The changing face of accounting: Prospects and issues in the application of artificial intelligence

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Abstract

Artificial intelligence (AI) has penetrated every part of business, and accounting has changed from e-accounting to AI-enabled accounting. AI opens the door to many competitive edges, whether collecting and analyzing financial data or various real-time data, including those from social networks, videos, images, geological locations, etc. AI is adaptive to the work environment, and its infusion is expected to expand its spider-web in almost every industry. This study aims to discuss AI in accounting while discussing the prospects and issues in applying AI. It also discusses some of the popular AI-based programs available for accounting.

Keywords: Artificial intelligence; e-accounting; accounting; cost-efficient; automation.

1. Introduction

Artificial intelligence refers to machine intelligence capable of learning (the collection of data and rules for using it), reasoning (applying rules to arrive at approximate or definite conclusions), and self-correction. In other words, it is the human intelligence that is stimulated by technology. "In 1956, at the University of Dartmouth seminar in the United States, John McCarthy and other computer experts first proposed artificial intelligence" (Chen, as cited by Luo, Meng, & Cai, 2018, p.850).

Humans are considered to be intelligent among all creatures. The same sense of intelligence has been devised into the machines. Artificial intelligence is devised into machines in a program that can learn, reason, and auto-correction. Machines with artificial intelligence can perform speech recognition, perception, learning, reasoning, planning, and problem-solving.

Artificial intelligence was introduced in accounting and finance almost 25 years back. Programs are being infused with artificial intelligence. For example, take the simplest form of artificial intelligence, one makes the journal entries, and the ledgers, trial balance, and final accounts are automatically generated. "The domains of accounting, tax, and audit services have become much more complex during recent years" (Meservy, Denna, & Hansen, 1992). Humans have always been poor in performing tedious, complex jobs such as collecting data from multiple sources and analyzing them. Accounting and finance have always been complex, but artificial intelligence has become more straightforward with artificial intelligence infusion. Programs infused with artificial intelligence can do complex jobs more efficiently and that, too, without errors. This is why artificial intelligence is becoming more demanding in complex accounting jobs such as auditing. Today, artificial

intelligence technologies are used by public and private sector institutions for regulatory compliance, surveillance, data quality assessment, and fraud detection (Financial Stability Board, 2017). With the development of artificial intelligence, the human workforce is rapidly being replaced by machines. Earlier, many accountants were needed to do specific jobs. Now a single program is devised to do all the tasks from a single point. Artificial intelligence can collect data from the points of sale and summarize the same in an accounting format. There is no need to maintain separate books. With the advent of computers, accounting systems and operations moved from the realm of paper journals and ledgers to computer-based formats, enabling artificial intelligence to apply self-management, self-tuning, self-configuration, self-diagnosis, and self-healing to achieve optimal results in accounting operations (Chukwudi et al., 2018). Now even banks have started using artificial intelligence. The applications are devised to analyze the nature of the customers based on the data available in the accounts. They can easily segregate a customer's spending; shopping, entertainment, investment, etc. Based on these results, the banks also select potential customers for insurance and investment purpose. (Julia and Thomas, 2017; Renuka, 2018; Ukpong et al. 2019) argue how artificial intelligence impacts accounting and auditing.

2. Objective and Scope

This is a conceptual study with the primary objective to discuss the concept of artificial intelligence in accounting while discussing the prospects and issues in applying artificial intelligence in accounting. The paper also discusses some of the popular artificial intelligence base programs available for accounting. The paper is limited to artificial intelligence in accounting only.

3. Artificial intelligence: Application in accounting

The e-accounting practices, including Customer Relationship Management (CRM), Management Information System (MIS), Enterprise Resource Planning (ERP), and Human Resource Management (HRM) that initiated almost three decades back from somewhere in Finland, has now experienced a change in the systems. The use of artificial intelligence in accounting is not new, but the intelligence level that has emerged recently calls for pondering accounting visions. Although artificial intelligence is more efficient and accurate than human intelligence, it does not replicate human intelligence. There is a need to study the efficiencies and limitations of artificial intelligence in the field of accounting. The accountants need to develop their skills so that they can work with artificial intelligence simultaneously. From the development of calculators to computers, accounting applications to artificial intelligence-based applications, accountants have always been benefited. The programs such as Tally, QuickBooks, FreshBooks, NetSuite ERP, etc., flourished the concept of e-accounting. The flow of accountants has always been at par with the technologies. However, artificial intelligence is something different from earlier technologies. They can work parallel. There is a need to make accountants capable of utilizing artificial intelligence for more focused decision-making. There is a need to study accounting problems, practical challenges, skills, and institutional issues to make accountants more capable of using artificial intelligence applications.

This century is experiencing a drastic change in architecture and infrastructure. Organizations are surviving more on the pillars of technological advancements rather than concrete. On the road towards competitiveness, organizations adopt artificial intelligence but with caution. Surely, the future of accounting will experience a drastic change with the infusion of artificial intelligence once the accountants learn and become efficient in monitoring artificial intelligence to get desired results in decision-making. Because Expert Systems impact work and vice versa, the impact of any Expert Systems implementation

cannot be predicted without a thorough grasp of the underlying work and knowledge. (O'Leary & O'Keefe, 1997). However, one should differentiate between accounts, accounting, and accountancy to experience the impact of artificial intelligence in accounting. As we all know, the popular definition of accounting by Smith and Ashburne reads as "accounting is the art of recording, classifying and summarizing in a significant manner and terms of money, transactions, and events, which are, in part at least, of a financial character and interpreting the result thereof." Accounting presents the summary of accounts for decision-making. While on the other side, accountancy is a profession. So, it is eminent to mention that the impact of artificial intelligence in accounting will differ from that in accountancy. Countries, organizations, universities, individuals, and other parties who support artificial intelligence in accounting must work together to overcome challenges that arise during the application process (Luo, Meng, & Cai, 2018).

4. Accounting software with artificial intelligence

In this section, we will discuss the popular accounting software that is devised with artificial intelligence. These programs can be installed on the computer or can be operated online. Jeb Su (Principal Analyst and Technology Futurist at Atherton Technology Research, Silicon Valley) assessed the automation capabilities of four of the most prominent AI-enabled cloud-accounting products currently in the market, namely, OneUp, QuickBooks Online, SageOne, and Xero. They compared them to their Accounting Automation Index (AAI), which measures how accurate their Artificial Intelligence systems are at automatically recognizing transactions from bank feeds and generating correct accounting without the need for human participation. After five months of use, the OneUp topped the list with an automation index rate of 95 percent, followed by QuickBooks Online (77 percent), Xero (38 percent), and SageOne (30 percent). Let us discuss each of these programs as below:

a. **Xero**: Xero is popular accounting software for small businesses. It is devised with features such as invoicing, inventory, bank connections, bank reconciliation, expense management, information security, bill payments, employee payroll, purchase orders, accepting payments, assets management, tax management, reporting, and storage. As per a test by Atherton Research, this program has an automation index rate of 38 percent. It can be installed on a computer as well as a smartphone.

b. **OneUp**: OneUp is the most popular accounting application enabled with artificial intelligence. The main features involve invoicing, inventory, accounting, and CRM. It has an automation index rate of 95 percent, according to a test conducted by the Atherton Technology Research. This application can be installed on both computers and smartphones. However, this application has not been designed for India. However, the app provides for changes in the tax structures that suit India. The app can be used in India with some changes after installation. Figure 1 depicts the dashboard of Xero and OneUp apps.

c. **QuickBooks Online**: QuickBooks is an accounting software developed and marketed by Intuit. QuickBooks is meant for small and medium businesses and can perform invoicing, accounting, banking, taxation, and payroll functions. It could be used online and installed on a computer or a smartphone. The picture below depicts the dashboard of this application.

d. **SageOne**: SageOne is an accounting application meant for small businesses. SageOne features invoicing, inventory, banking, and accounting functions. However, this application is not yet available in India.

e. **KuberaGST**: KuberaGST app is designed by Kubera Softtech, available on the cloud, computer, and smartphone. It is designed in and especially for India and features point of sale, including bar code reader, inventory, payroll, bookkeeping, accounting, and GST

compliance. A screenshot of the dashboard and features of the KuberaGST app is provided in Figure3.

f. Smacc: Smacc is an accounting software for small businesses developed by the Arab Sea Information Systems Co., Saudi Arabia. The customers are from the United States, Singapore, China, and India. It features invoicing, inventory, accounting, and reporting functions.

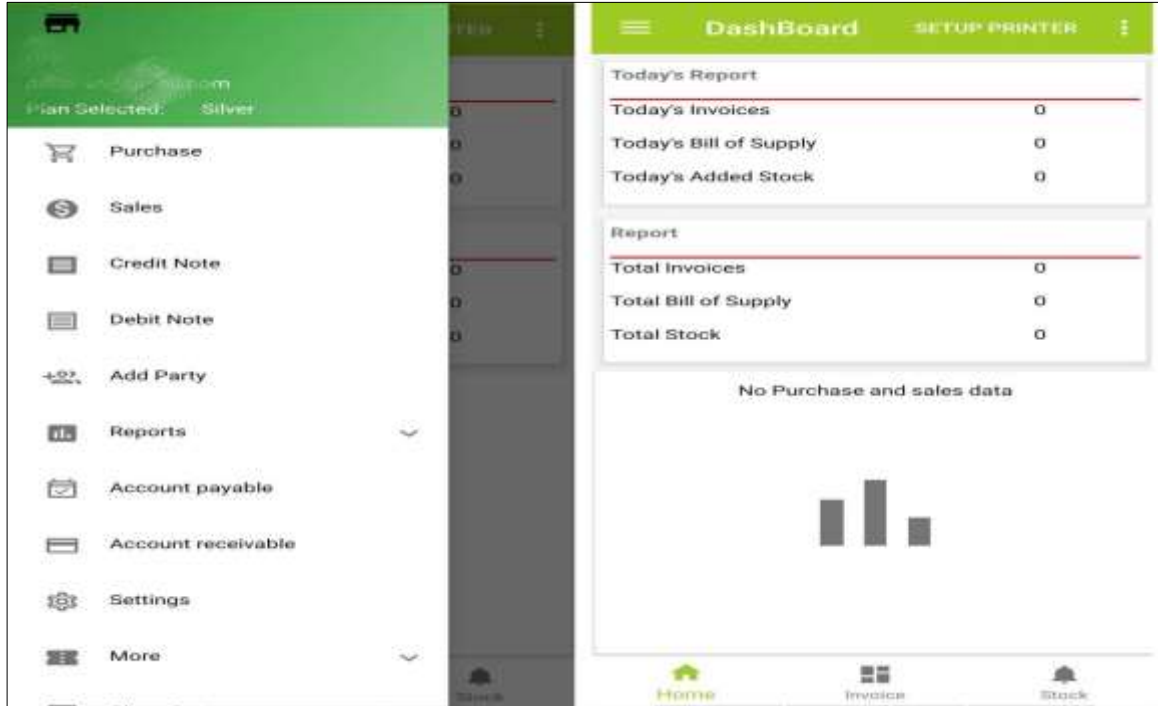**Figure 1: Image showing Dashboard of Xero and OneUp apps**
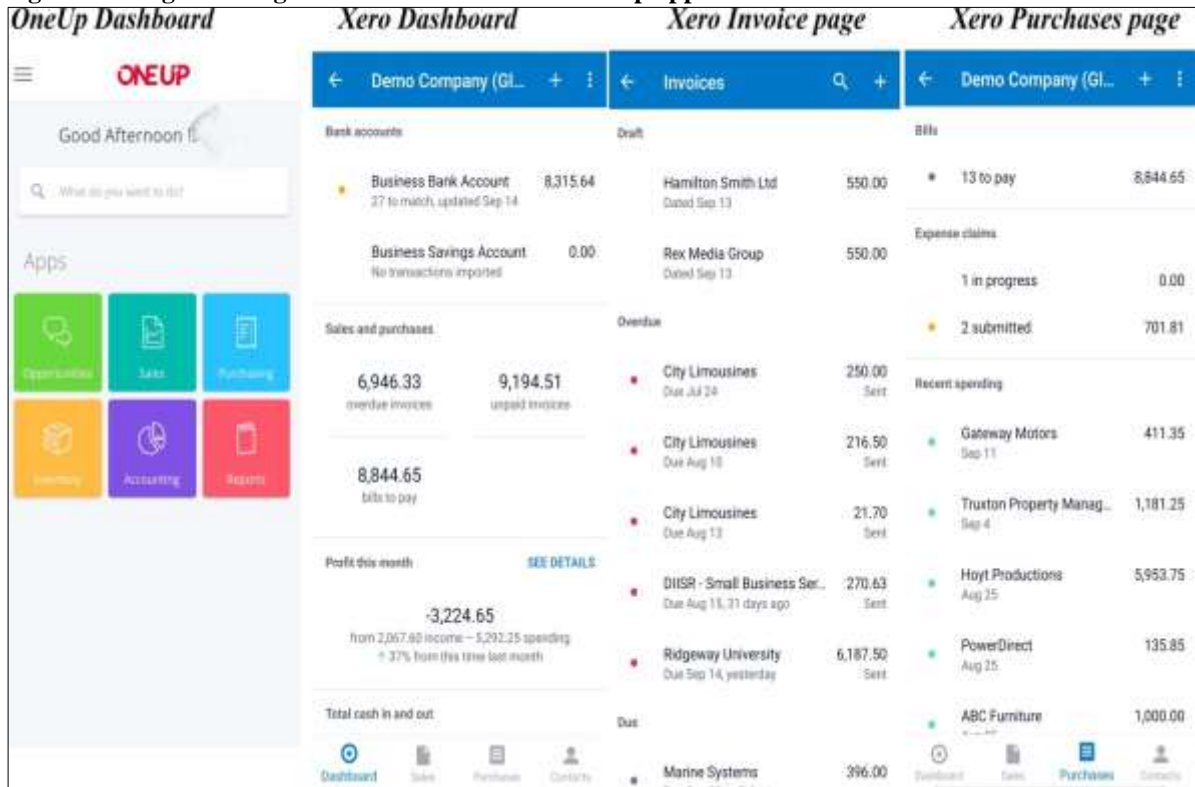
Source: App installed on a smartphone for trial

Figure 2: Image showing dashboard of QuickBooks application

Source: https://quickbooks.intuit.com/
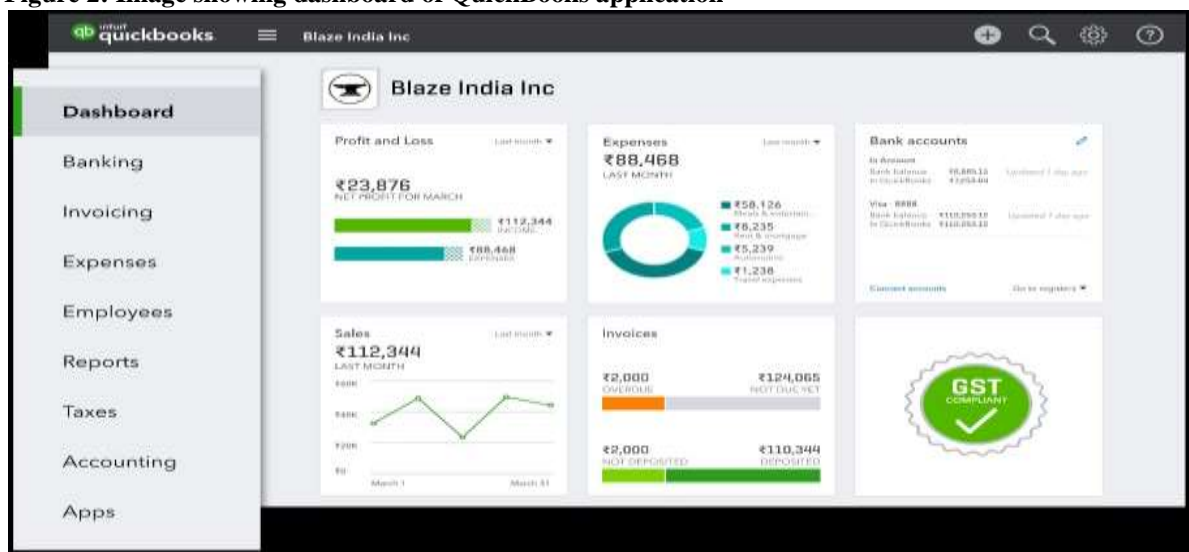
Figure 3: Screenshot of Dashboard and features page of KuberaGST app

Source: App installed on a smartphone for trial

5. Application of Artificial Intelligence in Accounting: Prospects & Issues

Everything in this world has two faces: a good one and a bad one. Artificial intelligence is not an exception to this role. This section will go over the benefits and drawbacks of using artificial intelligence in accounting. According to a survey conducted by the MIT-Boston Consulting Group, more than 80% believe that artificial intelligence gives them a competitive advantage, and 79% believe that technology boosts productivity. Artificial intelligence has many benefits, and some of them are listed below:

a) Automation: The era of artificial intelligence has changed accounting drastically. The programs infused with artificial intelligence can collect data from different points, analyze the same, and summarize the final accounts. Especially in the case of big and complex data, artificial intelligence is of great use as it renders error-free results. The programs infused with artificial intelligence are capable of generating reports quickly. They are even linked to various tax returns such as GST returns that help auto-populate the returns' related data.

b) Increased Efficiency: It is well known that humans can work to an extent. They cannot work continuously; they need rest, and their efficiency deteriorates with time. On the other hand, artificial intelligence never stops working, and its efficiency increases with time and experience. It can alone do the work previously done by a group of accountants. They do many accounting tasks, including monthly-quarterly closing, managing receivables and payables, expense management, procurement, audit, and many more.

c) Increased Accuracy: We have already discussed the efficiency of artificial intelligence. The systems are not only efficient but also error-free. Their reports are more accurate than prepared human reports, especially in the case of an extensive database.

d) Deeply involved in data: Artificial intelligence is involved in data collection and analysis 24/7. It leaves no data untouched. Even the minute data is checked algorithmically to eliminate errors.

e) Real-time analysis: While the accountants start their work after receiving the data, artificial intelligence is involved in the continuous process of collecting, reasoning, and

acting. Artificial intelligence is capable of collecting and analyzing real-time data. Artificial intelligence can extract financial data and other data from social networks, RFID data, videos, images, etc. They can lead to unexpected outcomes.

f) Cost-efficient: Reduced errors surely mean reduced costs. From error-free accounting to paper-free accounting, artificial intelligence leads to cost reduction. While engaged in tedious tasks, artificial intelligence gives accountants ample time for complex matters that need critical thinking. Retailers have been benefited the most from the introduction of artificial intelligence-enabled applications. These applications are helpful from selling, preparing books, managing accounts, and reporting to filing GST returns.

As discussed above, artificial intelligence brings several opportunities, including automation, reduced cost, increased efficiency, accuracy, etc. The application of artificial intelligence in accounting has and will in the future provide organizations a meaningful set of reasons as to why they need it. Although it has many advantages, there are some issues and fears that are developing with its use. It is being believed that accuracy, efficiency, and automation will lead to the replacement of humans. Artificial intelligence in other fields, such as using robots in place of laborers, has already led to unemployment. Applying artificial intelligence in accounting will undoubtedly lead to some humans becoming reluctant, but they need to generate opportunities. They can develop skills that will help them work along with the machines. There is an immense need to develop different skills and roles compatible with artificial intelligence. Although accounting is going to remain the same, accountancy will change drastically. Artificial intelligence also brings with it the opportunity for research and development. Shifting accounting from the physical to the virtual world of artificial intelligence will surely replace humans. Another threat of artificial intelligence is data loss. The threat of data security is not new to the virtual world. The e-accounting is accessed with the help of passwords and is available on a remote server that the rivals can access if the server is hacked or the administrator password is leaked in any way. However, an integrated system may help reduce the hazards of loss of information. Artificial intelligence is now being used for data security, too, and this threat will surely come down. Another issue is concerned with the lack of experience in accounting. Artificial intelligence develops itself with time. Initially, they need to be monitored by skilled humans to experience accounting know-how.

6. Conclusion

Towards home, it can be said that although some issues and fears, such as unemployment, breach of security, and lack of experience, are developing with the application of artificial intelligence, it brings with it several opportunities such as automation, reduced cost, increased efficiency, and accuracy to name some. The future of accounting will undoubtedly experience a drastic change with the infusion of artificial intelligence. The accounting will no longer remain limited to the financial data and statements and extend to real-time data from social networks, videos, RFID data, etc., and extracts results that will lead the organizations to the edge of competitiveness.

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