

**INFORMATION AND COMMUNICATION TECHNOLOGY AND THE
DEVELOPMENT OF ACCOUNTING PROFESSIONALS**

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**BEING A PROJECT WRITTEN AND SUBMITTED TO THE DEPARTMENT OF
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AWARD OF BACHELOR OF SCIENCE IN ACCOUNTING.**

MAY, 2024.

DECLARATION

I, **EHINEBOH Whitney Onosetale**, declare that the research work is based on the study undertaken by me in the department of Accounting, University of Benin under the supervision of Professor O. J. Ilaboya. This work has not been submitted elsewhere for the award of a degree. All the ideas and views of this project are products of the research undertaken by me, where the ideas and views of other researchers have been expressed, they have been duly acknowledged.

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CERTIFICATION

I hereby certify that this research work was done by EHINEBOH Whitney Onosetale with matriculation number MGS1907642 in the department of Accounting, University of Benin, Benin City.

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DEDICATION

I dedicate this research work to God Almighty, for the infinite mercy shown to me from the start to the end of this work. I dedicate this work to my father, Mr. Samson Ehineboh, of blessed memory.

ACKNOWLEDGMENTS

I thank the Lord Almighty for giving me this opportunity to complete this work. With deep gratitude I want to thank my supervisor, Professor O. J. Ilaboya, for the guidance and advice he has rendered to me during the course of this research.

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ABSTRACT

The study was carried out to examine how Information and Communication Technology has impacted on the development of accounting professionals in Nigeria. The study is an exploratory study which used the survey strategy with a deductive approach and quantitative method. The research instrument employed in this study is the close-ended questionnaire administered to the staff members of selected accounting firms. The data which was gathered from the research instrument are analyzed using the Ordinary Least Square method and descriptive and inferential statistics. The statistical package for social sciences (SPSS) was used for data analysis. The main findings from the study indicates that Artificial Intelligence, Cloud computing and Blockchain have a positive and significant relationship with the development of accounting professionals. The study concluded that the positive relationship which exists between artificial intelligence, blockchain, cloud computing, education and the development of accounting professionals emphasizes the importance of embracing innovation and investing in education within the accounting profession. The researcher recommended that accounting firms should embrace artificial intelligence, adopt cloud computing, leverage blockchain technology and focus on education and continuous learning in order to achieve proper development for accounting professionals.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The American Accounting Association(1966) defined accounting as ‘the process of identifying, measuring, and communicating economic information to permit informed judgements and decisions by users of information’. It is simply the process of recording financial transactions relating to a business and reporting the analyzed result to users of the information. This process was previously done manually with the use of books, pens and papers to prepare and record the financial transactions and calculations which was very tedious, time consuming and prone to several human errors. The errors can be little in small entities but it could occur more often in big entities without the possibility of the error being detected which can affect the entity in the long run. The manual system of accounting is without a doubt cheaper to operate than the automated accounting system but due to the growth in a business, there must be an inevitable shift from the manual system of accounting to the automated process. Accounting plays a crucial role in the success or failure of a business.

According to Chaffield(2007), the history of accounting in Nigeria dates back to the establishment of professional accounting bodies in the country. In 1965, the first indigenous body was established called the Institution of Chartered Accountants of Nigeria (ICAN) by an act of parliament. The institute is responsible for issuing guidelines on the practice of accounting,

training and certification of professional accountants in Nigeria. However, in 1993 another professional accounting body was formed by a decree which is responsible for ensuring best practices in the profession and it also participates in the regulation of accounting practices in Nigeria which is known as the Association of National Accountants of Nigeria (ANAN).

Technological innovations are drastically changing the professional environment where accountants work today. Ultimately, the role of an accountant is moving from a financial accountant to a financial analyst and management accountant who requires a broad set of knowledge, critical thinking skills, professional aptitude and decision making capabilities when compared to previous generations. The rapid development of Information and Communication Technologies (ICTs) have effectively facilitated the reorganizing of firm's business process and streamlining the provision of its products and services in today's dynamic business environment (Lientz and Laissen, 2008). According to Ruddock (2006), such adoption helps the modern organization develop and maintain their competitive advantage for ensuring their profitability and survival in the business. Just like many other industries, the accounting industry changed with the inception of personal computers and it is on this note that we examine the role that ICT is playing or has played in developing accounting professionals.

For an organization to achieve effectiveness and efficiency, it will require capacity to process accurate and timely information which leads to the need of Information and Communication Technology (ICT). Frequently, Information Technology (IT) and Information

and Communication Technology(ICT) are used interchangeably but ICT is a term which encompasses the role of unified communications, integrated telecommunications, computers as well as necessary audio-visual system, middleware, software and storage which helps users to access, manipulate, store and transmit information. IT, on the other hand, has been present for as long as people have been in existence because there was always a way to communicate. The history of Information Technology is in four main stages which are pre-mechanical, mechanical, electromechanical, and electronic but only electromechanical and electronic affect us today.

ICT has cut across all the aspects of activities in this modern day which may vary from small to medium and medium to large applications. The trend of human based which are more popular at times are now gradually fading out from our public and private corporate establishments. A new trend which is advent, versatile, effective, efficient and where the approach is computer based has now overridden almost all of the modern day industrial practices from the very first step of decision making to the final outcome. Information and communication technology constitute this computer based system which has increased and improved efficiency, effectiveness, performance, reliability, validity and other characteristics which are needed in modern day operations. ICT has developed a more intricate manner whereby transactions are taken care of in any financial system with optimal levels of performance. The way accountants can potentially add value to economic entities is going through a drastic change. Accountants

worth are now measured with higher order critical thinking skills which provides independent assurance and the integration of strategic knowledge.

Accounting professionals are expected to take advantage of Information and Communication Technology and its components to automate the existing processes for conducting the business in new and innovative ways. The growth within the accounting information system is becoming prominent with the use of ICT tool like cloud computing, accounting software, cybersecurity, data analytics, predictive analytics, artificial intelligence and blockchain. ICT has been seen to have affected the accounting profession in so many positive ways.

In the recent past, that is before the inception of ICT, accountants made use of a socially acceptable behavioral method for reporting accounting and economic reports which were carried out at accounting year ends. The accounts which were prepared include statement of profit or loss, statement of financial position, statement of cash flow, cash book among others. The ICT on accounting practice in Nigeria is becoming a prerequisite for local and international competitiveness. The way accountants make decisions on what and how to provide their service to the profession has been greatly affected by ICT and ICT has also improved the speed and quality of service delivery. A major development which ICT has done on accounting is the use of computerized systems to track and record financial transactions accurately and properly by organizations. According to Granlund and Mouritsen (2003), the recording of business

transactions manually has been translated and computerized for quick and easy presentation of financial transactions and reports. The use of ICT in many firms has helped to reduce transactional cost, overcome constraints of distance and have cut across geographical boundaries which assists in the improvement and coordination of activities within organizational boundaries (Shanker, 2008). It is clear without a doubt that the computerized accounting system has improved the functionality of accounting professionals by increasing the timeliness of accounting information and the preparation of different reports.

Computerized accounting systems have appropriate internal check and balance measures which ensures the transactions and accounts are properly balanced before the financial statement is prepared. With the inception of ICT, accounting professionals can process large amount of financial information and it is processed quickly. The quicker processing time for the transactions has lessened the amount of time needed to close out each accounting period. Transactions which would have taken an accountant a very long time to prepare is done quicker and faster thereby reducing high cost that would have resulted in preparing the reports (Pricewaterhousecoopers, 2015).

According to Fidelis (2013), the implication of technology has indeed caused obvious changes in firms relating to their accounting systems and organizational performance which is of great concern and interest. Companies have to consider ICT in their accounting decisions and plans in order to stay relevant and competitive. So far, ICT has improved business relationships,

facilitated speed and enhanced quality delivery. ICT is important for a firm's growth and survival, it is also an integral part and fundamental to support, sustain and grow a business (Ali et al., 2013). This study, therefore, seeks to examine how information and communication technology has impacted on the development of accounting professionals in Nigeria. It focuses on the overall performance of accounting and how the adoption of ICT has impacted on the daily operations of professionals.

1.2 Statement of the Problem

The manner that accounting professionals can potentially add value to the economic society is rapidly changing. The worth of an accountant is now reflected in his or her critical thinking skills like designing business processes, developing electronic business model among others high provides assurance and integrates strategic knowledge. ICT affects all processes that are associated with modern day accoun practices from its daily routine to strategic activities. There has been relatively little research done in the area of ICT as it affects accounting professionals despite its significance in the profession and the widespread use. Stefanou (2006) posits that a number of authors in various countries share similar views on the lack of research on accounting information system. It is against this that the study is focused on information and communication technology and the development of accounting professionals in Nigeria.

This study seeks to examine how ICT has impacted on the development of accounting professionals in their daily operations. To what extent do accounting professionals use ICT tools and how relevant is it to their advancement.

1.3 Research Question

This study seeks to provide answers to the following research questions:

1. What is the impact of artificial intelligence on the development of accounting professionals?
2. How has cloud computing affected the development of accounting professionals?
3. To what extent does blockchain impact on the development of accounting professionals?

1.4 Objectives of the Study

The broad objective of the study is to examine how ICT has impacted on the development of accounting professionals in Nigeria.

The specific objectives are to:

1. Examine the impact of artificial intelligence on the development of accounting professionals;
2. Ascertain the impact of cloud computing on the development of accounting professionals;
and
3. Determine the effect of blockchain on the development of accounting professionals.

1.5 Research Hypotheses

For the purpose of this research the following null hypotheses were formulated and tested to provide answers to the research questions:

1. There is no significant relationship between artificial intelligence and the development of accounting professionals.
2. There exists no significant relationship between cloud computing and the development of accounting professionals.
3. There is no significant relationship between blockchain and the development of accounting professionals.

1.6 Significance of the Study

The study is carried out to evaluate how information and communication technology has impacted on the development of accounting professionals. It is significant to different individuals in the society such as corporate organizations because it will enhance their knowledge on productivity, accuracy and cost efficiency. It is also important to investors and stakeholders because it provides them with information to help them assess the accounting system and make informed decisions. In the same vain, it is beneficial to both academiam and practitioners as it makes them understand the changes in the profession caused by ICT. More so, it will add to the existing literature.

1.7 Scope of the Study

The scope of this work is focused on accounting firms in Nigeria. The chartered firms were chosen because the accounting professional can provide all the adequate and necessary information that will be required in the research. The population sample will be drawn from accounting firms that employ information and communication technology in their daily operations and the study was carried out in the year 2024 in Nigeria.

1.8 Limitation of the Study

The following are some limitations that was faced will carrying out this research

1. The research was done on a sample which might not accurately represent the entire population.
2. Unavailability of similar works or materials on this topic.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section deals with three main aspects which include; conceptual review, empirical review and theoretical review. Concepts and theories relating to ICT and the development of accounting professionals will be examined if any, this is done for a better understanding.

2.2 Conceptual Review

2.2.1 Accounting Profession

The accounting profession is one complex field which has gone through significant changes over the years. In the business world, it is currently considered a very lucrative and important profession. Accounting is essentially the practice of systematically recording, reporting and analyzing financial transactions and information which relates to an individual or business organization (Needles & Powers, 2021). The accounting profession has some key aspects which include; bookkeeping, financial accounting, management accounting, auditing and tax accounting. Onaolapo and Odetayo (2012) saw accounting as a language of business due to the fact that it records all transactions of an individual, organization or other bodies which can be stated in monetary terms. The accounting profession plays a crucial and pivotal role in facilitating the growth and development of individual companies. It provides crucial support and sustenance to non-profit organizations and in the same vain assists government in attaining their

economic and social objectives. It additionally acts as a catalyst for promoting performance in financial markets by means of effectively reporting and providing assurance on financial information. Accounting profession is mainly concerned with the measurement, provision or disclosure of assurance on financial information which aids users of the information such as managers, investors, or firms and others, make adequate and informed decisions on resource allocation. An accounting professional is constantly involved in the process of decision making in every corporate business.

The core of the accounting profession entails financial reporting and assurance. Financial reporting is the dissemination of financial information which relates an organization to the external stakeholders. This information assists them in making informed economic decisions and evaluating the managerial process of the organization. Assurance, on the other hand, entails the accounting professional in practice to express a valid opinion or conclusion and the purpose of this opinion is to boost the confidence of the intended users. The accounting profession is a dynamic field that is constantly evolving due to the advent of Information and Communication Technology.

2.2.2 Development of Accounting Profession and Professionals

Every accounting professional is aware that accounting serves as a fundamental means of communication in the current business world. This language or mode of communication has been through a lot of diverse modifications over the course of time. The coming of Information

and Communication Technology has consistently played an important role in facilitating the duties of accounting professionals and their ability to scrutinize quantitative data. The accounting professional has essentially moved from a basic financial accountant to a financial analyst that possesses the aptitude to interpret the language of a business.

Modern accounting dates as far back as the twelfth and thirteenth centuries where the double entry bookkeeping method was developed. *Summa de Arithmetica, Geometiria proportioni et Proportionaliti* published in 1494 by an Italian monk named Luca Pacioli, was the first book which had a complete description of the double entry system (Helmkamp, Indieke and Smith, 1986, p.3; Glautier and under Down, 1982, p.5; Omolehinwa, 1994, Ogundele, p.9). In the Industrial Revolution of the 18th and 19th Century, the size and complexity of business grew immensely. It required more advanced accounting techniques and this gave birth to the need for full time accounting professionals. Different professional bodies were established for accountants which helped to provide training programs and set standards. Accounting has developed and evolved overtime as a profession and has attained a status which is equivalent to the profession of law and medicine. The formal accounting and accountability which we know today has evolved in our country with the coming of expatriates into our land.

In Nigeria, credit should be given to the military era because it was during this time that most bodies and laws regulating the accounting profession and professionals were established. It

is only worthy to note that the major gains as well as crises which branded the accounting profession were witnessed and took place under the military regimes (Uche, 2002).

In 1960 before the independence of Nigeria, there existed little professional accounting activities in the country, and these activities were mainly in the multinational enterprises sector which were under the guidance of British accounting system. At the time, Nigeria was a British colony which like all others inherited accountancy and company law from the British. The requirements for disclosure and reporting of events and transactions were based on the British system. Large international accounting firms have a significant impact on the accounting systems in Nigeria, in addition to multinational enterprises. In fact, these international accounting firms have dominated the country's accounting and auditing practices. The main and primary reason for their presence in Nigeria is the longstanding connection between multinational enterprises and international accounting firms, while the absence of domestic accounting firms serves as another contributing factor. Therefore, the development of the accounting system in Nigeria has been greatly influenced by foreign enterprises. Immediately after Nigeria's independence, Nigeria began the professionalization by organizing different professionals into various groups. One professional group that emerged was the Association of Accountants in Nigeria (AAN) which is now the Institute of Chartered Accountants of Nigeria (ICAN), other bodies or groups were also established for other professions (Wallace, 1992).

The professional bodies established and the members due to their education, training and origins became replacements of the expatriate personnel. The development of accounting profession and professionals in Nigeria had been derived from the British accounting practices. The people who promoted the formulation of the first accounting body in Nigeria were members of accounting bodies in the UK such as the Institute of Chartered Accountants of England and Wales (ICAEW), the Institute of Chartered Accountants of Scotland (ICAS), and the Association of Chartered Certified Accountants (ACCA). Mr. Akintola Williams was the first Nigerian to qualify as a professional accountant in 1949. He was admitted into ICAEW subsequently in 1960 (Wallace, 1992).

The first step, post-independence, in the development of accounting profession was the formation of the Association of Accountants in Nigeria which was a body corporate registered under the then Companies Ordinance and had the objective to provide a central organization for accountants and auditors and may generally take actions that are necessary to maintain a strict standard of professional ethics among the members and to promote a higher sense of importance for systematic and modern accounting to encourage greater efficiency (Uche, 2003).

In 1965, the first indigenous professional accounting body in Nigeria was established called the Institute of Chartered Accountants of Nigeria (ICAN). It was created by a parliamentary act and is in charge of certifying and teaching accounting professionals in Nigeria. It also has the duty of issuing regulations on the practice of accounting. In 1993, another

professional body was formed through a decree which is called the Association of National Accountants of Nigeria (ANAN). It is responsible for ensuring best accounting practices and the regulation of the general practices in Nigeria (Uche, 2003). These two bodies have locked heads since the inception of ANAN over issues relating to superiority and legal responsibility (Uche, 2003). This cannot be said for accounting bodies established in the UK and USA. According to Salisu (2015), the later established professional bodies work expertly and tirelessly to achieve full status recognition because they fight for the common good of the profession and expose their efforts to the public to gain appreciation and confidence. Accounting education is very important to every accounting professional as it is key for standard setting and a cornerstone used by professionals to get productive membership in the society. A professional accountant is expected to have basic attributes such as technical skills, intelligence, good personality and conduct.

Accounting profession today is highly specialized and a global profession where accountants must acquire different certifications and licenses. It also has increased regulations enhancing the quality of information in the various and diverse areas of accounting. The advent of Information and Communication Technology has also transformed the profession and its professionals. The accounting profession has ultimately changed or evolved from ancient record keeping to a complex and global industry which has various specializations and technologies. The accounting professionals continue to provide their vital services such as tracking, reporting and analyzing financial and non-financial information for organizations and individuals.

2.2.3 Information and Communication Technology (ICT)

Using computer application programs to perform accounting tasks and operations is a recent breakthrough in the technological world (Imene & Imhanzenobeone, 2020). Information and communication technology is popularly known as ICT. This concept has been defined in many similar ways by different scholars and bodies. ICT can be defined as the acquisition, processing, storing and disseminating of vocal, textual, numerical information and pictures by a microelectronic-based combination of computing and telecommunications (Karl, 1961). ICT involves a wide range of activities and equipments which are accessible and available through computers and they include all the tools, applications and information. It encompasses various forms of information delivery systems like computers, internet, radio, television, newspapers among others (Unchidiuno, 2006). Many information and communication tools are necessary and useful in every development process when it comes to technological advancement.

According to UNESCO (2009), ICT refers mainly to the technologies used for accessing, gathering, communicating, manipulating and presenting information. ICT has developed rapidly thereby ensuring faster communication, easy access to information and encouraging new innovations across all sectors (Lwoga, 2016; Rao et al., 2016). It has impacted greatly on many aspects of our daily lives in aspects such as education, business, government, healthcare among others. The world we know today is transforming into a global village where information and communication is paramount. ICT is the sharing and impacting of information via the study and

use of computers for receiving, transferring and storing information. The accounting profession and its practitioners have been impacted by ICT infrastructure, which is crucial for a nation's rapid economic and social development (Hajela, 2015).

Accounting professionals are required to be competent in using their technologies in the profession and this is prevalent in the profession. ICT aids the profession to implement and achieve good and best practices (Kwanchukwu, 2004). It is unphantomable to work on a computer in today's world that is not connected to a network. ICT enhances productivity, analysis, reporting and decision making in every action process. According to Ali et al. (2013), ICT is necessary for a firm's growth and survival as it is an important part and fundamental to support, sustain and grow a business. For a company to stay relevant and competitive, its accounting decisions and plans have to be made while taking ICT into consideration. These computerized systems have improved the functionality of accounting professionals in a firm. This has in turn increased the timeliness of accounting information, efficiency and minimizing errors to ensure customer satisfaction.

The main purpose of information and communication technology is to assist the accounting professionals in preparing financial reports and to increase the financial performance of the firm. Some specific functions of ICT includes;

1. Communicating information to decision makers.
2. Recording, processing and interpreting data and information which is financial in nature.

3. Classification of similar events and transactions which helps in trend analysis of the event under consideration.

Modern accounting is filled with the instances of the usage of ICTs in accounting processes and auditing processes. Research has been conducted in the use of ICT in accounting, the result has been reported in academic papers and official reports derived from professional and regulatory bodies. Professionals and qualified educators in accounting have also contributed to increase the use of ICT in the education curriculum (Chang & Hwang, 2003). In order to become an accounting professional, a student must have at least general knowledge of ICT in areas which ensures good working knowledge and a changed business environment. ICT encompasses the following areas: internal control in computer based business system, standards and practices for business systems creation, acceptance of ICT management and implementation, information security management, artificial intelligence, expert systems, fuzzy logic and electronic commerce systems (Ricco et al., 2002). The new business environment of accountants involves the use of accounting information system for enterprise resource planning. Accountants are now required to make use of management information system and other expert systems to help in the decision making process and strategic level planning. These systems have changed the work routine of accounting professionals and influenced their development in that they now hold wealth of knowledge on any issue and artificial intelligence can be used to proffer solutions in any given situation.

2.2.4 Artificial Intelligence (AI)

Defining the concept of artificial intelligence is evolving just as it is itself. Artificial intelligence is a system which is programmed to think, behave and work just as human intelligence does things in a much better way than humans through the experimental aspects of computer science used in programming an intelligent machine that can operate on various activities or tasks by using its intelligence (Dongre et al., 2020). Artificial intelligence was defined by Ezeribe (2019) as the process of programming a computer, robot under computer control, or software to think and act intelligently, much like the human mind. It is also defined as a software or program which has the ability to carry out tasks which only the human brain is expected to perform (Odoh et al., 2018). The activities include capacity for knowledge, the ability to acquire it and it also consists of the ability to judge, understand and produce relationships and original thoughts. AI is a combination of “artificial” and “intelligence” where artificial refers to made by humans and intelligence involves consciousness and self thinking (Panmunjom, 2015). It mainly encompasses when a computer has the ability to think just as a human and undertake the work that can be done only by a human. This is done through simulating the thinking process which includes two ways such as structural simulation and functional simulation. Structural simulation involves the development of intelligent machines which imitates by studying the internal structure and mechanism of the human brain. Functional simulation mainly focuses on simulating the thinking process of a human brain. The AI machine

can be divided into weak AI and strong AI on the basis of its thinking and reasoning ability. The weak AI does not have the ability to think, reason and solve problems independently while the strong AI can think, reason and solve problems autonomously and independently. AI has also been suggested to be the mechanical simulation system used to gather knowledge and information which processes intelligence of the universe (Greeks, 2014). This mainly includes the gathering, interpreting and dissemination of knowledge and intelligence to eligible parties in the form of actionable intelligence. According to Haenlein and Kaplan (2019 as cited in Zemánková, 2019), it is the ability of a system to accurately understand external data, learn from it and apply what is learnt to accomplish specific goals and tasks through adaptation. Elaine (2000 as cited in Chukwudi et al., 2018) saw artificial intelligence as the study of how to make computers perform tasks better than humans.

In another perspective, AI can be seen as software programs which attempts to copy human expert's behaviour and expertise, then store the knowledge and experience and in turn change it into commands used to solve accounting problems and perform some accounting tasks (StanchevaTodorova, 2018). He also added that AI aims to make an intelligent machine that can react and behave in ways similar to humans. The financial organization is rapidly changing with the advent of AI, it increases its operated functions and operational efficiency level with minimal efforts (Odoh et al., 2018). PriceWaterhouseCooper (2019) said that the distinguishing factor between AI and other technologies is its ability to understand its environment and perform tasks

which normally requires human intelligence in a relatively short amount of time. In essence, AI is a technology that is self-sustaining and evolving and the more it does, the smarter it becomes to the extent that machines can now teach other machines and learn new jobs.

Artificial intelligence has a variety of practical operations which includes face recognition, audio and image processing and intelligent hunt that is beneficial to the profession in numerous ways. AI is combined with accounting information systems and it has a huge impact on the accounting profession and its professionals. It is also referred to as Cognitive Technology or Cognitive Computing. It encompasses a broad compass but not all the aspects are of significance and applicable to accounting (Kokina & Davenport, 2017). AI has a far reaching influence that is prominent across diverse business functions which is applicable in functions such as production, distribution, sales and marketing, accounting, finance, procurement, inspection, exploration or research and development among others. Presently, artificial intelligence is extensively used in the day to day operations of different industries. Due to the repetitious work of the accounting professionals, the use and operation of AI is logical in the accounting profession. With the commencement of AI, the accounting industry has achieved a significant shift from the manual system of accounting to computerized accounting and now to intelligent accounting. This intelligent accounting system is not without problems as they are in varying degrees in the industry such as inaccurate accounting information, high labor cost, high error rate of accounting information and poor punctuality of accounting information of timeliness.

At the same time, AI is a trouble to low position or entry position accounting staff as they can be replaced at anytime but AI is profitable to the industry as a whole. Research has shown that AI has been applied in different focus areas in accounting and auditing and it includes but is not limited to experts systems, continuous auditing, decision support systems, neural networks, deep learning, machine learning, natural language processing, fuzzy logic, genetic algorithm, robotic process automation and hybrid systems.

2.2.5 Cloud Computing

Cloud computing is a component of information and communication technology that has become very relevant in the global world. Pyke (2009) and Buyyasi Broberg (2009) defined cloud computing as an amorphous collection of services that are accessible from any location via an internet-connected mobile device provided through a parallel and distributed system of interconnected virtualised computers and it can be dynamically supplied and presented as a computing resource or a group of unified resources as agreed by the service provider and user. Cloud computing technology covers hardware and software equipments employed in data centers for supplying informative applications through the internet (Armbrust, 2010). The foundation of cloud computing is based on a comparison of enterprise resource systems, office software, and email, with the addition of ubiquitous resources shared by multiple users (Chinyao Low, 2011). According to Aggarwal and McCabe (2013), the features of cloud computing includes service

selection based on demand, wide access to network, confidentiality, high scalability, agility, fast flexibility, and resource coalition.

With regard to Nigeria, cloud computing policy, cloud computing is referred to as computing model developed for ubiquitous, conveniences, for accessing on demand and access to real time network, a pool of configurable and highly provisioned computing resources such as networks, servers, storage, applications and services, among others that is required by Financial and Performance Information System (FPIS) and Small and Medium Scale Enterprises (SMEs) to carry out their business activities and operations (National Information Technology Development Agency, 2019). Another definition of cloud computing provided by the National Institute of Standards and Technology is a concept created to improve and facilitate convenience when utilising an on-demand network to access a pool of shared data services which can be quickly provisioned and released with little management effort, this definition lended credence to the definition given by the National Information Technology Development Agency. Cloud computing mainly refers to various technology put in place to allow the easy access to computer hardware and software which has already been installed on a computer or elsewhere in a network that is made available to the users as a service by another business over the internet. This technology mainly leverages the internet and a centralized remote server to maintain data and applications.

Cloud accounting takes the concept of cloud computing and applies it to accounting. The relationship between these two concepts is that cloud computing is the delivery of services such as software, information and shared resources through a computer and other devices over a network mainly the internet while cloud accounting is the access of accounting software and data through the internet. A third party provides cloud based applications through a web browser or mobile application while the software and data is stored remotely on located servers and accessed by end users. Cloud accounting entails the access to accounting software and data via an internet browser. This software is provided on a subscription base and it is stored on a remote server. To access this service, a user login must be used to control the data. Data sharing is now made easier as it avoids the physical movement of data from one computer to another.

The adoption of cloud computing in Nigeria is seen to be highly imperative because of its cost-effectiveness and efficiency in reporting and delivery of financial data. With this new innovative technology, many establishments are now equipped with the resources they need to provide and deliver cutting-edge services that are easily accessible to the users (Scholastica & Francisca, 2019). Many things have changed in the field of accounting and in the work of accounting professionals with the coming of emerging technologies. It has greatly improved the accounting process making it more effective and efficient in its resource management. Cloud computing has helped most business establishments to increase or expand their scope, become more adaptable to changes in the environment and improve their profitability (Kuliya et al.,

2015). Consequently, cloud computing is an accounting software that enables users to store, transfer files and run applications online. Cloud computing are the data centers that are accessible to several users over the internet. The functions from central servers are spread over different locations by large clouds. There are mainly three types of clouds which are operational in every entity and it includes: enterprise cloud, public cloud and hybrid cloud. Enterprise clouds are only available to one business or entity; public clouds can be accessed by different firms; and hybrid clouds are a combination of both enterprise and public cloud.

The hosting of cloud accounting software is done on a remote server. This is similar to the Software as a Service business model which provides accounting capabilities to business establishments. This technology frees the enterprise from the hassle of installing and maintaining software on individual computers. Staff members or professionals who work from home or other branch offices can also access the same data and software version. Cloud computing software is also known as Web-based accounting software or Online accounting software. The advanced cloud computing has proved its value in the information technology sector when a firm may have its financial data evaluated from the internet with the use of a network (Osintsev, 2013). Record keepers, commercial owners and other interested parties can decide to work together with mutual benefits to distribute financial data irrespective of their locations through a digital framework in a situation where records are not kept locally (Otilia & Marian, 2015).

2.2.6 Blockchain

Satoshi Nakamoto invented blockchain technology to circumvent intermediaries like financial institutions thereby enabling peer-to-peer transactions in 2008 (Short, 2018). He suggested the use of peer-to-peer distributed ledger to realize this purpose. The use of the end to end encryption and agreement mechanisms were made to create immutable exchanges across a network (Guo et al., 2016). The double spending problem was solved using the blockchain technology (Nakamoto, 2008). The problem was solved by designing a framework to track and identify who possess the funds and he should be the one authorized to spend it only once to prevent dual spending. Blockchain technology merges both technological and non-technological elements. The incorporation of these features allows the exchange of important and valuable products with or without the participation of a centralized organization (Guo & Liang, 2016). The characteristics which this technology provides include anonymity, decentralization, security and integrity of data without the need for intermediary entities or centralized authority. When comparing centralized systems to the blockchain's decentralized characteristics, data transparency can be facilitated (Yli-Huumo et al., 2016).

Blockchain is essentially a distributed ledger that keeps a valid history as proof of all activities carried out on a network of connected systems. Transactions under this technology are grouped in blocks which are cryptographically chained in an immutable manner which in turn generates an irrefutable history mathematically. Data can be stored in several locations and continually reconciled through a shared database with blockchain technology. Blockchain

produces identical blocks of information across a network which cannot be controlled by a single entity and this ultimately removes or eliminates the possibility of having a single point of failure. It has a secure validation mechanism for every transaction using a sophisticated encryption technology. Every transaction on the blockchain can be recorded, arranged sequentially based on occurrence, updated and verified for validation purposes. The relationship between identities, transactions and ledgers creates transparency thereby fostering trust on a blockchain network. Thus, it makes it possible to trace an entity's transaction path from its source and sink it with remarkable security and transparency (Ahishakiye et al., 2018).

Blockchain initially served as an underlying infrastructure for cryptocurrencies like bitcoin. However, with the passing of time it has shown to be more advantageous in other aspects than merely being the technology behind bitcoin. Financial institutions are optimistic that blockchain will reduce the cost of operational functions such as trading, settlement and international payments (Irrera & Shumaker, 2017). Blockchain gives assurance to users that the quality of their stored information will remain untapped and unadulterated. The inception and development of this technology has also enhanced the accounting profession and its professionals as it has inhibited the problem which comes with the field such as loss of data, mistake in recording transactions, errors in financial statements, challenge of working with large numbers amongst others. With every advantage comes a disadvantage as there has been an increase in the level of internet fraud, scammers and hackers. Accounting firms are not free from

the menace but a proper understanding of blockchain and how it works can be used for protecting the accounting information and also the accounting world.

There exists four types of blockchain technology used in accounting and it includes public blockchain, private blockchain, federated blockchain and hybrid blockchain. Public blockchain is also known as permissionless which allows records to be “shared by users, updated by miners, monitored by everyone and owned or controlled by no one” (Swan, 2015). It allows any organization or individual to join the network which is beneficial in decentralization but it has speed limit based on the quantity of transactions which can constrain the application for large scale use. Privacy is a major setback to this type of blockchain. The private or permissioned blockchain is a type of blockchain technology with restrictions on its control procedure and membership. It is partially decentralized due to the fact that the members have varying control over authorization of access but with a greater privacy potential. In this type of blockchain, it defines the role of participants, and only certain members can gain access to it, write information on the blockchain and approve new members admission. Federated or consortium blockchain shares similar features with the hybrid blockchain because it has both public and private characteristics, its difference is that there exists multiple collaboration of organizational members on a decentralized network. It is a private blockchain with limited access to a particular group which eliminates the risks associated with one entity controlling the network. In this blockchain, consensus procedures are controlled using preset nodes. The member nodes have the ability to

receive or initiate transactions (Parizo, 2021). Hybrid blockchain is a type of blockchain technology which combines the private and public blockchain characteristics. It allows an organization to set up a permissioned and permissionless system which permits them to control the access to specific data stored in the blockchain and determine data which can be opened publicly. Using this technology, records and transactions are not made public but can be verified when needed through a smart contract. When a user joins a hybrid blockchain, they have access to the network. The identity of the user is protected from other users unless in the case where they are engaged in the same transaction, their identity is revealed to the other party involved (Parizo, 2021). Through the use of blockchain, credible transactions, reduced fraud and increased transparency, increased transaction security and time savings is possible. Blockchain also has various implications in accounting as there has been a drastic shift. The implications are seen through elimination of occurring errors, elimination of unnecessary expenditure, increased transactional transparency and verification through computers (Watson & Mishler, 2017). These prove that blockchain has a positive impact and is highly beneficial on real time accounting practices (Byström, 2019).

2.3 Empirical Review

2.3.1 Artificial Intelligence and the Development of Accounting Professionals

Edogame (2022) examined the impact of artificial intelligence on the development of accounting system. The work assessed the effects of the introduction of AI-based system in the

field of accounting, dividing artificial intelligence into expert system, robotic process automation and machine learning to determine the extent in which the world of accounting system evolved. To achieve this, a survey research design was adopted with the use of quantitative data and a questionnaire was made to elicit answers. The study found that there is a positive significant relationship between Artificial Intelligence (expert system, robotics process automation and machine learning) and the development of accounting system. Hussin et al. (2024) in their work, examined the impact of artificial intelligence on the accounting profession. The study investigated how AI technologies have reformed and changed the accounting field, redefined the roles and responsibilities of accounting professionals. The study employed qualitative methods using extensive Scopus database to collect relevant articles and literatures. The result found that the impact of AI on the profession can be divided into three themes which are automation of routine tasks; enhanced data analysis and; value added transaction processing. The findings of this research was positive suggesting the profession is evolving in response of AI technology and accountants should embrace the change in order to be at an optimal level in their work.

Kwarbai and Omojoye (2021), in their work Artificial Intelligence and accounting profession, investigated the effects of artificial intelligence and the accounting profession in Nigeria using accountants in the Big four which includes KPMG, Deloitte, PriceWaterhouseCoopers and Ernst and Young. The study employed a survey research design using quantitative data. The findings of the study showed that Artificial Intelligence has positive

significant effect on reporting accuracy, anomalous detection and data analytics in the accounting profession. It concluded that AI is significant to an improved system in the accounting profession. Odoh et al. (2018), aimed in their study to examine the effects of artificial intelligence on the performance of accounting operations among accounting firms in south east of Nigeria. They employed a descriptive research survey type using primary and secondary data. The result of the study revealed that expert system and intelligent agent have a significant effect on the performance of accounting functions in accounting firms in south east of Nigeria concluding that AI positively influenced the performance of functions in accounting.

2.3.2 Cloud Computing and the Development of Accounting Professionals

Onyali et al. (2016) examined the use of cloud computing and accounting packages on the accounting system for corporate firms in a developing country from the perspective of corporate stakeholders. They carried out an exploratory study employing a questionnaire to gather data. The data was analyzed using descriptive statistics and the findings of the study was that the use of cloud computing packages in corporate business transactions by the firm in a developing economy does not significantly have a beneficial impact on corporate stakeholders. Al-zoubi (2017) carried out a study to identify the impact of cloud computing on the elements of accounting information system. A descriptive approach was adopted in the work by collecting previous literatures relating to the topic. The result of the study was that cloud computing leads to the reduction in the size of an establishment with respect to buildings and offices. It also leads

to improved operational performance and efficiency and it allows the use of software and physical equipments by firms without the constant need to buy the software and install it on their computers.

Awotomilusi et al. (2022) assessed the adoption of cloud computing on the efficacy of accounting practices in Nigeria. The study employed frequency and ordinary least square regression to analyze the data gathered from the questionnaire. The findings of the study was that cloud computing exhibited a positive significant relationship with efficacy of accounting practices. It also found that technological advancement and security efficiency showed a significant relationship with the dependent variable while cost-effectiveness revealed a negative significant relationship. Due to the various issues surrounding the technological advancements among enterprises and the business sector, Bangalore et al. (2019) examined the challenges in the adoption of cloud based accounting among sole- proprietaries and Chartered accountants in Bangalore. Data was gathered through a questionnaire and analyzed using ANOVA and Likert scale. The result showed the major challenges in cloud based accounting adoption from the view point of Chartered accountants. The conclusion from the author was that lack of technical know-how and high information costs are the major problems from the non-adoption of cloud accounting mostly in the private audit firm.

2.3.3 Blockchain and the Development of Accounting Professionals

Singh et al. (2023) examined the effect of blockchain technology on the accounting professional. The study adopted a survey design and employed descriptive statistics, one sample t-test, correlation and regression to analyze the data gathered. The findings of the study was that technologies increase the control of big and large firms. It was also found that the knowledge and involvement of the professionals will aid in the development of blockchain. The impact of blockchain on the accounting profession will aid the increase in knowledge and understanding of potential benefits of the technology for accounting professionals. Ajayi et al. (2022) investigated the impact of blockchain on financial technology in Nigeria. They employed or adopted a systematic review using qualitative data and six scholarly papers were chosen and reviewed. The data gotten was divided into four major themes which includes; concept, importance, impact and challenges of blockchain on financial technology in Nigeria. The findings showed that blockchain technology has the ability to improve the efficiency of different areas of the financial industry.

Pugna and Dutescu (2020) explores the potential for the application of blockchain in accounting by identifying the shortcomings and benefits while analyzing the opportunities and possible threat. This research is an initial phase in a broader research project which addresses the implications of blockchain technology for the financial sector. A qualitative research approach was employed and an extensive analysis of both business and scientific literature relating to organizational issues raised by blockchain technology was done. It was found that blockchain

can potentially increase the accounting information and it also has the potential to reduce errors in disclosure and earnings management. Blockchain technology will also change the role of financial accountants. Ajayi-Nifise et al. (2024) examined blockchain and its transformative potential to enhance transparency and integrity with U.S accounting practices. The study employed systematic literature review and content analysis methodology drawing from a range of reviewed articles, industry reports and authoritative database. The key findings of the study was that blockchain acts as a catalyst for transparency and integrity in accounting, also offering a decentralized and immutable record -keeping system which reduces the occurrence of fraud and errors. The study highlights the significant role of blockchain in changing accounting practices and it emphasizes the need for continuous exploration and strategic integration of blockchain in the accounting sector.

2.4 Theoretical Review

This section is going to analyze different technology adoption models and theories. The theories which are going to be examined include theory of diffusion of innovation, theory of task-technology fit, theory of reasonable action, theory of planned behaviour and technology acceptance model.

2.4.1 Theory of Diffusion of Innovation

This theory was propounded by Everett M. Rogers in 1962 which is widely accepted and it explains how new ideas, practices and technologies spread and are adopted through a social

system over time. The theory examines the process by which an innovation is communicated and adopted by the members of a social system (Rogers, 2003).

Rogers (1995) posited that the concept of diffusion of innovation which was aimed at providing a solid base for conducting research on the acceptance and adoption of innovations. Rogers collected and amalgamated findings from 508 diffusion studies to formulate the theory of diffusion of innovation which elucidates the process whereby an innovation is disseminated to the members of a social system over a certain period of time (Rogers, 1995). It is the process where the members of a social system communicates an innovation through certain channels over a time period known as diffusion. The theory explained the adoption and execution occurred after going through different stages which includes understanding, persuasion, decision, implementation and confirmation which led to the development of Rogers (1995) s-shaped adoption curve of innovators, early adopters, early majority, late majority and laggards. The innovators also known as risk-takers are the first individuals to adopt an innovation. The early adopters are often opinion leaders who adopt an innovation after the innovators and have a great degree of influence within the social system. The early majority are the individuals who adopt an innovation after sometime but typically before the average members of the social system. The late majority are individuals who adopt the innovation after the early majority and are typically cautious and skeptical to the idea. Laggards are the last to adopt an innovation and are mainly resistant to change and are traditional in their behaviour. The theory of diffusion of innovation

holds a considerable significance in the success of an organizational implementation because of its market orientation.

2.4.2 Theory of Task-Technology Fit

The theory of task-technology fit was propounded by Goodhue and Thompson in 1995 to explain the link between information technology and individual performance. The focus of this theory is that the performance of individuals will be enhanced when the technology capabilities employed matches the requirements of the task being undertaken or performed (Goodhue & Thompson, 1995).

According to Goodhue and Thompson (1995), the theory mainly focuses on individual impact which pertains to enhanced efficiency, effectiveness and superior quality. They posited that a strong alignment and relationship between tasks and technologies increases the chance of utilization and enhances performance impact due to the fact that the technology closely fulfills the needs and desires of users. The task-technology fit is particularly useful for assessing the application of the available technology in the market place such as Google play store or Apple store application among others.

The theory suggests that task characteristics, individual characteristics and technology characteristics affects performance and influence the task-technology fit (Goodhue & Thompson, 1995). Task characteristics are the actions performed by individuals in turning inputs to outputs which includes non-routines, interdependence and time management. Technology characteristics

are the features and capabilities of the technology being used such as reliability, functionality and ease of use. Individual characteristics are factors which influence the individual ability to use the technology effectively such as motivation, training, and others. The theory posits that a good task-technology fit leads to improved individual performance which is measured in terms of efficiency, effectiveness or quality (Goodhue et al.,1995).

2.4.3 Theory of Reasonable Action

This theory is widely accepted in the field of social psychology. The theory of reasonable action was propounded by Martin Fishbein and Icek Ajzen in 1975. The theory examines and predicts an individual's behaviour based on their behavioural intentions which influences their attitudes and norms. The theory is a widely used theoretical framework which explains a key determinant of behavioural intention that is specifically an individual's attitude towards a particular behaviour.

According to Fishbein and Ajzen (1975), attitude is an individual's assessment of an object while belief is the connection between an object and its attributes or characteristics. Behaviour in this theory is conceptualized to be an outcome or intention. An individual's behaviour is determined by their intention to perform that behaviour and the intention is influenced by two factors; attitudes towards the behaviour and subjective norm. Attitudes are effective in nature and are shaped by a set of beliefs in regard to the behaviour's object. The other factor is subjective norms which shows their perception of the immediate community's attitudes towards a specific

behaviour. The stronger the intention to perform a behaviour, the more the individual is likely to engage on that behavior (Fishbein & Ajzen, 1975).

2.4.4 Theory of Planned Behaviour

The theory was propounded by Icek Ajzen in 1985 as an extension of the theory of reasonable action. Ajzen (1991), formulated the theory of planned behaviour which pertains to a determinant of an individual's behavioural intention based on their attitudes towards a particular behaviour.

Based on the theory, an individual's intention to perform a behaviour is influenced by three factors. The initial two factors; attitudes towards the behaviour and subjective norms align with the ones identified in the theory of reasonable action. The third factor which is perceived control of behaviour, encompasses the limitations that individuals perceive might impede their actions, it is an individual's perception of how easy or difficult it might be to perform the action or behaviour. The intention to perform a behaviour is influenced by the combination of attitudes towards the behaviour, subjective norm and perceived control of behaviour (Ajzen, 1985).

2.4.5 Technology Acceptance Model

The theory or model was propounded by Fred Davis in 1986 which was tailored to model user's acceptance of information systems or technologies. Theoretically, the technology acceptance model is based on the theory of reasonable action. In 1986, Davis employed the technology acceptance model to explain and elucidate the behaviour of computer usage. The

primary objective of TAM is to comprehend the fundamental factors that determine the acceptance of computers. This comprehension is crucial in explaining the behaviour of users across a wide range of computing technologies and user populations. The initial TAM model encompasses two specific beliefs which include perceived usefulness and perceived ease of use. Perceived usefulness is the subjective likelihood perceived by the potential user regarding the enhancement of their actions through the usage of a certain system. Perceived ease of use, on the other hand, relates to the level of effortlessness expected by the potential user in using the target system (Davis, 1989). It is important to note that the beliefs of an individual towards a system maybe influenced by other variables which are referred to as external variables in TAM. The attitude along with perceived usefulness, perceived ease of use then shapes the individual's behavioural intention to use technology. The behavioural intention influences the actual usage behaviour (Davis, 1989).

CHAPTER THREE

METHODOLOGY

3.1 Introduction

Research methodology outlines the systematic process and techniques which were used to analyze, collect, design and interpret data with the aim of responding to the research questions or testing hypotheses. It is how the study was conducted. It includes research design, population, sampling and sample size, source of data, research instrument and the method of data analysis and the model specification. This research is designed to survey how information and communication technology tools have impacted in the development of accounting professionals in selected companies.

3.2 Research Design

The research design employed in this study is the exploratory research design. The research strategy used is the survey strategy with a deductive approach and the methodological choice is the quantitative method. The strategy allows the data collected which can be analyzed quantitatively using descriptive and inferential statistics. This research is also cross sectional as it studies how information and communication technology has impacted the development of accounting professionals at a particular time.

3.3 Research Population

The study population is accountants from two thousand, four hundred and eleven (2411) accounting firms in Nigeria. This is made up of two thousand, one hundred and thirteen (2113) active licensed firms by the Institute of Chartered Accountants of Nigeria (ICAN) as at 4th December, 2023 and two hundred and ninety eight (298) licensed practicing firms by the Association of National Accountants of Nigeria (ANAN) as at 2023. Accountants from accounting firms were chosen as the target population because they will provide necessary information needed for the study.

3.4 Sampling and Sample Size

The sample size is 343. This size was arrived at by the use of Yamanne (1967) formula because the population size is known. The formula is:

$$n = \frac{N}{1 + N(e)^2}$$

Where, n = sample size

N = population

e = margin of error

$$\text{Therefore, } n = \frac{2411}{1 + 2411(0.05)^2} = 343$$

The sampling technique adopted was the cluster sampling technique because it is cost effective and efficient and it is complemented with the simple random sampling technique.

3.5 Data Collection Technique

The source of data used in this research is the primary data which was gathered by the use of self-designed, close-ended questionnaire which was administered to the staffs of the companies used which formed the focus of this work.

3.6 Data Estimation and Method of Data Analysis

The descriptive and inferential statistics is utilized in examining the primary data which gives a better understanding of the data. The Ordinary Least Squares (OLS) is employed in order to provide answers to the hypotheses and research questions in order to achieve the objectives of the research, and it examines the relationships that exist between the variables. The Statistical Package for Social Science is employed for the analysis of data collected and it is presented using simple charts and percentage.

3.7 Research Instrument

The research instrument employed in this study is a close-ended structure questionnaire which was administered to the staff members of the selected companies. The questionnaire was designed in such a way as to enable the respondents provide answers on how ICT has influenced the development of accounting professionals. The research questions were tailored in such a way that it addressed the research objectives in this study and also the formulated research hypotheses.

The designed questionnaire used a five Likert-Summated rating scale which has different sections intended to elicit and provide answers to the objectives. The options to the statements

were arranged in a Likert Scale Continuum of 5 to 1; Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Stringly Disagree (SD).

3.7.1 Validation and Reliability of the Research Instrument

The face validity approach was employed to ensure the instrument accurately measures the variables and realize the goal of the study. The project supervisor will also give the final validation of the instrument. The Cronchback Alpha was also used to test the validity of the instrument. The statements gotten from the close ended questionnaire were constructed from the research questions in such a way, which when put forth can provide accurate answers which ensure the validity of the research instrument which also went through content review by an expert.

3.8 Theoretical Framework and Model Specification

3.8.1 Theoretical Framework

This study is anchored on the Technology Acceptance Model (TAM) by Fred Davis in 1986. Fred Davis in his book, “A Technology Acceptance Model for User Acceptance of Information Systems” in 1986 introduced TAM which aimed to explain and predict the attitude and intention of individuals towards the use of specific technology. The goal of this model by Davis is to examine and explain the determinants of computer acceptance which leads to the explanation of users behavior over a broad range of users who use computing technologies. He tested two specific beliefs which include perceived usefulness which is the potential user’s

subjective likelihood that the use of a certain system will improve his action and perceived ease of use which is the degree to which the potential user expects the target system to be effortless. Davis also recognized other factors which he called external variables that could influence the belief of a person towards a system.

The technology acceptance model gives a valuable framework to understand how the user adopts new technologies. It aims at explaining the usage of ICT which deals with the perceived usefulness, perceived ease of use, and the attitude of individuals towards the use of technology. This relates to the study because information and communication technology tools and its uses on the development of accounting professionals are examined.

When examining the context of accounting professionals development, Artificial Intelligence (AI) and the Technology Acceptance Model (TAM) are interconnected notions. TAM provides a theoretical framework which helps to explain the adoption of AI technologies in accounting. TAM mainly focuses on the relationship that exists between perceived usefulness, perceived ease of use, and the attitude of users towards accepting technology. TAM helps in the identification of factors that influence the acceptance of artificial intelligence by accounting professionals. The extent to which accountants find AI useful, the extent they believe using AI will reduce their work effort and the manner in which professionals accept the use of AI in their daily operations can be explained using the technology acceptance model. We expect that AI will enhance the developme of accounting professionals such that;

DAP = f(Artificial Intelligence) ... (i)

In the development of accounting professionals, cloud computing and technology acceptance model are related. TAM is key in understanding the adoption of cloud computing in accounting. TAM helps to identify the beliefs that influence the adoption of cloud computing. The beliefs include; to what extent do accounting professionals believe that cloud computing can help them carry out their tasks more efficiently, can cloud computing be used easily and is it reliable? We expect that cloud computing will enhance the development of accounting professionals such that;

DAP = f(Cloud Computing) ... (ii)

Technology acceptance model provides an essential tool for understanding the adoption of blockchain by accounting professionals for their development and it provides a better understanding of the factors that influence the adoption of blockchain in accounting by professionals as it regards the perceived usefulness, perceived ease of use, and the attitude of the accounting professionals towards accepting blockchain as a new technology. We expect that blockchain will enhance the development of accounting professionals such that;

DAP = f(Blockchain) ... (iii)

Against the above backdrop the schema for the framework will be;

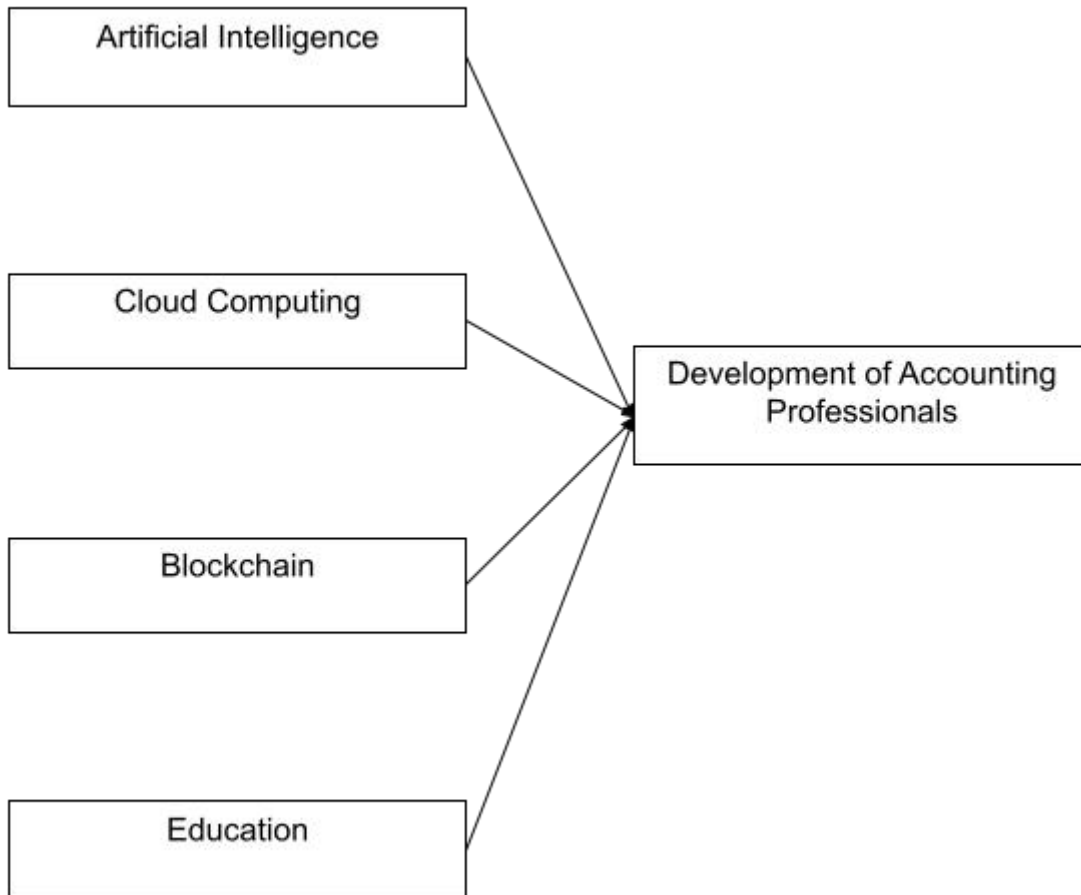


Fig 3.1

3.8.2 Model Specification

Collecting equations i to iii, the general functional form of the model will be;

$$DAP = f(AI, CC, BC) \dots(iv)$$

By integrating the control variable of education, the equation will be transformed as:

$$DAP = f(AI, CC, BC, E) \dots(v)$$

To express the above equation in an econometric form, it will be written as;

$$DAP = \beta_0 + \beta_1 AI_t + \beta_2 CC_t + \beta_3 BC_t + \beta_4 E_t + \mu_t \dots(vi)$$

Where,

DAP = Development of Accounting Professionals

AI = Artificial Intelligence

CC = Cloud Computing

BC = Blockchain

E = Education

μ = Error or Stochastic term

β_0 = Slope

β_1 to β_4 = Coefficients

CHAPTER FOUR

DATA PRESENTATION ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the analysis, findings and interpretations of the various data collected for this study. It involves the use of statistical techniques to provide the basis for analyzing the research objectives listed in chapter one. Therefore, it is an important part of this study since it forms the basis for conclusion and recommendations.

4.2 Data Presentation

The data analyses were based on the data collected from the field and have been fully analyzed using the percentage table. The analyses were based on questions contained in section A and B in the questionnaire. A total number of three hundred and forty-three (343) copies of the questionnaire were administered to respondents all were retrieved from the respondents and used for the analyses. The use of a table is the most appropriate means of interpreting information for easy understanding.

4.3 Research Questions

Research Question 1: What is the impact of artificial intelligence on the development of accounting professionals?

Table 4.3.1: Frequency and percentage on the impact of artificial intelligence on the development of accounting professionals

Artificial intelligence has improved the accuracy of accounting processes and professionals.	Frequency	Percentages
Strongly Agree	172	50.15%
Agree	99	28.86%
Neutral	58	16.91%
Disagree	9	2.62%
Strongly Disagree	5	1.46%
Total	343	100%
The use of artificial intelligence in accounting has led to increased efficiency in your organization.		
Strongly Agree	154	44.91%
Agree	139	40.47%
Neutral	26	7.58%
Disagree	22	6.41%
Strongly Disagree	2	0.58%
Total	343	100%

The use of artificial intelligence by accounting professionals has reduced the need for manual data entry.		
Strongly Agree	137	39.94%
Agree	127	37.03%
Neutral	55	16.03%
Disagree	22	6.41%
Strongly Disagree	2	0.58%
Total	343	100%
Artificial intelligence in accounting has changed the skill set needed by accounting professionals.		
Strongly Agree	116	33.81%
Agree	115	33.53%
Neutral	65	18.95%
Disagree	41	11.96%
Strongly Disagree	6	1.75%
Total	343	100%
The use of artificial intelligence has increased job satisfaction for accounting professionals		
Strongly Agree	130	37.89%
Agree	133	38.76%
Neutral	57	16.62%
Disagree	17	4.96%
Strongly Disagree	6	1.75%
Total	343	100%

Source: Field Survey, 2024

Table 4.3.1 reveals that the majority of accounting professionals (67%) believe that AI has improved the accuracy of accounting processes and professionals. A significant portion (44.91%) agree that AI has led to increased efficiency in their organizations. However, a significant portion (7.58%) remains neutral, suggesting uncertainty or lack of awareness. A significant number (39.94%) agree that AI has reduced the need for manual data entry in accounting. However, a significant portion (16.03%) remains neutral, indicating mixed perceptions. A significant proportion (33.81%) agree that AI has changed the skill set needed by accounting professionals, indicating a recognition of the evolving nature of skills required due to AI adoption. A significant number (37.89%) strongly agree that AI has increased job satisfaction for accounting professionals. However, a slightly higher proportion (38.76%) simply agree with this statement. A notable percentage (16.62%) remains neutral, indicating uncertainty or varied experiences regarding the impact on job satisfaction. Overall, the study indicates a generally positive perception among accounting professionals regarding the impact of AI on their development.

Research Question 2: How has cloud computing affected the development of accounting professionals?

Table 4.3.2: Frequency and Percentage on cloud computing and the development of accounting professionals

The use of cloud computing by accounting professionals has led to increased efficiency in your organization.	Frequency	Percentages
Strongly Agree	114	33.25%
Agree	146	42.54%
Neutral	48	14.00%
Disagree	23	6.71%
Strongly Disagree	12	3.50%
Total:	343	100%
Cloud computing improved the accessibility of accounting data and software for professionals.		
Strongly Agree	129	37.59%
Agree	143	41.66%
Neutral	50	14.56%
Disagree	19	5.54%
Strongly Disagree	2	0.58%
Total	343	100%

Cloud computing has enhanced the collaboration and communication within accounting teams.		
Strongly Agree	120	34.95%
Agree	145	42.31%
Neutral	56	16.34%
Disagree	18	5.25%
Strongly Disagree	4	1.17%
Total	343	100%
The use of cloud computing has led to increased job satisfaction for accounting professionals.		
Strongly Agree	111	32.35%
Agree	150	43.73%
Neutral	55	16.04%
Disagree	24	7.00%
Strongly Disagree	3	0.88%
Total	343	100%
Cloud computing has drastically changed the skill set required by accounting professionals.		
Strongly Agree	107	31.21%
Agree	144	42.01%
Neutral	55	16.04%
Disagree	24	7.00%
Strongly Disagree	13	3.79%
Total	343	100%

Source: Field Survey, 2024

Based on table 4.3.2, cloud computing has significantly impacted the development of accounting professionals. It has increased efficiency, improved accessibility, enhanced collaboration, and increased job satisfaction. A majority of respondents, 67% and 33%, agree that cloud computing has improved efficiency in their organizations. Additionally, cloud computing has improved the accessibility of accounting data and software, facilitating easier access to crucial resources. A significant proportion of respondents, 60% and 27%, believe that cloud computing has enhanced collaboration within accounting teams, fostering teamwork and connectivity. Furthermore, cloud computing has drastically changed the skill set required by accounting professionals, highlighting the evolving nature of the profession due to technological advancements. Overall, the findings suggest that cloud computing has had a predominantly positive influence on the development of accounting professionals, requiring the acquisition of new skills and shaping the contemporary landscape of accounting practice and professional development.

Research Question 3: To what extent does blockchain impact the development of accounting professionals?

Table 4.3.3: Frequency and Percentage on blockchain impact on the development of accounting professionals

Blockchain technology has improved the transparency and trust of accounting processes by professionals.	Frequency	Percentages
Strongly Agree	104	30.3%
Agree	141	41.1%
Neutral	77	22.4%
Disagree	17	5.0%
Strongly Disagree	4	1.2%
Total	343	100%
The use of blockchain technology in accounting has led to increased efficiency in your organization.		
Strongly Agree	105	30.6%
Agree	176	51.3%
Neutral	48	14.0%
Disagree	13	3.8%
Strongly Disagree	1	0.3%
Total	343	100%

The blockchain technology used by accounting professionals has reduced the risk of fraud in accounting practices.		
Strongly Agree	99	28.8%
Agree	131	38.2%
Neutral	89	25.9%
Disagree	24	7.0%
Strongly Disagree	0	0.0%
Total	343	100%
Blockchain technology has changed the skill set needed by accounting professionals.		
Strongly Agree	113	32.9%
Agree	138	40.2%
Neutral	65	18.9%
Disagree	25	7.3%
Strongly Disagree	2	0.6%
Total	343	100%
The use of blockchain technology has increased job satisfaction for accounting professionals.		
Strongly Agree	105	30.6%
Agree	152	44.3%
Neutral	66	19.2%
Disagree	16	4.7%
Strongly Disagree	4	1.2%

Total	343	100%
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Source: Field Survey, 2024

Based on table 4.3.3, blockchain technology has significantly impacted the development of accounting professionals. It has improved transparency and trust in accounting processes, leading to increased efficiency and a reduction in fraud risk. A majority of respondents (67%) believe that blockchain technology has improved operational efficiency within their organizations. Additionally, 60% of respondents believe that blockchain technology can mitigate fraudulent activities in accounting processes. The study also shows that blockchain technology has changed the required skill set for accounting professionals, with 33% strongly agreeing and 40.2% agreeing. This indicates that professionals recognize the evolving nature of skills required in the accounting field due to blockchain adoption. Furthermore, 33% and 44.3% of respondents believe that blockchain technology has increased job satisfaction for accounting professionals. These findings underscore the significant role of blockchain in reshaping the accounting profession and its practices. Overall, blockchain technology has a significant impact on the development of accounting professionals, enhancing transparency, efficiency, trust, and job satisfaction.

Research Question 4: To what extent does education impact the development of accounting professionals?

Table 4.3.4 Frequency and Percentage on education impact on the development of accounting professionals

Education is crucial for accounting professionals to stay competitive in the digital age.	Frequenc y	Percentages
Strongly Agree	158	46.06
Agree	125	36.45
Neutral	38	11.07
Disagree	17	4.95
Strongly Disagree	5	1.46
Total	343	100%
Education has improved your ability to use accounting technologies.		
Strongly Agree	143	41.68
Agree	127	37.01
Neutral	57	16.62
Disagree	15	4.37
Strongly Disagree	1	0.29
Total	343	100%
Education has increased the efficiency of accounting professionals in your organization.		
Strongly Agree	150	43.73
Agree	119	34.68

Neutral	57	16.62
Disagree	14	4.08
Strongly Disagree	3	0.87
Total	343	100%
The education of accounting professionals has improved the accuracy of accounting processes.		
Strongly Agree	157	45.75
Agree	111	32.34
Neutral	61	17.78
Disagree	9	2.62
Strongly Disagree	5	1.46
Total	343	100%
Education has increased job satisfaction for accounting professionals.		
Strongly Agree	153	44.60
Agree	126	36.70
Neutral	38	11.07
Disagree	19	5.54
Strongly Disagree	7	2.04
Total	343	100%

Source: Field Survey, 2024

The table reveals that education is crucial for accounting professionals to remain competitive in the digital age, with 67% of respondents stating this. A significant 73% of respondents believe that education has improved their ability to use accounting technologies, while 27% agree. This suggests that education enhances technological proficiency among accounting professionals. 60% of respondents agree that education has increased efficiency in their organizations, with 27% disagreeing or neutral. A majority of respondents (78%) agree that education has improved the accuracy of accounting processes, indicating a positive impact on the quality of work performed by accounting professionals. However, 44% of respondents strongly agree that education has increased job satisfaction, with 39% disagreeing or neutral. The table suggests that while education may contribute to job satisfaction, it may not be the sole factor influencing overall satisfaction levels. Despite these findings, improvements are needed to ensure that education adequately addresses the evolving needs of the profession in the digital age.

4.4 Discussion of One-Sample T-test Result

Table 4.8: One Sample T-test Result

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
AI	84.925	342	.000	4.236	4.14	4.33
Cloud_Computing	71.239	342	.000	3.953	3.84	4.06
Blockchain	80.176	342	.000	3.945	3.85	4.04
Education	83.991	342	.000	4.207	4.11	4.31

Source: Computed by author using SPSS 23.0

4.5 Test of Hypotheses

H01: There is no significant relationship between artificial intelligence and the development of accounting professionals.

The test result indicates a significant relationship between artificial intelligence and the development of accounting professionals, with a test statistic of 84.925 and a p-value of < 0.001 . Therefore, we reject the null hypothesis (H01) and conclude that there is indeed a significant relationship between artificial intelligence and the development of accounting professionals.

H02: There is no significant relationship between cloud computing and the development of accounting professionals.

The test result shows a significant relationship between cloud computing and the development of accounting professionals, with a test statistic of 71.239 and a p-value of < 0.001 . Consequently, we reject the null hypothesis (H02) and conclude that there is a significant relationship between cloud computing and the development of accounting professionals.

H03: There is no significant relationship between blockchain and the development of accounting professionals.

The test outcome indicates a significant relationship between blockchain and the development of accounting professionals, with a test statistic of 80.176 and a p-value of < 0.001 . Thus, we reject the null hypothesis (H03) and assert that there is indeed a significant relationship between blockchain and the development of accounting professionals.

H04: There is no significant relationship between education and the development of accounting professionals.

The test reveals a significant relationship between education and the development of accounting professionals, with a test statistic of 83.991 and a p-value of < 0.001 . Therefore, we reject the null hypothesis (H04) and conclude that there is a significant relationship between education and the development of accounting professionals.

4.6 Discussion of findings

The findings from our study suggest a significant relationship between artificial intelligence (AI) and the development of accounting professionals. This aligns with previous research conducted by Edogame (2022), Hussin et al. (2024), Kwarbai and Omojoye (2021), and Odoh et al. (2018). Edogame (2022) found that AI, including expert systems, robotic process automation, and machine learning, positively impacted accounting systems. Similarly, Hussin et al. (2024) identified three themes—automation of routine tasks, enhanced data analysis, and value-added transaction processing—demonstrating the positive impact of AI on the accounting profession. Kwarbai and Omojoye (2021) concluded that AI significantly improved reporting accuracy, anomalous detection, and data analytics in the accounting profession. Odoh et al. (2018) found that AI, particularly expert systems and intelligent agents, positively influenced the performance of accounting functions in firms. Our study indicates a significant relationship between cloud computing and the development of accounting professionals. This finding is consistent with research conducted by Awotomilusi et al. (2022), Al-zoubi (2017), and Bangalore et al. (2019). Awotomilusi et al. (2022) observed a positive relationship between cloud computing adoption and the efficacy of accounting practices. Al-zoubi (2017) highlighted the benefits of cloud computing in reducing the size of establishments, improving operational performance, and enhancing cost-effectiveness. However, Bangalore et al. (2019) identified

challenges in cloud-based accounting adoption, such as lack of technical know-how and high information costs among private audit firms.

Our study also reveals a significant relationship between blockchain and the development of accounting professionals. This finding is consistent with research conducted by Singh et al. (2023), Ajayi et al. (2022), Pugna and Dutescu (2020), and Ajayi-Nifise et al. (2024). Singh et al. (2023) found that blockchain technologies enhance control in large firms and emphasized the importance of professional knowledge and involvement in blockchain development. Ajayi et al. (2022) highlighted blockchain's potential to improve efficiency in financial technology in Nigeria. Pugna and Dutescu (2020) identified benefits of blockchain in increasing accounting information accuracy and reducing errors. Ajayi-Nifise et al. (2024) emphasized blockchain's role in enhancing transparency, integrity, and reducing fraud in accounting practices. Our study confirms a significant relationship between education and the development of accounting professionals. This aligns with previous research conducted by Onyali et al. (2016), Awotomilusi et al. (2022), and Banglore et al. (2019). Onyali et al. (2016) found that education plays a crucial role in improving accounting system transparency from the perspective of corporate stakeholders. Awotomilusi et al. (2022) observed that education positively influences accounting practice efficacy. Banglore et al. (2019) highlighted the importance of education in addressing challenges related to cloud-based accounting adoption.

In examining various technology adoption models and theories, our study found significant support for the Theory of Diffusion of Innovation, Theory of Task-Technology Fit, Theory of Reasonable Action, Theory of Planned Behaviour, and Technology Acceptance Model. These theoretical frameworks provide valuable insights into the adoption and acceptance of technologies such as artificial intelligence, cloud computing, and blockchain in the accounting profession.

In conclusion, our study provides empirical evidence supporting the significant impact of artificial intelligence, cloud computing, blockchain, and education on the development of accounting professionals. These findings underscore the importance of embracing technological advancements and investing in education to enhance the capabilities of accounting professionals in the digital age. Additionally, theoretical frameworks such as the Theory of Diffusion of Innovation and Technology Acceptance Model offer valuable insights into understanding the adoption and acceptance of technology in the accounting profession.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings

The summary of the study's findings based on the data collected and analyzed in Chapter Four are as follows:

1. Artificial Intelligence (AI) was found to have a significant positive impact on the development of accounting professionals, as evidenced by the high percentage of respondents agreeing or strongly agreeing with statements related to AI's influence on various aspects of accounting processes.
2. Cloud Computing emerged as another significant factor contributing to the development of accounting professionals, with a considerable proportion of respondents indicating that the use of cloud computing technology has led to increased efficiency and job satisfaction in their organizations.
3. Blockchain technology was also found to significantly impact the development of accounting professionals, particularly in reducing the risk of fraud in accounting practices. Respondents expressed agreement with the positive influence of blockchain on transparency, trust, and skill set requirements in the accounting field.

4. Education was identified as a crucial factor in the development of accounting professionals, with a majority of respondents acknowledging the importance of education in improving their ability to use accounting technologies, increasing efficiency, accuracy, and job satisfaction.

5.2. Conclusion

In conclusion, the findings of our study provide empirical evidence supporting the significant impact of artificial intelligence, cloud computing, blockchain, and education on the development of accounting professionals. These technological advancements and educational opportunities play pivotal roles in enhancing transparency, efficiency, and trust in accounting processes, while also mitigating the risk of fraud. The positive relationship between these factors and the development of accounting professionals underscores the importance of embracing innovation and investing in education within the accounting profession. Further research may delve deeper into the specific mechanisms through which these technologies and educational interventions influence professional development, as well as explore additional factors contributing to the evolving landscape of accounting practices.

5.3. Recommendations

Based on the t-test results from your study, we can make specific recommendations for the development of accounting professionals:

Primarily, with the significant relationship between AI and the development of accounting professionals indicated by the test statistic (84.925) and p-value (< 0.001), it is recommended that firms invest in AI technologies and training. This could involve integrating AI into everyday accounting tasks to increase efficiency and accuracy.

In addition, the significant relationship between cloud computing and the development of accounting professionals (test statistic 71.239, p-value < 0.001) suggests that cloud technologies are crucial for the modernization of accounting practices. Firms should prioritize transitioning to cloud-based accounting solutions to enhance data accessibility and collaboration.

Moreover, with blockchain showing a significant impact on the field (test statistic 80.176, p-value < 0.001), accounting professionals should be encouraged to understand and utilize blockchain for secure and transparent record-keeping.

Finally, the strong relationship between education and professional development (test statistic 83.991, p-value < 0.001) underscores the importance of continuous learning and professional development courses that keep pace with technological advancements.

These recommendations are directly tied to the significant findings from the study and aim to position accounting professionals to effectively respond to technological changes and enhance their expertise.

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APPENDIX

Department of Accounting,
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Benin City, Nigeria.

Questionnaire on Information and Communication Technology and the Development of Accounting Professionals

Dear Respondent,

The project is undertaken in partial fulfillment of the requirements for a Bachelor of Science (B. Sc.) in Accounting. You have been carefully selected as a sampled respondent to be part of the study.

Please your kind assistance is needed to provide answers to the items in the questionnaire and note that participation is voluntary and you reserve the right to opt out of the study at any time. It is strictly for academic purpose, as the information you offer will be treated with utmost confidentiality but do not indicate your identity anywhere on the questionnaire.

Thank you.

Sincerely,

Whitney Onosetale EHINEBOH

Telephone: 09135201307

Instruction: Evaluate each statement on the scale of five (5) Strongly Agree to one (1) Strongly Disagree. Please tick against the most appropriate options.

Section A: Artificial Intelligence

S/n	Statements on Artificial Intelligence	Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
1.	Artificial intelligence has improved the accuracy of accounting processes and professionals.					
2.	The use of artificial intelligence in accounting has led to increased efficiency in your organization.					
3.	The use of artificial intelligence by accounting professionals has reduced the need for manual data entry.					
4.	Artificial intelligence in accounting has changed the skill set needed by accounting professionals.					
5.	The use of artificial intelligence has increased job satisfaction for accounting professionals.					

Section B: Cloud computing

S/n	Statements on cloud computing	Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
1.	The use of cloud computing by accounting professionals has led to increased efficiency in your organization.					
2.	Cloud computing improved the accessibility of accounting data and software for professionals.					
3.	Cloud computing has enhanced the collaboration and communication within accounting teams.					
4.	The use of cloud computing has led to increased job satisfaction for accounting professionals.					
5.	Cloud computing has drastically changed the skill set required by accounting professionals.					

Section C: Blockchain

S/n	Statements on Blockchain	Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
1.	Blockchain technology has improved the transparency and trust of accounting processes by professionals.					
2.	The use of blockchain technology in accounting has led to increased efficiency in your organization.					
3.	The blockchain technology used by accounting professionals has reduced the risk of fraud in accounting practices.					
4.	Blockchain technology has changed the skill set needed by accounting professionals.					
5.	The use of blockchain technology has increased job satisfaction for accounting professionals.					

Section D: Education

S/n	Statements on Education	Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
1.	Education is crucial for accounting professionals to stay competitive in the digital age.					
2.	Education has improved your ability to use accounting technologies.					
3.	Education has increased the efficiency of accounting professionals in your organization.					
4.	The education of accounting professionals has improved the accuracy of accounting processes.					
5.	Education has increased job satisfaction for accounting professionals.					