services and engineering. Enthusiasts describe that DA use allows manipulation of data "on an industrial scale", and calculations are performed "in a fraction of a second".

DA implies data extraction using the fields in the database structure more than those in the file format. A simple example is Power View, an Excel tool that filters, sorts, divides and highlights data in a spreadsheet, and enables visual presentation in a variety of graphical images.

Many DA applications can be easily used by auditors with minimal help or no help from management. The ability to perform these independent analyzes is very important. Many of them can be done at very detailed levels and / or can be fully done.

Common DA procedures include:

- Comparing the last period in which a good was purchased with the period it was consumed for evaluation purposes
- Old stocks and the number of days the stock is held for an item
- Old claims and debts and reduction of uncollectability period from customers
- analysis of income viariation, broken down by production or region
- Gross margin and sales analysis, highlighting the negative margins
- Compliance of payment orders with purchased goods
- Testing the task separation and its functioning
- Detailed recalculation of fixed assets depreciation
- Capital expenditure versus repair and maintenance expenditure
- Establishing three-way compliance between purchase decisions, sales, documentation of goods received and invoices.

Privacy and data security are critical issues. Entities generally have protocols on the handling the sorting of personal data, archiving it, or deleting certain parts of it. These protocols need to be known by the auditor, who does not create new data.

The neverending challenges in this regard relate to data stored in the Cloud, revision of data handling and data protection guides, and to obstacles for regulatory bodies, especially those relating to the transfer of data across borders.

The document developed by ICAEW also concerns the future. It is noted that auditors have a history of demonstrating the managers the adoption of new technologies. Business people are learning about DA from auditors at the same time as ERP vendors are developing analytical business applications.

The 2026 audit can be a hybrid of current methods and new tools. The speed of change is quick: audit committees ask companies if they have DA capabilities and prospects regarding it. Some think DA are a real game changer and a transformation that will change the fundamentals of the audit. Others say that DA will cause firms to do what they can do well and quickly, and that the ability to enhance existing service offerings, and many of the new applications, such as management controls will be internalized.

The development of standards is evolving. The existing system is stable in a stable audit environment or is slightly changing. But the environment is changing rapidly and it can not easily be predicted what professional practices will there be in five years. The issue is not just how standardization bodies manage the DA challenge in audit standards, but also how the standardization process itself needs to evolve. DA presents opportunities for standardization bodies to experiment and demonstrate that they can be innovative in their role as guardian of audit quality and representative of the public interest.

DA causes an actual uncertainty and vulnerability respecting the accounting profession. It is necessary to share concerns in a safe space where the tensions between ownership strategy, competition issues and regulatory challenges can be brought together. Companies must go ahead, in the interest of a competitive advantage, and regulatory bodies must respond to this innovative process.

The audit is a social product, a public good, and the benefit of the audit is achieved if the environment in which it develops is secure, before being exposed to the dangers and uncertainties of an open and challenging market for regulatory bodies.

Under the ECL brand, one of the leaders of Audit Analytics services, a professional accountant, John Verver, has since 2008 presented a more practical approach to the challenge of using DA in the audit. >(Verver, 2008) It is the document in which we find phrases such as Audit Analytics - AA or Audit Data Analytics - ADA. He recommends seven practical steps to establish best audit analytics practices:

1. Understand your tasks and identify which parts of the organziation and which business processes can be scrutinized using DA. Audit Analytics can be used throughout the audit cycle.
2. Understand your IT environment to establish a suitable technical architecture;
3. Develop a DA strategy, a natural extension of your overall requirements which includes data accessibility, data analysis protocols, establishment of business process and internal control standards and the overall review of analytics performed.
4. Define your own DA architecture;
5. Set up your own technology by establishing a centralized, secure and manageable AA environment, necessary in order to coordinate and plan your business.
6. Assigning roles and responsibilities within the audit team
7. Implement a training program regarding the AA use in the audit cycle

Concerns related to our subject matter also exist outside of the accounting profession. Under the auspice of the Financial Reporting Reform Center, a World Bank body, a document was published, specifically addressed to professional accountants who are Small and Medium Sized Practitioners (SMPs) and which presents some opportunities and some suggestions regarding the acceptance and implementation of DA. (Shukarova-Savovska, Sirois, 2017) Thus, in terms of

increasing the quality of the audit, the use of DA leads to increased auditing relevance, early identification of problems, testing larger populations, obtaining more relevant evidence and a higher quality of them.

Using DA leads to improved customer service, enabling high perspicacity, real-time problem solving, improved communication, and the ability to view results.

It also increases the effectiveness of the audit because a large amount of data is rapidly evaluated, risk assessment is made on a more informed basis, auditor's attention is increased, more frequent testing is possible and reporting is quicker.

This document highlights five suggestions for introducing DA into the work of auditors:

1. Accepting the use of technology in the audit process

Using DA is not just a challenge for auditors. Many large companies are already using DA solutions, because they have invested in order to gain competitive advantages and respond to the stakeholders' expectations. They use DA in the internal control and internal audit departments. Financial reporting is changing and calls for real-time information and the expansion of non-financial reporting. SMPs also need to introduce new technologies, but they need support from professional education bodies, professional guides, software recommendations, and support for questions and comments.

2. Audit standards will evolve

Current standards are developed taking into account the relationship risk-based internal control-analytical procedures and the use of CAATs. DA challenges:

- testing the entire population and how to handle exceptions, as well as the ability to measure results accurately;
- appropriate audits following the introduction of DA within the current requirements;
- the integrity of significant data and how the auditor easily collects the data used in the procedures, and what procedures are needed to validate data from non-traditional external sources, for example from the media.

It is necessary to revise standards to allow the introduction of developments, but with caution.

3. Engage in learning processes about how to get analytics skills

It is necessary for auditors to have and maintain basic training in traditional technical skills that are the main body of knowledge studied in the university and in continuing professional training programs. At the same time, a new set of skills is needed with regard to advanced audit technologies. This education is required in information technology, statistics and modeling, and this body of knowledge must be introduced into the university and professional training program for prospective accountants.

IT specialists will be part of the audit team in this complex technological environment. All auditors will need to have technological skills. A learning process is also needed to understand how the new tools are used and how the results of DA use can produce evidence and lead to conclusions.

4. Hardware and software investments are required

The integration of new technologies into audit applications is underway and gives rise to a series of questions about: the complexity of data mining in company systems; obtaining data from diverse multiple systems; the validity of the sources; legal challenges and regulations; other barriers.

For SMEs, there are some alternatives to large companies' investments: the use of third parties for processing and analyzing data; using simple but powerful tools that have auditor functionality, such as the ability to access a variety of data sources and source testing that is automatic, identifiable and repetitive.

Examples of DA use:

- Testing unauthorized log entries
- Dividing accounts and log entries
- Inactive accounts

- Regular value inputs
- Suspicious key-descriptions
- Task separation tests
- Numerical sequences
- Variation and probability analyzes

5. Use of DA beyond traditional audit services

The use of DA tools can be extended to provide additional services or specialist advice, such as:

- Fraud detection and predictive accounting
- Tax consultancy
- Improvements in invoicing and cost management or business operations
- Identification of past and potential losses and incomes
- Identifying risks and providing advice on risk management
- Real-time monitoring of controls
- Using predictive models and improving forecasts
- Integrated reporting and sustainable reporting

6. Conclusions

It is certain that the digital technologies are, step by step, conquering all the fields of human life. It is important to be open-minded towards challenges and respond appropriately, i.e. in the public interest or to create a better world.

New technologies, and especially developments in the field of artificial intelligence, can change, within a foreseeable time horizon, some of the fundamental coordinates of our existence. There are already large companies that use artificial intelligence to build personalized applications.

Accountants, in general, and financial auditors, in particular, carry out many missions in the public interest, of which the audit engagement of the financial statements is most relevant. The audit report addresses several categories of users of the information presented in the financial statements. Most of them have different information needs, and the way financial information is aggregated must meet the needs of each. The use of Data Analytics in the audit of financial statements, as well as in other professional missions, may allow the auditor to conduct more comprehensive and in-depth investigations than by using traditional methods. As a result, he can better represent the interests of these users and the public interest in general.

With a stretch of the imagination, we can think of using artificial intelligence applications in the work of professional accountants. Advantages can be significant, auditors may develop their own applications to help them exercise professional reasoning, using personal qualities such as level of training, professionalism and experience. Financial statements could be tailored to provide personalized information for each category of users. However, today the multitude of advantages can only be suspected.

Finally, we want to mention an important finding. No matter how high the level of the development of new technologies will be, we must not forget that these are made by people, for people.

References

AICPA Audit Analytics and Continuous Audit: Looking Toward the Future. (2015). Essay 5, Data Analytics for Financial Statements Audit, Trevor R. Stewart, CA, PhD, from www.aicpa.org.

IAASB, DAWG. (2016, September) ”Exploring the Growing Use of Technology in the Audit, with a Focus on Data Analytics”, from www.ifac.org.

IAASB, DAWG. (2018, January). Feedback Statement, Prepared by the Staff of IAASB, Exploring the Growing Use of Technology in the Audit, with a Focus on Data Analytics, from www.ifac.org.

ICAEW. (2016). Data Analytics for External Auditors – International Auditing Perspective, from www.icaew.org.

Mannoppa, A. (2018, March 2). Data Science versus Big Data versus Data Analytics, from www.simplelearn.com.

Shukarova-Savovska, K. (2017). Senior Financial Management Specialist şi Bonnie Ann Sirois, Senior Financial Management Specialist, CFRR, World Bank, Audit Data Analytics: Opportunities and Tips, from http://siteresources.worldbank.org/EXTCENFINREPREF/Resources/4152117-1427109489814/SMPs_spreads_digital.pdf.

Verver, J. (2008). White paper – Best Practices for Use Data Analysis in Audit, ACL, from https://pdfs.semanticscholar.org/5b25/99d1323904f555dd74a6e61135d34290c30d.pdf.

Daniel Botez (b. March 31, 1963) PhD in Accounting (2005) from "Alexandru Ioan Cuza" University of Iași. Now he is an associate professor of accounting and audit in Department of Accounting, Audit and Economic-Financial Analyse, Faculty of Economic Sciences, Vasile Alecsandri University of Bacau, Romania. His current research interests include several of theoretical and practice aspects of accounting profession to international, regional and national level.