The Use of Innovative Technologies in Internal Audit: Discussion About New Features.

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Abstract. The present article discusses the internal audit responsibility, it's role in the company's corporate governance and the activities addressed by the audit. The article mainly focuses on data analytics and artificial intelligence technologies that once implemented have the potential to help the internal auditor in many ways, such as, but not limited to, increasing productivity and permitting better results in the analysis. The internal audit is a very important engine in the governance framework of the company, mainly because this area has two different characteristics, the objectivity of the analysis and the independence of the reports. However, currently in many companies the professionals carry out activities manually consequently spending a lot of time, for example, with database analysis, regulation comparison, preparation of standard reports, etc. The time spent in activities such as these could be better used by the application of digital technologies. The researches here presented were developed using analytical descriptive methods. The necessary data were obtained by the use of internet media to resource the journals and articles cited in this article. As a result of this analysis there are demonstrated many uses for these tools and technologies. Artificial intelligence and data analytics when combined unlock the real potential to improve the audit results, increase efficiency and save time. In conclusion, some practical applications for these technologies in the internal audit industry are here demonstrated.

Keywords. Internal Audit, Artificial Intelligence, Data Analytics, Innovative Technologies, Three Lines of Defense, Corporate Governance.

1. Introduction

Based on the three lines of defense model developed by the IIA (The Institute of Internal Auditors), the internal audit (IA) is the third and last line responsible for providing assurance to senior management and the board. The main differences between the internal audit and the other two first lines is its high level of structural independence and objectivity analysis.

The internal audit is not directly responsible for implementing new processes, but it can provide advice and recommendations regarding the process that has been analysed or audited.

Data analysis tools have become more frequently used by internal auditors in recent years. But a new challenge is to advance one step further by adding and adapting the use of artificial intelligence (AI) tools to the internal audit function.

Once these new technologies are well established they will enable the internal auditor to perform his role with more security, efficiency and conservation of time, allowing the internal auditor to focus on other activities which can mitigate risk for the company.

This article presents examples of the available tools and technologies and how the internal audit function could implement those features theirby increasing the level of corporative governance in the company.

2. Methodology

The results presented in this paper are based on what researchers of internal audit, accounting, data analysis and related areas have presented in their most recent studies concerning the use of new tools and technologies in the internal audit activities.

In this qualitative study, the analytical descriptive method was used to collect data as well as to analyze and interpret the results. Analysis and interpretation of data are carried out in accordance with the

research objectives of this study.

3. Analysis of the concepts and new technologies

As an important part in the engine of company's corporative governance, the internal audit has been playing a very important role, testing and reporting the analysis to the board and company's senior management. A major part of the internal auditor's job is developing analysis with the available data, but in actual practice the professionals spend a lot of time carrying out in manual activities for example database validation, new regulation verification, revision of standard issues, etc.

However, we can identify that in many companies the internal auditors are executing manual activities that could be replaced or simplified by the use of both of the technologies, Data Analytics and Artificial Intelligence.

The time gained in this way could be spent more effectively, by focusing on a comprehensive in-depth analysis and additonal relevant functions.

3.1 Three Lines of Defense Model

The three lines of defense model can be understood by following the process described in the figure below:

Fig. 1 – Three Lines of Defense Model by the Institute of Internal Auditors (IIA). [1]

The risk owner is the first line of defense, namely the operational manager of a particular function who owns and manages the risk, for example the head of the sales division. [2]

The company's managers are responsible for identify the risks in the processes and create measures to avoid and control these weakness. It is also important to consider that every area or activity has risks.

After the first line of defense, there is the figure of the second line of defense, responsible for monitoring the company's risks with the risk owners and verify the effectiveness of the developed controls.

The second line is composed by the risk management, internal controls, compliance, data security and technology areas, those focusing on an ethical operation, following the sector regulation (if applicable) and very often must provide periodic reports to the senior management about the implementation of risk controls and the monitoring process.

The third line of defense and the main focus of discussion in this paper is the internal audit. Differently from the two other the internal audit area carries out an independent assurance, veryfing important risks in each area according to the risks matrix developed by the second line, and analyze other possibles risks not previously identified.

It is also responsible for periodic reports to the senior management, the board and the audit comittee about the issues identified during the audit, to establish an internal audit annual plann to guarantee the coverage of the main company's risks and follow up the corrections for the issues identified during previous audits.

3.2 Internal Audit

Internal audit is an important component of corporate governance, and it is responsible for evaluating the effectiveness of the organization's risk management, internal controls, and governance processes. [3]

In recent years, mainly for brazilian publicly traded companies, internal audit has growing as an important procedure to develop the corporate governance. It is one important requirement for an IPO for example, one of the major requirements is the level of corporate governance.

A very important area such as the internal audit might use the highest technologies and tools to improve the quality of the audit results.

3.3 Data Analytics

Data analytics is the science and art of discovering and analysing patterns, identifying anomalies and extracting other useful information in the underlying data. In other words, data analytics enables decision-making by establishing non-obvious relationships between data and transforming them into relevant and useful information for the organisation, information that would not be obtained through traditional data processing methods. [4]

Fig. 2 – Data Analytics System. [5]

The biggest challenge of implementation is the difficult of get the data, in many companies the processes and results are not linked in performance systems for example.

Data analytics softwares are not a recent discovery,

they have been an important tool for the management to analyze data. The information showed in those dashboards for example, can be used to optimize processes, increasing the overall efficiency of a business or activity.

3.4 Artificial Intelligence (AI)

The Organization for Economic Co-operation and Development (OECD) defines Artificial Intelligence (AI) as a "machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations or decisions influencing real or virtual environments." [6]

The Artificial Intelligence is also a tool fed by the data provided and has the capacity of learn with it to deliver improved results.

It is expected as a new feature that the companies find difficulties to use and explore the AI possibilities, but it is completely necessary to develop programs because once this tryes works, the possibilities of gains in efficency are enormous.

The expectations for the AI are based in the use of programs that could perform verifications more effectively and safest than the auditor, increasing the quality of auditing.

4. Technologies Application in Internal Audit Activities

4.1 Application of Data Analytics

In recent years the use of Data analytics has been increasing, for example as source of information for the key procedures for the internal audit. With this information the internal auditor has more information to develop the internal audit plann.

Based on these needs, technological tools such as data analytics arises as technical support options for internal auditors to extract, model, improve and optimize the analysis and scope of the data.

The use of Data Analytics have positive advantages for the AI project portfolio and for the future of the area, such as better project planning, greater resource management, more comprehensive scope definition, agility in the execution of audit work, traceability and record of analyzes performed and performance increase. [7]

The implementation of data analytics tools contribute with the efficiency of the internal audit projects, reducing the intensity of manual work, expanding the scope and increasing the delivereable's efficiency, with this the internal auditors can focus on cover new procedures or new areas to verify and consequently spending less time in the audit procedures.

Data analytics tools can help the internal auditors to identify risks based on previous data, for example verifying losses in processes or manufacturing, verifying company's investments, helping and following up company's projects, etc.

Furthermore, the biggest potential appears when the data analytics is combined with other technologies, such as the artificial intelligence.

4.2 Application of Artificial Intelligence

Recently the AI had a boom of use, most of that due to the Chat GPT, a tool that enables Q&A, research, text analysis, content creation, etc. Follow bellow some examples for the use of ChatGPT in internal auditing:

• Q&A: ChatGPT can help internal auditors to answer specific questions from various domains, e.g., laws and regulations, accounting, IT, tax or specific technologies.

• Research: ChatGPT can help the internal auditors to create a list of ideas or recommendations or a list of relevant topics for an audit engagement.

• Text Analysis: ChatGPT can help internal auditors with different text analysis tasks, especially to summarize (long) text fragments, find unfavorable clauses and terms, screen different types of textual information, interpret materials in other languages, determine the impact of new laws and regulations, or find critical terms in a text.

• Content Creation: ChatGPT can help internal auditors to write, correct, create, or explain program code, create meeting minutes from bullet points, create individual emails for different business situations, or create draft audit reports.

• Statement analysis: AI tools can help to identify possible inconsistencies in accounting and financial statements, and as the Ai collects more data and information the quality of the analyssi improves.

What differentiates AI from previous data analytics techniques is that AI is able to model highly non-linear relationships in the data and process both large volumes of data and unstructured data such as text and images. AI algorithms can complement other recent technologies, which provide data that can be analyzed by AI or specific applications. [8]

The possibilities of Artificial Intelligence application are unimaginable, the technology can perform stressful activities or identify possible risks that the auditor did not identified before.

These applications are just the beggining, the AI learns with the process and the obtained results, as a machine learning the technology develops it self with data. The tendencies are that the internal audit sector increase his scope and efficiency covering more processes and areas.

5. Conclusion

To conclude, the objective of this paper was to analyze the actual scenario in internal audit industry and present alternatives to increase the productive and improve the audit results. The paper also showed concrete examples on how the internal

auditor can use Data Analytics and Artificial Intelligence to improve internal audit activities. Although, the best approach for an organization will depend on it's specific needs and goals. It may be helpful to use both technologies jointly to get a more comprehensive view of the organization's capabilities and identify areas for improvement.

The practical application of this techniques remains inovative in this fields, I hope that the analysis presented within this article will estimulate others to attempt to implement these tools, resulting in further improvements. More research about the results of implementation will be necessairu to continue advances in this field.

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