

Fourth Industrial Revolution, Corona Virus Pandemic, and Accounting Profession: Nigeria Perspective.

Oyewumi H. K.

Internal Audit Unit, Ladoke Akintola University of Technology (LAUTECH), Nigeria

Email: olanipekunhk@yahoo.com

Ajape, Mohammed.K

Department of Accounting, University of Lagos, Nigeria

Email: Moajape@gmail.com

Fatimoh Mohammed

Department of Accounting, University of Lagos, Nigeria

Email: fatimohmohammed@student.usm.my

Abstract

This study appraises the Fourth Industrial Revolution (4IR), the Corona virus pandemic, and its relationship with accounting practice and profession in Nigeria. The emergency of the Corona virus pandemic and the astronomical rate at which technology is growing call for professions and disciplines to follow suit in order to remain relevant and competitive in contemporary society and businesses. The extent of technological usage toward the progression of the accounting profession and its future challenges are worthy of examination in the Nigerian context. The meta-analysis technique was employed for this study. Findings revealed that 4IR has both positive and negative impacts on the accounting profession by removing some accounting tasks and at the same time providing new opportunities for accountants. Based on the outcome of the study, it was concluded that the 4IR and Corona Virus Pandemic had significant impact on the accounting profession by changing the ways of doing things. In view of the findings, it is recommended that accountants engage in result-based learning in the area of IT relating to their task. Further, accounting professional bodies in Nigeria and globally need to protect their accounting territory from being hijacked by individuals or groups of individuals that are IT experts. Allowing this will result in the erosion of accountants authority.

Keywords: *Accounting Practice and Profession, Fourth Industrial Revolution (4IR), Corona Virus Pandemic, Technology Expert*

Introduction

The astronomical rate at which technology is growing calls for professions and disciplines to follow suit in order to remain relevant and competitive in the contemporary society and businesses. The globe has metamorphosed technologically such that processes and procedures are electronically performed, thus, concepts such as e-business (Bi, Davison & Smyrniotis, 2017; Soto-Acosta, Popa & Palacios-Marqués, 2016), e-banking (Ramesh, et al., 2020; Salimon, Yusoff & Mokhtar, 2017), e-governance (Solvak et al., 2019), e-registration (Kgasi & Kalema, 2016), e-

learning (Truong, 2016), e-taxation (Ajape, Afara & Uthman, 2017), e-examination, e-result, e-booking, e-conferencing, e-induction, e-ticketing among others are the order of the day (Ajah & Chigozie-Okwum, 2019). Accounting profession is not spared from this wave of technological change as the profession tends to be affected by the recent technological change known as 4th industrial revolution (Wilkinson, Hislop & Coupland, 2016). The concept of Fourth Industrial Revolution (4IR) has been defined and described in different ways by scholars as digital revolution, Industry 4.0, and the artificial intelligence revolution (Kruskopf et al., 2019; Schäfer, 2018; Hoffman, 2017).

However, the common view is that in the period of 4IR, computers and machines do most of the tasks that are ordinarily being performed by human beings, thus, things and businesses are done differently. The job profiles, economic structures, working time, working relationship, and remuneration patterns will undergo serious change in the revolution (Jung, 2019; IBA Global Employment Institute, 2017). 4IR is triggered by artificial intelligence, cyber-physical systems, internetworked physical devices, robotics, 3D printing, biotechnology and nanotechnology (Hoffman, 2017). Park, Shin, and Kim (2019) posit that monumental shift will occur across all industries in the aspect of production, design, sales, marketing, and delivery system in the period of 4IR. Also, the current issue of coronavirus pandemic, popularly known as COVID 19, has complemented technological application and indirectly compels accountants to adopt more of technology than traditional accounting practice. Discussion is ongoing in the literature as regards the effects of 4IR on the generality of jobs and tasks particularly in the developing countries. While it is agreed that the 4IR tends to improve efficiency and effectiveness of how things are done, the common position of the scholars (Kruskopf et al., 2019; Mahnkopf, 2019) is that 4IR will have negative effect on many jobs and professions, thus, the need for the practitioners to be proactive (Rasid, Saruchi & Tamin, 2019) and change with the trend of technology.

Accounting profession attracts a lot of people comprising students who are aspiring to become accountants in future and the existing accountants who are already practicing. From the international perspective, 420,000 chartered accountants and 530,000 students globally registered with professional accounting bodies in UK (Wilkinson, Hislop & Coupland, 2016), while US had 664,532 qualified accountants as at 2016 (Greenman, 2017). In Nigerian context, Nigerian universities and polytechnics are graduating significant number of accounting students every year to fill different positions as accountants, auditors, tax officers and consultants in different industries in the country. Similarly, the accounting professional bodies in Nigeria, comprising the Institute of Chartered Accountants of Nigeria (ICAN) and the Association of National Accountants of Nigeria (ANAN), have more than three hundred thousand registered candidates (ICAN, 2019) and produced eighty one thousand seven hundred and three (81,703) chartered accountants as at 31st December, 2018 working in different sectors of the economy (ICAN, 2019; ANAN, 2019). Globally, it is estimated that some jobs will be lost as a result of 4IR. For instance, it has been estimated that within the next two decades, automation would displace 47 percent of jobs in U.S (Hoffman, 2019), while 70 percent of jobs in India or Thailand would be at risk (IBA Global

Employment Institute, 2017). It is also estimated that in the nearest future, about 33 percent of the jobs that ordinarily require a university degree education will be performed by intelligent software or machines, indicating the disappearance of many jobs and emergence of new ones (IBA Global Employment Institute, 2017). From the accounting perspective, evidence from the literature has indicated the accounting profession will feel the wave of 4IR as many jobs being performed by the accountants will be done by softwares and other related machines. Specifically, the probability of the works of accountants being done by intelligent softwares is more than 90 percent (Ezeribe, 2019; IBA Global Employment Institute, 2017). Similarly, Hoffman (2017) provides the list of professions that are going to be taken over by technology and considers accounting profession as one of the first five professions that will be affected.

This material number of accountants in Nigeria and globally notwithstanding, the contemporary 4th industrial revolution puts their tasks or job at risk unless they are able to move with technological change and acquire necessary skills that will update their knowledge. The current unemployment rate in Nigeria is alarming (Adu, Edosomwan, Babajide & Olokoyo, 2018), thus, if many tasks of accounting professionals such accountants, auditors, tax consultants among others, are taken over by machine, the tendency of some of these professionals indirectly and technically joining the queue of unemployed is imminent. Unemployment in this context may not necessarily be a job loss but being irrelevant in the available accounting tasks to be performed. Despite this envisaged problem the 4IR tends to cause for accounting profession, few studies have been conducted on the effect of the revolution on the profession in Nigeria context.

Recognizing the potential effects of 4IR, professional accounting bodies in Nigeria have started creating awareness and sensitization for their members and deploying different strategies to militate against professional irrelevance in the society. For instance, ICAN has been organizing different conferences, workshops and training on 4IR to acquaint its members to the technological development. The Institute has also brought a lot of technological changes to its examination process such as the introduction of electronic marking system which enhances its marking system and quick release of students' results. The plan of the Institute to commence computer-based examination is intended to prepare the potential chartered accountants for technological usage and its future challenges. The objective of this study, therefore, is to conceptually examine the impact of 4IR on the accounting profession in Nigeria and the opportunity it could also create for the country. Although it has been argued that Nigeria is not ready for 4IR (Uzochukwu, Alloysius & Olohi, 2019), this may not be true for private companies that are multinationals and those ones that are operating in line with the best practice. Change is inevitable and they tend to concur with the global technological change.

Literature Review

Fourth Industrial Revolution (4IR)

The 4IR tends to metamorphose the conventional ways of doing things to machine-performed ones. It also tends to drive all human activities and perhaps leaves no conscious business untouched (Soh & Connolly, 2020; Rasid, Saruchi & Tamin, 2019; Schwab 2016). It shapes society and affects all spheres of life in terms of the way people live, interact, communicate, and work, thus, leading organizations that want remain relevant and stand out in the competitive business environment should concentrate on innovation and technological adoption (Loureiro, 2018). 4IR is dependent on the third industrial revolution (Ajah & Chigozie-Okwum, 2019; Kruskopf et al., 2019; Hoffman, 2017; Liu, 2017) and it is characterized by advances in artificial intelligence, internet of things, cyber-physical systems, nanotechnology and biotechnology (Hoffman, 2017). Similarly, Skilton and Hovsepian (2017) describe 4IR as the convergence of industrial production and information and communication technologies emanating from the convergence of Internet of Things (IoT), the Internet of People (IoP), and the Internet of Everything (IoE). It is able to have impact on many businesses and people because its design and implementation are based on six principles comprising interoperability, real-time capability, service orientation, decentralization, virtualization and modularity (Dai & Vasarhelyi, 2016).

Scholars (Mahnkopf, 2019; Park, Shin & Kim, 2019; Rasid, Saruchi & Tamin, 2019; Popoola, Ahmad, Arowolo, & Malek, 2018; Hoffman, 2017) have expressed different opinions in the literature on the essentiality and associated challenges or disadvantages of 4IR. In the aspect of advantages, IBA Global Employment Institute (2017) posits that the application of automation, robotics and intelligent algorithms in the production process will bring about savings in cost of labour and products. It is also argued that reliability, dependability, accuracy, standardization, synchronization, effectiveness and efficiency are other advantages accruable from automation and 4IR generally. Teng, Ma, Pahlevansharif and Turner (2019), though admit that 4IR will create new jobs, claim that the revolution will create unemployment especially among the lower educated and low skilled individuals. In other words, it will bring a disruption to the labour market thereby threaten the existing jobs especially the repetitive ones (Menon & Fink, 2019). Similarly, Menon and Fink (2019) posit that the 4IR tends to advance the level of inequality between the people in a country and between one country and another. According to them, 4IR brings about a potential increase in knowledge and talent.

However, the position of some scholars is that human element cannot be completely removed no matter the level of technological change (Hong & Seo, 2018). In the submission of Hoffman (2017), tasks can be classified into two comprising those tasks that can be performed creditably well by the machine or computers and those ones that can be handled well by human beings. According to him, three forms of task consisting of routine tasks, structured problem solving and arithmetic and other types of mathematics can be performed well by computers. On the other hand, he stressed twelve forms of task such as non-routine task, unstructured problem

solving, imagination, creativity, intuition, innovation, improvising, compassion, politics, exploration, judgment and identification and acquisition of new relevant information that can be done well by human beings. He, therefore, emphasized that in the 4IR, the power of computers will be harnessed by human and computer teamwork. This aligns with the argument that technology cannot replace the critical thinking abilities and emotional intelligence of a human in near future (Akhter & Sultana, 2018).

Empirical Study on Accounting Profession

It has been foreseen in the literature that accounting profession will be affected by the 4IR and some of the tasks being performed by the accountants will be taken over by machine and done in different ways (Islam, 2017; Guthrie & Parker, 2016). It is being argued that the knowledge and skills required by the accountants in the 4IR is far beyond figure, debit and credit, or having proficiency in the application of Excel, rather they need the skill and capability of being at forefront of this innovation and assisting to shape the future of the organization they belong to (ACCA, n.d; Islam, 2017). Possession of additional academic or professional qualifications as accountants and auditors without value adding IT skill in a workplace will be of little benefit to the individuals (IBA Global Employment Institute, 2017). Thus, all aspects of accounting profession such as management accounting (Rasid, Saruchi & Tamin, 2019; Wadan, Teuteberg, Bensberg & Buscher, 2019), financial accounting (Kruskopf et al., 2019), auditing (Dai & Vasarhelyi, 2016), and taxation (Hong & Seo, 2018) will be affected in one way or the other. According to Slyozko and Zahorodnya (2016), accounting profession tends to be modified in the period of 4IR. This is because sitting in the office may no longer be necessary for accountants as the virtual office may be the order of the day for the performance of their accounting task as cloud computing makes it easy for activities to be performed anywhere and anytime (Asein, Akintoye & Soetan, 2018). This fact notwithstanding, accounting professional bodies are challenged for being slow in responding to the development of IT (Guthrie & Parker, 2016). Ezeribe (2019) conceptually examined the future of accounting profession in Nigeria context and from technological perspective. He stated that the profession has two categories of future. The first one, according to him, is the increasing application of digital technology in which practitioners of accounting profession will make use of sophisticated technology to enhance their traditional method of performing task. The second future involves a radical shift in which the traditional method is taken-over by technology. In other words, professional accountants who possess necessary IT skills have a better chance of being employable and sought for by employers (ACCA, n.d). In other words, the market will be segregated such that only accountants who are highly skilled and IT proficient will retain their employment and earn good and attractive pay while the ones who are not skilled will exit the labour market or earn low pay (Asein, Akintoye & Soetan, 2018). Thus, accountants with the knowledge of information security, data, and control tend to be attractive in the labour market.

Academic scholars and practitioners have expressed divergent opinion on the impact of 4IR on accounting profession. The position of some scholars is that accounting is one of the professions that will go into extinction with the advent of 4IR, while some argue that accounting function cannot be completely replaced by machine. From the perspective of the former, Susskind

and Susskind (2015) emphasized that accountants are among the professionals that will not be needed in the internet society because the traditional and highly valued function of professional bodies tends to be disrupted in a highly networked society.

Methodology

The meta-analysis technique was employed for this study. This is done through a thorough review of several studies that provide information on the study area. Meta-analysis was chosen based on one of the research syntheses used to integrate the results of several individual studies in the subject area.

Discussion of findings

It is clear from the academic and professional literature that 4IR has both positive and negative impacts on accounting profession because it removes some accounting tasks and at the same time provides new opportunities for accountants. The issue of digitalization of accounting knowledge is moving towards the point of necessity and not a choice. In Nigerian context, professional accountants in corporate accounting firms such as the Big Fours may not be affected much by the trend 4IR because of their big investment in training and retraining on digitalization and serious application of sophisticated accounting and auditing softwares. Similarly, accountants in corporate settings such as multinational companies may also not be much affected because of the same reasons of training and investment in technology. However, accountants in private practice or public sectors that are not willing and ready to embrace technology may be boxed into another corner, thus, the need for them to engage in personal development in respect of skill acquisition in information technology in order to be relevant and remain relevant in the accounting labour market. The outcome of this study corroborate the findings of lieu (2017), Loureiro (2018), Mahnkopf (2019), Oladejo and Yinus (2020), Yinus et al (2021) and Rasid *et al* (2019) in the field of emerging trend in technology, accounting profession and practice, Sustainable Development and economic Integration.

Conclusion and Recommendation

Based on the outcome of the study, it was concluded that 4IR, Corona Virus Pandemic had impact on Accounting Profession. In view of the findings it is recommended that accountants need to engage in result-based learning in the area of IT relating to their task and this should not be misconstrued as suggesting accountants to become IT experts in programming or other aspects of IT, rather, they should acquire basic understanding and operational capacity of IT tools needed for their job. Further, accounting professional bodies in Nigeria and globally need to protect their accounting territory from being hijacked by individuals or group of individuals that are IT expert. This is because allowing this will lead erosion of accountant authority.

References

- Adu, O., Edosomwan, O., Babajide, A. A., & Olokoyo, F. (2018). Industrial development and unemployment in Nigeria: an ARDL bounds testing approach. *International Journal of Social Economics*.
- Ajah, I. A., & Chigozie-Okwum, C. C. (2019). Exploring the benefits of the 4th industrial revolution: The Nigerian experience. *AFRREV STECH: An International Journal of Science and Technology*, 8(1), 22-32.
- Ajape, K. M., Afara, A. E. & Uthman, A. B. (2017). The influence of E-tax system on tax administration and tax revenue generation: Insights from Lagos State internal revenue service. *Journal of Economics and Business Research*, 23(2), 129-150.
- Asein, A. A., Akintoye, I. R., & Soetan, T. A. (2018). New Technologies: Catalysts for Business Models and Finance Function. *Research on Humanities and Social Sciences*, 8 (20).
- Bi, R., Davison, R. M., & Smyrnios, K. X. (2017). E-business and fast growth SMEs. *Small Business Economics*, 48(3), 559-576.
- IBA Global Employment Institute (2017). Artificial Intelligence and Robotics and Their Impact on the Workplace
- Jung, J. (2019). The fourth industrial revolution, knowledge production and higher education in South Korea. *Journal of Higher Education Policy and Management*, 1-23.
- Greenman, C. (2017). Exploring the impact of artificial intelligence on the accounting profession. *Journal of Research in Business, Economics and Management*, 8(3), 1451
- Guthrie, J., & Parker, L. D. (2016). Whither the accounting profession, accountants and accounting researchers? Commentary and projections. *Accounting, Auditing & Accountability Journal*.
- Islam, M. A. (2017). Future of accounting profession: Three major changes and implications for teaching and research. *Business Reporting, International Federation of Accountants (IFAC)*.
- Kgasi, M. R., & Kalema, B. M. (2016). The Influence of Exerted Pressure, Awareness and Attitude on Students Use of e-Registration. *International Journal of Information and Education Technology*, 6(9).
- Liu, C. (2017). International competitiveness and the fourth industrial revolution. *Entrepreneurial Business and Economics Review*, 5(4), 111-133.
- Loureiro, A. (2018). There is a fourth industrial revolution: the digital revolution. *Worldwide Hospitality and Tourism Themes*.
- Mahnkopf, B. (2019). The '4th wave of industrial revolution'—a promise blind to social consequences, power and ecological impact in the era of 'digital capitalism' (No. 01). EuroMemo Group. Discussion Paper.
- Menon, J., & Fink, A. (2019). The Fourth Industrial Revolution and Its Implications for Regional Economic Integration in ASEAN. *Journal of Asian Economic Integration*, 1(1), 32-47.

- Oladejo M.O and **Yinus Oluwaseun** (2020); Electronic Accounting Practice: An effective means for financial reporting. *International Journal of managerial Studies and Research* Volume8, Number 3, March 2020. PP 01-09.
- Ramesh, V., Jaunky, V. C., Roopchund, R., & Oodit, H. S. (2020). 'Customer Satisfaction', Loyalty and 'Adoption' of E-Banking Technology in Mauritius. In *Embedded Systems and Artificial Intelligence* (pp. 861-873). Springer, Singapore.
- Rasid, S. Z. A., Saruchi, S. A., & Tamin, R. S. M. (2019). The eminence of the 4th industrial revolution: how it transformed management accountants. In *16th International Symposium on Management (INSYMA 2019)*. Atlantis Press.
- Salimon, M. G., Yusoff, R. Z. B., & Mokhtar, S. S. M. (2017). The mediating role of hedonic motivation on the relationship between adoption of e-banking and its determinants. *International Journal of Bank Marketing*.
- Schäfer, M. (2018). The fourth industrial revolution: How the EU can lead it. *European View*, 17(1), 5-12.
- Schwab, K., (2016). The fourth industrial revolution. Geneva: The World Economic Forum.
- Soh, C., & Connolly, D. (2020). New Frontiers of Profit and Risk: The Fourth Industrial Revolution's Impact on Business and Human Rights. *New Political Economy*, 1-18.
- Solvak, M., Unt, T., Rozgonjuk, D., Võrk, A., Veskimäe, M., & Vassil, K. (2019). E-governance diffusion: Population level e-service adoption rates and usage patterns. *Telematics and Informatics*, 36, 39-54.
- Soto-Acosta, P., Popa, S., & Palacios-Marqués, D. (2016). E-business, organizational innovation and firm performance in manufacturing SMEs: an empirical study in Spain. *Technological and Economic Development of Economy*, 22(6), 885-904.
- Susskind, R. E., & Susskind, D. (2015). The future of the professions: How technology will transform the work of human experts. Oxford University Press, USA.
- Truong, H. M. (2016). Integrating learning styles and adaptive e-learning system: Current developments, problems and opportunities. *Computers in human behavior*, 55, 1185-1193.
- Uzochukwu, O. C., Alloysius, N. T., & Olohi, E. S. (2019). Re-Engineering Nigeria Economy through Fourth Industrial Revolution: A Case of Agro-Allied Firms in Nigeria. *International Journal of Applied Economics, Finance and Accounting*, 5(1), 14-30.
- Wilkinson, A., Hislop, D., & Coupland, C. (Eds.). (2016). *Perspectives on Contemporary Professional Work: Challenges and Experiences*. Edward Elgar Publishing.
- Yinus, S.O., Hussaini, U.A., Adamu, D.B., Jaafar, R., Nasasira, J. & Jimoh, C. (2021). Effect of COVID-19 Pandemic on Sustainable Development Mechanisms: Perspective from Uganda and Nigeria. *KIU Interdisciplinary Journal of Humanities and Social Sciences*, 2(1), 84-98.