

EXPLORING CURRENT OPPORTUNITY AND THREATS OF ARTIFICIAL INTELLIGENCE ON SMALL AND MEDIUM ENTERPRISES ACCOUNTING FUNCTION; EVIDENCE FROM SOUTH WEST PART OF ETHIOPIA, OROMIYA, JIMMA AND SNNPR, BONGA

Meyad Diriba Abdi, Wolkite University
Habtamu Abafoge Dobamo, Jimma University
Kefiyalew Belachew Bayu, Wolkite University

ABSTRACT

The current growth and advancement in new technology and invention is making the companies in stiff competition for surviving in the market. This study mainly emphasis to explore the current opportunity and threats of artificial intelligence on Small and Medium Enterprises accounting function from the evidence of southwest part of Ethiopia mainly Jimma from Oromiya region and Bonga from South nation peoples regional state. Thus, the rationale behind for undertaking this study is to explore the opportunity of new advancement in technology especially with that of artificial intelligence on SME's accounting functions in the firms and examine the threats as well the way forward. Both primary and secondary data were used. Primary data was collected using structured questionnaires and Quantitative approach was adopted. Secondary data were from the existing theory based evidence and analyzed by using Qualitative approach. Thus, mixed approaches were utilized. Hence, the nature of the Study is descriptive and it is related to qualitative analysis method. The census or total universe inquiry method was applied since the study is easily manageable and total number of population on the study areas was selected which is below 50. The new advancement of technology (AI) is having possible opportunity for the firms and there a fear that the accountants are in lining with the upcoming technology. Therefore, better concentration has to be given for staff training and introducing them with the artificial intelligence or new technology unless the with the existence of stiff competition, it is known that the business may result in "big to fail".

Keywords: Artificial Intelligence, Firms Accounting Function, Accounting Profession, New Technology, Stiff Competition.

INTRODUCTION

Artificial intelligence is the capacity of machines or software to create and exhibit intelligence. It bring with it both promise and concern. AI tools and applications are being developed to think, feel, and react like living creatures. A survey of recent literature suggests that there is a practical connection emerging between science and finance, more specifically,

accountancy (Brown & Murphy, 1990). AI could become an invaluable partner in professions that demand considerable training, technical precision and ethical judgments including accountancy. According to (Hallevy, 2013), AI could bring about entirely new classes of products and services, create new markets, and generate large gains for inventors. Application areas include customer service, research and development, logistics, sales, and marketing. The market for AI-based tools and applications is growing rapidly (Conick, 2017).

New Technology specifically Artificial Intelligence or AI is defined as the capacity of machines and software to exhibit or imitate a sense of cognitive intelligence. The idea behind AI holds great potential and yet also raises many concerns. There is no need to deny the fact that AI can become an invaluable business enhancement tool in significant professions training is necessary prerequisite Professions where technical precision and right-minded judgments are necessary such as accounting also have great scope for AI applications (Roetzer, 2014).

An accountant's daily obligations usually include obeying archaic data analysis and report generation methodologies. Although there are many specialized software tools to help automate such data-centric tasks for accounting, tax, and auditing, human accountants are still needed to verify and review such data according to the aforementioned traditional methods. AI, on the other hand, can potentially change this entire aspect of the accounting profession (Committee on Technology, 2016). The Association of Chartered Certified Accountants claims in one of their reports that AI-powered automation will soon eliminate almost all tedious and cumbersome data related tasks like bookkeeping and transaction coding. This will further help accountants to focus on more advisory services and other high-value tasks. Logically this should create a situation where the business value of accountants and their advisory services increases many times over (Baldwin et al., 2006).

Intelligent machines with AI will be able to ensure compliance with the numerous rules, regulations, and organizational policies. It can also evaluate employee performance and influence HR decisions. Some might even think that AI may invade human privacy by analyzing human behavior and lifestyle patterns through its '*machine learning*' prospect.

According to Hirst (2014) and Taghizadeh et al. (2013), Intelligent machines with AI will be able to ensure compliance with the numerous rules, regulations, and organizational policies. It can also evaluate employee performance and influence HR decisions. Some might even think that AI may invade human privacy by analyzing human behavior and lifestyle patterns through its '*machine learning*' prospect. As this technology advances and becomes more powerful, professional, white-collar workers, including accountants, are starting to worry about what the future holds for their career and if AI will make their job obsolete. Data accessibility has been enhanced by technological innovation, such as the financial information provided to accountants increased in effectiveness and efficiency. Hence, the decision-making process will be improved by providing more accurate and detailed data (Hansen & Messier, 1987; Mohammadi, 1987).

Lenard et al. (2001); Miklos, (2000); Sutton et al. (2016) reviewed the nature of accounting and auditing problems and the need for the application of automation. According to this study, auditing is a field that is intrigued by the use of automation. Auditors have to deal with uncertainties and incomplete financial information, but the decisions that are being made are often repetitive. United States, (2016) Studied the use of Expert Systems in large accounting firms. Firms generally use Expert Systems mostly to reduce time and costs while auditors have more time to take important audit decisions. Expert Systems bring more accuracy and consistency in the audit procedures and auditors can work faster without having to ask questions

to a senior auditor. The study also found that, Accountants are septic regarding the reliability of the financial information provided by automation. The lack of sufficient knowledge of Big Data and the analysis of the data could generate inappropriate results, accountants may not be able to analyze and interpret the results correctly.

Hallevy, (2013); Makridakis, (2017) a major opportunity exists for interdisciplinary work between accounting domain specialists and AI application specialists. This sort of collaboration could vault the development of AI in accounting forward significantly. By pairing those most knowledgeable about the accounting domains that could best benefit from AI development with those most knowledgeable about the AI applications and technologies that could or should be applied to particular types of problem, the discipline could see an explosion of fruitful research and development that far surpasses the theory and prototype development that currently characterizes the literature.

The artificial intelligence is having bondage with that existing accounting firm's specifically small and medium enterprise in developing countries relatively in Ethiopia. Off course, the aims are to explore the current opportunity and benefits of machine learning basically artificial intelligence and to determine the threats of using AI especially on South west part of Ethiopia on jimma and Bonga. Based on the above problem statements, this study had explored the AI opportunity and threats for accounting firms especially Small and medium enterprises (SME's) and addressed the following questions.

1. What are the current opportunity that Small and Medium Enterprises are benefiting from adoption of artificial intelligence in accounting functions and the way forward on south western part of Ethiopia especially at Bonga and Jimma.
2. What are the threats that Small and Medium Enterprises are facing from adoption of artificial intelligence in the accounting functions and the way forward on south western part of Ethiopia especially at Bonga and Jimma.

The general objective of the study is to explore the current opportunity and threats of artificial intelligence on Small and Medium enterprises accounting functions and the way forward at Jimma and Bonga, South western part of Ethiopia.

The specific objective of the study is:

1. To examine the current opportunity of artificial intelligence on small and medium enterprises accounting functions and the way forward at Jimma and Bonga, south western part of Ethiopia.
2. To explore the current threats from adoption of artificial intelligence on small and medium enterprise accounting functions and the way forward in Jimma and Bonga, South western part of Ethiopia.

LITERATURE REVIEW

Definition and Concepts underlining Artificial Intelligence and Accounting Functions

Artificial intelligence (AI) is a broad term that refers to technologies that make machines “*smart*” Organizations are investing in AI research and applications to automate, augment, or replicate human intelligence and analytical and/or decision-making and the accounting profession must be prepared to fully participate in organizational AI initiatives.

Actually the AI concept dated back to the 1950s but many of the technological breakthroughs occurred later on in the 1980s and 1990s. As a term, AI is applied to any technique enabling computers to mimic human intelligence and encompasses machine learning

and deep learning, being its subset. The history of AI applications in the accounting domain could be traced back to the 1980s. There are many other terms related to AI, such as, deep learning, machine learning, image recognition, natural language processing, cognitive computing, and intelligence amplification, cognitive augmentation, machine augmented intelligence, and augmented intelligence. AI, as used here, encompasses all of these concepts.

The most comprehensive definition of Artificial Intelligence was coined by McCarthy in (1956). According to the father of Artificial Intelligence John McCarthy, it is the science and engineering of making intelligent machines, especially intelligent computer programs. Artificial Intelligence is a way of making a computer, computer-controlled robot, or a software think intelligently, in the similar manner the intelligent humans think. One can accomplish AI by studying how human brain thinks, and how humans learn, decide, and work while trying to solve a problem, and then using the outcomes of this study as a basis of developing intelligent software and systems.

Goals of AI

AI has two major goals i.e. to create Expert systems which exhibit intelligent behavior, learn, demonstrate, explain, and advise its users, and to implement human intelligence in machines by creating systems that understand, think, learn, and behave like humans.

Artificial Intelligence Basics in Relation with Data

Big data means more than just large amounts of data refers to data (information) that reaches such high volume, variety, velocity, and variability that organizations invest in system architectures, tools, and practices specifically designed to handle the data. An algorithm is a set of rules for the machine to follow. An algorithm is what enables a machine to quickly process vast amounts of data that a human cannot reasonably process, or even comprehend. The performance and accuracy of algorithms is very important.

Empirical Review

An extensive research was conducted by academics and practitioners on AI application in auditing, taxation, financial accounting, management accounting and personal financial planning. The development and use of expert systems (ESs) in the accounting discipline is probably the most studied area. Dirican, (2015) and Hansen & Messier, (1987) considered as software programmers attempting to replicate human experts' behavior and expertise, store human knowledge and experience and transform it into rules thus trying to solve accounting problems and perform some accounting tasks.

Beside these early, even quite primitive attempts for automation, stands accountants' everlasting willingness to improve efficiency and effectiveness of their work and deliver more value to businesses. The recent technological breakthroughs in AI are now opening a new page in accounting discipline refocusing the research from ESs applications to some new perspectives towards accounting practitioners: how could accountants benefit from the use of AI capabilities, what is the long-term vision for AI and accountancy, how will AI change accounting roles in the organization. These new generations of machine learning systems have great impact on economics and business but they are also bringing new life style and sociological side effects (Dilek et al., 2015). The esteemed British theoretical physicist Stephen Hawking warned us in an

interview for BBC that “*The development of full AI could spell the end of the human race*”. His message that “*Humans, who are limited by slow biological evolution, couldn’t compete and would be superseded*” sounds like prophesy and echoes in many subsequent arguments and discussions. They probably the most cited distinguished men nowadays with their arguments against the risks inherited in AI technologies. We can hardly overpass their warnings about the end of humanity. Some of their advocates argue that the existential threat is real and it is possible humans to be superseded by robots in the near future. They will make better decisions, faster and free of bias. It seems that “*singularity*”, the moment when AI will match human intelligence, stands for the moment when the grim ending of the mankind will begin (Lenard et al., 2001; Miklos, 2000). The other study conducted by Lenard et al. (2001) and Miklos (2000), focused on Artificial intelligence which is “*100*” is a study led by Stanford University into the impact of AI over the next 100 years. They will study and anticipate how the effects of artificial intelligence will ripple through every aspect of how people work, live and play. A framing memo for the study calls out 18 topics, including monitoring and addressing possibilities of super intelligences and loss of control of AI. In addition to this, limited studies were conducted on developed economies concerning the current study basically on small and medium enterprises.

Conclusion and Identification of Knowledge Gap

The above empirical review of literature emphasizes that all the studies so far conducted were mainly focused on the new advancement in artificial intelligence and the accounting profession as an aggregate level specifically on developed economies.

By considering the stiff competition that business organization have, new advancement in technology basically artificial intelligence is found to be effective for small and medium enterprises accounting function at their start up and determining currently existing opportunity and threats for adoption of artificial intelligence is appropriate. Moreover, there is few and minimum study undertaken in developing economies especially in Ethiopia, the researcher can confidently concluded , almost no one had conducted on this areas and this study want to invest for upcoming researcher on this area. Thus, it is found to be appropriate to take up the present study entitled “*Exploring Current Opportunity and Threats of Artificial Intelligence on Small and Medium Enterprises Accounting Function; Evidence from South West Part of Ethiopia, Oromiya, Jimma and SNNPR, Bonga*”.

RESEARCH METHODOLOGY

In order to achieve the objective of this research, the study adapts Descriptive Research Design. The rational for choosing descriptive research design is; it used to explore the current opportunity and threats of artificial intelligence on small and medium enterprises accounting functions in Southwestern part of Ethiopia basically evidenced from Jimma and Bonga .The required data to explore Artificial intelligences opportunities and threats on SME’s was by using Qualitative Approach. The primary data was collected though structured questionnaires given with the degree by using likert scale. It is from all accountants on SME’s in Jimma and Bonga, Southwestern part of Ethiopia. All 28 accountants, 16 from Jimma and that of 12 from Bonga was the target population for this study. From total accountants operating in SME’s all accountants were selected as respondents since the study is easily manageable i.e N<30.. Census enquiry or total universe sampling technique was adapted to target the Small and Medium Enterprise (SME’S) in Southwestern part of Ethiopia (Jimma and Bonga) for exploring

opportunity and threats on their accounting function so as to maintain the stiff competition. Accordingly from the adopted methodology, the data was analyzed qualitatively and supported by theory based evidence.

RESULTS AND DISCUSSION

Opportunity of Artificial intelligence on Accounting function of SME'S

Before discussing the opportunity, it is better to see the evidenced facts behind artificial intelligence and accounting functions. Human workforce will not be eliminated in accounting firms but will have new colleague's machines-which will pair with them to provide more efficient and effective services to clients.

Machines can learn to perform redundant, repeatable and often at times, extremely time consuming tasks. However, there is currently no machine replacement for the emotional intelligence requirements of accounting work. Some of the possibilities that machines can take over include; auditing of expense submission where machines could learn a company's expense policy, read receipts and audit expense claims to ensure compliance and only identify and forward questionable claims to humans for approval. Machines could therefore handle the bulk of this task.

Machines Could Clear Invoice Payments

When customers submit payment that might combine multiple invoices or that don't match any invoice in the accounting system, it's time consuming for accounts receivable staff to apply payment correctly without making a call to the client or trying to determine the right combination of invoices. Smart machines could easily analyze the possible invoices and can match the paid amount to the right combination of invoices, clear out short payments or automatically generate an invoice to reflect the short payment without any human intervention.

1. Machines can do risk assessment. Machine Learning could facilitate risk assessment mapping by pulling data from every project a company had ever completed to compare it to a proposed project. This very comprehensive assessment would be impossible for humans to do on this scale and under a similar time line.
2. Machines can do Analytics calculation. The accounting department is usually asked many questions, such as, "What was our revenue for this product in third quarter last year?" Or "How has this division grown over the last 10 years?" Given the data intelligent machines can learn to answer these questions very quickly.
3. Machines can do Automated invoice categorization. Accounting software firm, Xero is deploying a machine learning automation system that will be able to learn over time how to categorize invoices, something that currently requires accountants to do manually.
4. Machines can do bank reconciliations. Machines can learn how to completely automate bank reconciliations. As accounting firms and departments begin to rely more heavily on machines to do heavy lifting of calculating, reconciliations, and responding to enquiries from other team members and clients about balances and verifying information, accountants and bookkeepers will be able to deliver more value to their clients and handle more clients than ever before.

According to the accountant's responses over the new technology (Artificial Intelligence),

the opportunity side were determined and analyzed as well supported here under with evidence.

As An Opportunity Side, Accountants Already Use AI

The accounting profession has embraced the computer revolution. The most prominent (and ubiquitous) computer program in the field is Microsoft Excel, whose digital spreadsheets hugely reduced the burden of accountants. Similarly, programs like Sage that allow people to access their books from wherever there is an internet connection, bring vast improvements to both accountants and businesspeople. Being able to see the present state of a business, and having a medium through which business information is more easily understood, allow for productivity gains – the less time spent on the tedious, means more time to spend on the more creative aspects (or, perhaps, more time for leisure). The fact is that an artificial intelligence that would make the accounting profession history would likely make most jobs redundant. The kind of problem-solving, creativity and pattern-finding that an accountant has to produce in their role requires a kind of intelligence that is not currently reproducible. It involves qualities of thought that are used by engineers, strategists, marketers, lawyers and other professionals. In the scenario in which artificial intelligence sophisticates to that point, it would fall to the newly-anointed artificially intelligent accountant to find a way to resolve the problem of comprehensive unemployment. While many of the number-crunching aspects of the profession are likely to fall, the business savvy and strategic competency that is inherent in the accounting profession will live on. One of the most required skills is the technical expertise in machine learning and the depth of knowledge depends on the organization's size, investment policy and innovation strategy. Despite these factors, it is important for accountants to understand the significance of quality of the used data. Machine learning implies recognition and application of patterns based on existing data points or examples, deriving own algorithms and refining them in time [17] "Teaching" the computer by using data sets requires special attention to their quality as mentioned earlier. Internal control procedures should be implemented to mitigate the risk associated with the inherent biases and other limitations of AI applications.

AI provides Intelligent Investments

AI backed investment management or "*automated wealth managers*" according to The Economist, are more likely to offer sound financial advice without having to bring aboard a full-time advisor. The reactive cognition based benefits of AI has piqued the interest of the global investment community as well. While such AI systems will allow for greater competitive advantages for individual investors, it still however also poses a great threat to the market. If every investor out there is armed with such AI systems, it might have significant detrimental effects on the entire market as it will greatly influence capital flows and macroeconomic policies. Quicker AI backed trading decisions can ultimately offset entire industries and markets.

AI can Improves Productivity

It is no mystery that proper implementation of AI would result in improved productivity and excellent resource management. Accountants all over the world are already using multiple software tools from CRM systems to business process management tools, to make better-

informed decisions. As the technology of AI keeps on advancing each day, more accounting automation avenues also keep popping up.

In addition, AI technology is already able to handle many accounting functions, such as tax preparation, payroll, and audits. Many of the leading accounting software providers, including Sage Peachtree accounting have incorporated AI technology into their software to handle basic accounting tasks, such as bank reconciliations, invoice categorization, risk assessment, and audit processes, like expense submissions and invoice payments.

Many of these standard tasks are extremely time-consuming, which has many accountants across the country worried about how the emerging AI technology will affect their billable hours. An even bigger concern is that AI technologies will replace the need for companies to work with accountants at all.

As a fear to threats, Artificial Intelligence is ready for prime-time transforming if not disrupting all the sectors of the economy that generate lots of data, from technology to finance, communication, energy, healthcare, mobility or manufacturing. Accounting hasn't seen much innovation since the creation of the double-entry bookkeeping, a process of recording both debits and credits and considered one of the greatest advances in the history of business and commerce. However, recent developments have seen the application of AI and machine learning technologies to bookkeeping as a reality with most of the major accounting Software vendors (basically sage Peachtree) offering capabilities to automate data entry, reconciliations and sometimes more.

Other Respondents responded that, AI is however augment the accounting function by doing all the tedious and repetitive tasks which are time consuming and therefore lucrative to the accountant. Well configured Artificial Intelligence systems will eliminate errors that are generally hard to find thereby reducing liability and freeing more time to the accountant to play an advisory role.

As a fear to threats, white-collar workers who are part of the knowledge economy were already beginning to experience what manual laborers experienced in the past when new technologies made their jobs obsolete. Many professionals fear for their future as machines threaten to overtake them given the improvements we have recently seen in computing. However, instead of accounting professionals developing some fear, it's an opportunity for them to be excited for the changes machine learning will have on accounting tasks. Repetitive tasks will shift to machines hence the profession is going to be more interesting. The changes will not completely eliminate human accountants but they will alter their contributions.

The Evidenced Based way Forward as Opportunity to AI

Machine Learning is the leading edge of artificial intelligence (AI). It is a subset of AI where machines can learn by using algorithms to interpret data from the world around us to predict outcomes and learn from successes and failures. As machines infiltrate accounting tasks to take over the more mundane and repetitive tasks, it will free up accountants and bookkeepers to spend more time using their professional knowledge to analyze and interpret the data to provide recommendations for their clients. Innovation in accounting will be propelled by machine learning. When cloud based services were introduced by accounting firms and eliminated desktop support, accounting firms were forced to adapt to life in the cloud. Consequently, accounting departments and firms will be forced to adopt machine learning to remain competitive since machines can deliver real-time insights, enhance decision making and capital efficiency.

Threats of Artificial Intelligence with that of Accounting Functions.

As AI systems evolve, it is conceivable that at some point they could provide autonomous knowledge. However, algorithms designed to achieve optimal efficiencies could inadvertently result in negative or unforeseen consequences. This “runaway effect,” which occurs when the very things we seek to fix or solve cause greater harm than good, is a hazard that should be considered. If we design systems to maximize productivity, we should be aware that negative side effects can arise in their wake. We may never reach point of AI sophistication when it can be relied upon to mitigate all possible negative outcomes.

AI: Learning, Evolving, Taking on Increasing Tasks

Accountants’ responsibilities often involve following long-established methodologies for information analysis and professional standards for report preparation. Specialized software already automates many accounting, tax, and audit data-gathering and processing tasks and provides the results to professionals who use their professional judgment to review. AI has the potential to completely transform the accountancy profession. According to a report from the Association of Chartered Certified Accountants, over the next two years, automation will alleviate many cumbersome processes, such as bookkeeping and transaction coding, enabling accountants to focus on advisory services and other higher-value work. As a result, the future will offer smart applications that drive value for accountants and their clients. The Economist also recently indicated that there is a 94% likelihood that AI will lead to job losses in the accountancy profession over the next two decades.

The Evidenced based Way forward for threats of AI

Alan Turing, one of the fathers of modern computing and subject of the recent movie *The Imitation Game*, concluded in his landmark paper, *Computing Machinery and Intelligence*, “we may hope that machines will eventually compete with men in all purely intellectual fields.” To date, we have already seen impressive progress of AI in many fields and directions and it would be wise for accountants to actively embrace its potential, rather than shy away from the uncertainties.

Part Five: Conclusion and Recommendation

In this part the study ,the major opportunities of artificial intelligence on SME’s of southwestern part of Ethiopia especially Bonga and Jimma town and its threats was discussed shorten as well possible recommendation had provided from thereof.

CONCLUSION

AI will not take over the jobs of management accountants, at least not in the near future despite the progress made in the development of Artificial Intelligence. However, AI has moved beyond taking over repetitive tasks and now contributes to helping professionals make smarter decisions. AI now helps professionals with tasks that involve data gathering, management and

analysis. The development in AI technology is even more relevant for managerial accountants. These accounting professionals aim to provide the company's management with critical accounting information that will help them make better decisions. With artificial intelligence entering financial and accounting services, it is important to assess how the technology redefines the roles of managerial accountants. It is therefore high time for every accountant to reflect on their job, identify the opportunities machine learning could offer them, and focus less on the tasks that can be automated and more on those inherently human aspects of their jobs.

Possible Recommendation

Based on the finding and detail analysis conducted in small and medium enterprises of accounting firms in Jimma and Bonga, Southwestern part of Ethiopia current opportunity and upcoming threats in adoption the advancement of new technology which artificial intelligence, the accounting firms shall consider the possible opportunity and train the staff to familiarize them with artificial intelligence but it is not as such advisable to consider only threats of adopting artificial intelligence since stiff competition on firms were existed. So, the accountants and accounting firms shall stay connected with new advanced technology such as machine learning and other artificial intelligence components so as to gain current opportunities and win or at least maintain stiff competition.

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