

Emerging Trends in Accounting: An Analysis of Impact of Robotics in Accounting, Reporting and Auditing of Business and Financial Information

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Abstract

Accounting is the window of any business firm. With the increased usage of computers in the arena of the Accounting Information System, we can see a drastic change from paper-journals and ledgers to computer-based formats. So to walk along with this drastic change it is necessary to integrate Robotics (Artificial Intelligence) into the Accounting Database. Application of robotics technology in accounting is nothing but an application of expert system based software and other technologies during the process of recording, reporting and communication of business and financial information and also in the auditing process. This enables the business houses in easy and transparent reporting and communication of the business information and also to cater the needs of decision makers. So the present paper is in conceptual nature and intended to analyse the Impact of Robotics in Accounting, Reporting and auditing of Business and Financial Information with the help of secondary sources such as journals, websites, reports etc.

Keywords: Accounting, Auditing, Robotics in Accounting

Background

Accounting is the mouth of the business as it speaks about operational and financial performance. Success or failure of each and every business entity is totally depended upon how it caters the needs of various stakeholders. To cater the needs of various stakeholders, it is not enough to provide the goods and services as it involving

in production and rendering of goods and services; however, it is also necessary to perform other duties such as undertaking social obligations, environment protection activities, obeying the government and other regulatory authority's requirements. After discharging its duties, the business has to communicate the information on its performance in relation to above-said activities to ensure the accountability to all its stakeholders. In simple, we can say that proper communication of business and financial information is the main concern of the management to get the confidence from all the stakeholders. The technologies used in the business to conduct accounting operations are finding new avenues for development. One of the recent developments in the domain of accounting information dissemination system is the usage of robotics in accounting. This development, in the conduct of accounting operations, directly aids in faster, economical and paperless ways.

The present world is filled with full of technology because we can observe the usage of technology in all the spheres of life. Starting from birth till death, we experience infinite usage of technology. In the business world also, there is intensive dependence on the technology and coping with the dynamic changes due to the new up-gradations to the existing one. In accounting functions also, we can observe the rapid changes from paper-pencil based function to computer-internet and software-based functions. Today is the era of Artificial Intelligence (Robotics). So, many accounting firms working around the world are trying to initiate robotics in accounting function because of its fruitful benefits such as it eliminates the tedious and difficult accounting routine tasks and enables the accountants to perform efficient consultancy services.

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The basic objective of usage of robotics is to simplify the more complex human tasks by AI. According to Financial Stability Board publication, both public and private sector organisations are using robotic technologies for regulatory compliance, surveillance, data quality assessment and fraud detection. Today, it is evidently observed that accounting and reporting functions of the business organisations are transferred from paper journals and ledger patterns into a computerised pattern with the introduction of computers, which are supported by robotics technology. Robotics technology works with its own special features like self-management, self-tuning, self-configuration, self-diagnosis and self-healing to ease the operations of accounting.

Robotics in Accounting

With the advent of computers in the arena of the accounting information system, we can see a drastic change from paper-journals and ledgers to computer-based formats. The accounting information of a business house is being stored in the accounting databases. In these storehouses of the database, only specific accounting transactions are maintained. As a consequence, these systems are not meeting the specific needs of the stakeholders (decision-makers) of the business. Therefore, there is a need to apply a certain type of intelligence into accounting database, which helps to eradicate the flaws of the traditional system. So, one approach to solve this problem is to integrate robotics (AI) into the accounting database, which meets the needs of decision-makers. So, the present paper is intended to analyse the impact of robotics in accounting, reporting and auditing of business and financial information. For this purpose, the next part of the paper is organized as a literature survey, research gap, research questions, objectives, methodology, discussions and conclusions, limitations and scope for further research.

Literature Survey

Abdolmohammadi et al. (2001) analysed the auditor's perception on the application of expert systems for auditing function and concluded that irrespective of the nature of task complexity auditors more prefer for knowledge-based systems along with human processing.

Amelia et al. (2006) examined the application of artificial intelligence in accounting and auditing and opined that auditing and accounting function can be potentially

improved through the usage of complex AIs such as expert systems, genetic programming, neural networks, fuzzy systems and hybrid systems, should be investigated to the fullest extent possible.

Daniel et al. (1997) empirically analysed the impact of artificial intelligence in accounting, taxation work and influence on other organisational issues and opined that application of artificial intelligence helps top management and reduces the need for supervision because it works based on expert system which allows to solve a complex problem of accounting and taxation and allows the organizations to perform more work with less supervision. Further, it helps to take decisions immediately.

Murphy and Yetmar (1996) conducted the study on the context of use of expert system for the credibility of audited information and found that the application of expert system for the usage by subordinates affects the beliefs of superiors but use of ES by superiors does not affect on their own beliefs and on their own decisions.

O'Leary et al. (1991) discussed the role of artificial intelligence and expert system on accounting function and in solving the problems involved in traditional accounting functions. The researcher concluded that the use of AI in accounting will solve the problems of traditional paper-based accounting.

Odoh et al. (2018) examined the effect of artificial intelligence on the performance of accounting operations among various accounting firms in South-East Nigeria. They concluded that the application of artificial intelligence favourably impacts on the performance of accounting functions. Further, they recommended that accountants and accounting firms should continually upgrade their skills and knowledge in relation to artificial intelligence to enhance the performance of accounting functions, thereby eliminating certain accounting cost.

Patrick B Dorr et al. (1988) studied expert systems based decision aid in AIs and opined that that expert system decision aid was more efficient and effective method than the checklist-based system decision aid on accounting and business information of the business organisation.

Research Gap

From the review of earlier studies, it is evidently found that the most of the studies have basically focused on the impact of artificial intelligence but only a few studies have focused on accounting and auditing function with the help

of artificial intelligence. So, the present study is to analyse the impact of the application of robotics in accounting and auditing functions.

Statement of the Problem

The application of technology is one of the important developments in the area of accounting because it provides greater benefits to various categories of stakeholders; especially, nowadays application of robotics is the big debate in the area of accounting research. So, the present study is aimed at analysing the impact of the use of robotics in accounting and auditing operations.

Research Questions

- What is the importance of the application of robotics in accounting and auditing?
- What are the issues concerning the implementation of robotics in accounting and auditing?
- What are the thrust accounting and auditing areas for the application of robotics?

Objectives

- To analyse the importance of the application of robotics in accounting and auditing.
- To examine the issues concerning the implementation of robotics in accounting and auditing.
- To identify the thrust areas for the application of robotics in accounting and auditing.

Methodology

The application of robotics in accounting operations is still in the nascent stage. So, the present study is in conceptual conducted based on secondary sources collected through published sources such as journals, articles, websites, reports, magazines, etc.

Discussions

Importance of Application of Robotics in Accounting and Auditing

The development and usage of robotics (AI) in accounting majorly impact the allocation of resources. Because it will

be an effect on the amount of money expended on the accounting and auditing process as it may reduce payroll costs or enhance the decision-making process. Whereas on the other hand, usage of robotics will require an investment of time and monetary resources for procuring robotic technological equipment but the application of robotics in accounting and auditing is cost-beneficial in the long-run.

Further application of robotics in accounting helps in making accounting and auditing-based decisions because it is build based on knowledge and reasoning capacity. Integration of artificial intelligence in accounting and auditing is important due to the following reasons:

- Conventional accounting only dealt with reporting and communicating financial information of the corporate houses but now the environment is in dynamic nature so that the stakeholders need additional volatile information apart from financial. To do this, tradition paper-based and human-readable formats of reports such as PDF, word and excel are not appropriate because these formats are not readable by machines, i.e., computers. So, it is necessary to have reporting languages which are readable by both machines and humans. This can only be done through the use of AI in reporting of business and financial information which is popularly known as Integrated Reporting.
- Traditional financial statements such as income statements, fund flow statements and cash flow statements are the base for getting the data for decision making by the investors. But not all are aware of using these data. To enable them for easy decision-making based on the above statements, AI with knowledge-based expert system can be used.
- Use of robotics that is AI in accounting will not remove the accountants from the job but it eases the accounting and auditing functions to be performed by the accountants and auditors. Preparation and production of paper-based reports with manual processing will be removed because of the reports of accounting and non-financial information of the business will be internet based. Merging expert system with accounting information system helps to gather the huge volume of data with or without the direct effort of the stakeholders. In simple words,

AI or robotics-based system can analyse the data and helps the stakeholders in understanding and interpreting the financial events.

- Filing of various disclosure reports to regulatory authorities was one of the challenges to the business organisation because before filing the reports, it is important to get a compliance audit report. If the Accounting Information System based on AI is used, it will be very easy for the organisations to file reports to regulatory with regulatory authorities with automated verification of standard disclosure requirements with the actual disclosures and which will eliminate the compliance audit. Nowadays, this is carried with the help of XBRL (Extensible Business Reporting Language) in various countries. Further, it helps the firms to file the reports in paper-less mode, i.e., electronic format.
- In auditing context, auditors usually prefer human processing for their function even if it is a complex and time-consuming process. So, nowadays knowledge-based expert systems (Robotics) are most advisable along with human processing because of its efficiency and fruitfulness such as it helps the auditors to replace the checklist verification of accounts system with automated computerised verification system.
- For auditing purpose, auditors need sufficient explanation from their clients; but in all the time, it is difficult to get a proper explanation from the clients on the different contexts. If auditors rely on AI for this purpose, they will get correct explanations as it is a knowledge-based expert system. But to do this, there is a need of effort from academicians and researchers for advanced research on this aspect.

- If the auditing to be considered as efficient, it must ensure the audited accounts are within the four corner points of law. So, here to ensure all the information reported are in “true and fair” state, the auditors must verify the information with legal provisions and it is a highly complex human process. If we apply a knowledge-based expert system, i.e., Robotics, it is very easy to assess the risk of litigation in relation to the accounts of the clients.
- By using AI in auditing function, the auditor can carry the analysis function to verify the vouchers to ensure whether there evidence for the accounts of the clients or not.
- AI can also use the function in which auditor is intended to determine fraudulent insurance claims.
- Ensuring the materiality of transactions reported in the accounts is one of the important tasks to be performed by the auditors and it is also one of the difficult tasks for this also robotics can be applied.
- Application of Artificial Intelligence in auditing is also beneficial in bankruptcy prediction.

Issues Concerning the Implementation of Robotics in Accounting and Auditing

The organisation’s management decisions are totally based on accounting information and also they are impacted based on the functional areas of accounting. In this context, functional areas of accounting can be seen as accounting, auditing, management accounting, tax accounting, information system and financial accounting. Table 1 discusses how robotics is important to perform these functions.

Table 1: Issues Concerning the Implementation of Robotics in Accounting and Auditing

<i>Areas of Accounting</i>	<i>Issues to be Resolved by Robotics</i>
Auditing	<p>In auditing, there may be three types of auditors who can perform the auditing task and issues involved are:</p> <p>The external auditor is an auditor who is an outsider of an organisation working for remuneration. He expresses the opinion on the annual financial statements of an organisation with reference to the documents submitted by the management. His opinion speaks about 'true and fair' view of books of accounts and helps in getting the confidence of various stakeholders. Thus, the management, researchers, academicians of both accounting and robotics are concerned with the decision process of external auditors. So, it is required to develop a robotic knowledge-based expert system to make this decision process even more effective.</p> <p>The internal auditor is an auditor who is an employee of an organisation and reviews the operations and their activities of the firm. To review the operation and other activities, an advanced tool based on robotic technology is needed. So, here management, researchers and academicians are had to concentrate to address these issues.</p> <p>Computerized or EDP auditors may be external or internal to the organisation who involves in auditing computerized accounting information system to enable them, management, researchers and academicians are needed to concentrate on developing suitable tools and expert system to assess and control the computerised accounting system.</p>
Management Accounting	Management accounting involves in providing the information to management to aid them for decision-making. For this purpose, today it is necessary to have proper advanced robotic technology for planning and control system.
Tax Accounting	It needs an advanced robotic knowledge-based expert system for getting timely tax advises.
Financial Accounting and Information System	It needs to have a special knowledge-based expert system for following specific GAAP imposed for reporting and disclosure of business and financial information.

Source: Author compiled

Thrust Areas for the Application of Robotics in Accounting and Auditing

The study identified some of the thrust areas for the application of robotics (AI) in accounting and auditing arena are:

Thrust Areas in Auditing

- Tool to review the information needed for the auditing process.
- Tool for assessing the actual amount allowed to bad debts and automated checking of the existence of those debtors who were treated as bad debts.
- Tool for analysing the auditing opinion process and making the decision process of auditors at a faster rate without any flaws.
- Tool for analysing the decisions for the uncertainty of going concerns and projecting the financial position in the future.

- Tool to develop auditing planning process and automated preparation of audit programme which aids in the audit process.
- Tool to analyse, design and evaluating the internal control system and automated application of internal check system.
- Tool to the credit evaluation system.
- Tool to the borrowings evaluation system.
- Tool to litigation risk assessment and detection of fraud.
- Tool to analyse the genuineness of the contract prices.
- Tool to evaluate the reliability of accounting information system.

Thrust Areas in Management Accounting

- Tool to inducing the capital budgeting process.
- Tool for implementing cost and management accounting standards or GAAPs.

Thrust Areas in Tax Accounting

- Tool to analyse the tax implications on the financial and operational soundness of the business.
- Thrust areas in Accounting Information System.
- Tool to prepare and communicate business and financial reports (integrated reports).

With these thrust areas for the application of robotics in accounting and auditing, we can consider accounting and auditing is the domain which is providing greater opportunity for introducing robotics.

Conclusion

Application of robotics in the area of accounting and auditing is one of the important developments in business research. Some of the debates argued that application of robotics in the field of accounting and auditing leads to loss of jobs by the accountants and auditors but the present study observed that it does not remove the accountants and auditors but it eases their operations in an efficient manner. Further, it helps to process accounting functions with the greater accuracy, speed and efficient manner and this also enables investors to get their required information for timely decision-making. Finally, the study concludes that application of robotics in the accounting and auditing is cost-beneficial in the long run, smoothen its managerial decision process, and enables the firm to easy filing of compliance and other disclosure reports to the regulatory authorities. Importantly, it will build confidence among all the stakeholders by fulfilling their needs at large.

Suggestions for Policy Implication

The study observed that there is a gap between accounting researchers and AI researchers because accounting and AI researchers are carrying their researches independently. But in reality to make effective implementation of AI in the area of accounting and auditing, there is a need of carrying joint research by these two domain researchers. Further, to make the use of AI in a familiar manner, it is very important to initiate the robotics issues of accounting in the curriculum of accounting education.

Limitations of the Study

The study is in conceptual in nature and studied the field and which is based on secondary sources. Every methodology applied for the study may suffer from its own limitations and which may influence the results of the study.

Scope for Future Research

This study not observed the reality of the field and not conducted based on the primary data so future studies may consider this issue.

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