



RESEARCH ARTICLE

Future of Accounting Education Practices: Leveraging on Emerging Technologies

Agbo, Elias Igwebuike*

¹²³Department of Accounting and Finance, Godfrey Okoye University, Ugwuomu-Nike, Emene, Enugu State, Nigeria

*Corresponding Author

ABSTRACT

Improvements in information technology (IT) have transformed the whole education function in business. Also, it has altered the functions of professional accountants. Recognizing its level of usefulness, many employers and professional bodies have oftentimes demanded for adequate IT skills. No matter which domain of accountancy is involved, relevant IT tools, should be embedded in the context of accounting and communicated through the modern methods and practice of teaching. Notwithstanding how essential the springing –up telecommunication will be to accounting education practice in the future, the level at which the former is deployed in accounting units is seriously limited. In addition, hitherto, the present topic was researched upon in the extant literature more or less in fragments while many aspects of its skills which are demanded from the graduates of accounting by employers to possess are absent. Using the historical research approach, this study examined what the future of accounting education practices would be comprehensively. The outcome of the study revealed that emerging technologies play vital roles in modern accounting practices. Consequently, it is recommended that the relevant parties in the accounting profession become proactive enough to reap the emerging technology benefits.

Keywords: Accounting Education Practice; Accounting Professionals; Emerging Technologies

Introduction

People anticipate that accounting education should meet the aspiration of communities worldwide. To remain competitive, the enterprising world has continued to require variety skills and qualities through those individuals they employ newly. Globalization has significantly altered the conditions within which accountants function as well as the entrepreneurial activities which they get involved in (Grebe, 2017).

Factors like this seriously affected the unique function as well as identity of the accounting professionals as professionals (Grebe, 2017). Even literature concerning this subject matter has acknowledged the changing characteristics of graduates. This explains the swaps which are simultaneously happening in the requirements of accounting education (Shuttleworth, 2012). An example is that the function of accountants is being transformed into that of strategists. Previously, accountants played the simple function of assisting strategic managers by feeding them with financial information. However, contemporary research has shown that those in the accounting career have often become the tactical managers themselves that formulated and implement business strategies successfully. Generally, people are aware that there has to be dependable and valid monetary details before markets can perform competently

as well as for wealth to grow. However, fabricating qualitative monetary details has to be backed up with impressive business education system. The latter evolve and ameliorate the capability of career accountants, while contributing towards increasing general confidence in the quality of their activity. The fast growth of innovations has necessitated a swift alteration of skills and competences expected from professional accountants. Imene and Imhanzenobe (2020) assert that advancement in IT the employment of its instruments to carry out accounting functions and processes.

Prior to the era of IT, accountants faced the challenge of getting ready and reporting transactions, frequent errors and mis-statements. In addition, they encountered some difficulty in storing large data on papers (Imene & Imhanzenobe, 2020). However, given the coming to light of advanced IT techniques many accountants can now get

Citation: Agbo, E. I. (2023). Future of Accounting Education Practices: Leveraging on Emerging Technologies. *European Review in Accounting and Finance*, 7(3), 15-24. DOI: <https://doi.org/10.5281/zenodo.8112983>

Copyright: ©2023 The Authors. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

ready and deliver financial reports promptly and correctly. Notwithstanding how salient the unfolding technologies are to the hereafter of accounting education application; an appraisal of existing literature has disclosed that the degree of deployment of unfolding technologies into accounting units is significantly limited. Previously the discussions on this topic looked more or less fragmented (Kroon et al, 2021) and much of the expertise that employers demanded from the graduates of accounting is absent.

Finally, the link between the unfolding technologies and accounting education application has not yet been fully clarified. The present conditions and situations where technological innovations evolve with a pace faster than those accounting education practices make additional inquiries into how the former affect the latter both justifiable, necessary, reasonable and timely. Consequently, this review was undertaken as a contribution to the extant literature on the present status, and predictions, regarding what accounting education practice will be in the near future amidst the trending technologies. This work was centered on five aspects; it had to do with providing information and enhancing understanding with regard to (1) how unfolding technologies are changing the day-to-day accounting education practice; (2) what the evolving technical know-how means to today's accountants' role; (3) the capabilities that future accounting educators and professionals should possess; (4) the trend, opportunities, challenges as well as the threats of emerging technologies and (5) the steps being taken by the accounting profession and other to minimize the disruptive impact of the technologies on the future accounting education applications.

Its results will further inform, educate and clarify to what current or aspiring accountants and instructors should expect later as they venture into a transformed accounting landscape greatly impacted by up-coming technologies. In addition, we expect that professional associations and regulators would have the outcome of this review in while revising the relevant standards, rules, and laws. In addition, academic institutions can equally employ the results and accompanying recommendations to adjust their curriculum and programs.

The remaining sections of this work were arranged as follows: Section 2 is the literature review. Section 3 is about the methodology. Section 4 discloses the trend, opportunities, challenges and the threats of on-coming technologies. Section 5 discusses the future of accounting education practices of the future, given the technological innovation and the reactions of the accounting profession and the interventions of other stakeholders. Section 6 concludes the paper.

Literature Review

Conceptual Review

Accounting Education Practices

The term accounting is defined by Woods (2019) as the systematic and detailed recording of monetary transactions of an entity. The transactions could include reckoning for small businesses, government, forensic and management accounting. While accounting practice concerns the process of recording the day-to-day financial activities of a concern, accounting education is the experience and practice in learning to learn (Littleton (2016). Fouché (2013) reports that the interest in accounting education will be invariably concentrated on subject - content while the methodologies for teaching are mainly content - driven.

Emerging Technologies

Generally, the term emerging technology is employed to describe an on-coming technology. All in all, the meaning of emerging technology may differ slightly when employed different fora like media, business, science, or education. The reserved for those innovations that creating, or are designed to create, critical social or economic effects. Johnson (2019) lists the emerging technologies that are considered accounting: as Big Data or Data Science, Automation, Artificial Intelligence, Block chain, Cryptocurrency, Cognitive Computing, Bots and Quantum Computing. Even though technological innovations will always emerge, this is a moment of major transition. According to Johnson (2019), the transitions brought about by new technologies are happening so rapidly that changes occur on daily basis.

Theoretical Framework

This work is anchored on a number of theories:

Theory of Technology Acceptance

Davis (1989) describes this theory as a theory related to information systems which models how those that use a technology arrive at accepting and using it. One item that motivates individuals to make use the innovation is behavioral intention (BI). This is driven by the attitude which is the general impression of the technology. This theory suggests that whenever a new technology shows up, a number of issues influence peoples decision about how and when they will use it. Notable among those factors include: (i) Perceived usefulness. (ii) Perceived ease-of-use (iii) External variables

Critical Theory

This theory postulates the user evolving technology will be desirous of finding out whose interests are served by the questioned status quo.

Social Presence Theory

This theory discloses anticipated social effects of communications technology. It posits that the social effect of the medium of communication is driven by the social presence that it allows communicators to have. It assumes that more relationship between the parties will increase greater intimacy, immediacy, warmth and inter-personal rapport.

Empirical Review

For the sake of this work, the following studies were reviewed as they relate to the topic under discussion. Ibidunni, Ogundana and Jinadu (2015) investigated the part played by ICT integration in accounting education in favor of imparting value -adding ability in Nigerian accounting students. The survey research design was employed which involved the collection data from the students of accounting in selected private universities. The results showed that integrating ICT into the curriculum of accounting education will assist the graduates of accounting to carry out their responsibility of adding value to organizations. Al-Zoubi (2017) studied the influence of cloud computing on the elements of accounting information system. Descriptive approach was used.

Rînda (2017) sought to ascertain whether aspiring accountants and accounting professionals realize the benefits and security challenges that come with on-coming technologies including Big Data analytics and mobile technologies.

the study found as follows:

- i. On the average, accountants and auditors possess some theoretical know- how of emerging technologies in the accounting discipline but still needed to increase their competence in exploiting them efficiently and
- ii. Mobile technologies had begun to be accepted by the practitioners in Romania.

Cloete (2018) used an integrated assessment method to examine first-year university students in order to enhance critical thinking skills in undergraduate students. Statistical significance was observed in favor of the experimental group. Consequently, the author recommended that integrated assessments built upon real work problems, ought to be carried out during first year studies and in subsequent years.

Fourie and Erasmus (2018) evolved a teaching method that centered attention on classroom management practices. The authors discovered that teaching is the most essential determinant of student success.

The study by Beukes, Kirstein, Kunz, and Nagel (2018) analyzed the adoption profiles of South African students from innovators to laggards. This study revealed that male students embraced on-coming technologies faster than their female counterparts.

Coetzee, Schmulian and Coetzee (2018) examined the perception of undergraduate accounting students concerning web conferencing-based tutorials Several students signaled that the only matter preventing their positive. encounter had to do with operational problems. The study observed that, generally, participation in conference-

based tutorials had a strong impact on students' academic performance.

Imene (2020) arranged for discussions on how IT has helped the accountancy profession. The study concluded that the traditional role of accountants is to prepare financial statements. As such, a lot of tasks are carried out under this traditional role. The authors claim that in the era before IT, accountants were faced with the problems of delays in processing transactions and reporting, continuous errors and misstatements and difficulty in storing large data on papers.

Asuquo, Dan and Effiong (2020) investigated the effect of IT on the accountants' schedule of duties the study employed the survey research design. The authors distributed questionnaires to sampled individuals in the targeted zone that had the relevant knowledge in the area of inquiry.

Kroon et al. (2021) analyzed the extant accounting literature concerning the IT's impact on the accountants' duty and skills. It investigated whether open innovation is an influential factor in that connection. The research was done through a systematic analysis of extant literature. That followed a five-step approach after Denyer and Tranfield (2009). The Web of science and Scopus databases were employed for obtaining the articles reviewed. One of the major results of the analysis was the identification of the skills that the present accountant has to possess and the duties assigned to him.

Otuya, et al. (2021) assessed the ICT expertise of accounting practitioners as one of the key contemporary problems confronting the accounting profession and education in Nigeria. Using the technology acceptance model, the study employed the survey research design. The population of the study comprised accounting practitioners in Delta State. The research data were obtained through questionnaires. The work found that the expertise in using software packages should include the knowledge of Microsoft Word, Excel spreadsheet, Power Point presentation, Quick Books, Sage (any version) and XBRL.

In addition, the study discovered a big difference in the degree of expertise between accounting lecturers and the practicing-chartered accountants. The results of the study equally revealed that the practicing-chartered accountants are more ICT savvy than accounting lecturers.

Ikechukwu and Egiyi (2021) investigated the effect of ICT on accounting practice in Nigeria. The population of study included all the accounting firms in Enugu state. The study employed frequencies, percentages, tables and charts to present the data obtained. The Chi-Square test of independence and correlation was utilized in testing the statistical significance of the null hypotheses. The study concluded that there is a significant link job proficiency and the application of ICT, and adopting ICT in the accounting practice is beneficial significantly. Consequently, the study recommended the, the application of ICT in accounting practice in Nigeria.

Jackson, Michelson and Munir (2022) sought to find out how perfectly universities, employers and professional bodies prepare professional accountants to embrace the emerging technologies and create pathways to build technology-related skills for the future. With mixed - method study of 315 early professional accountants, and 175 managers/recruiters in Australia, the authors discovered that varying insights existed within the groups. The results disclosed that young professional accountants were generally more forthcoming in their judgment regarding how efficiently training programs got them prepared for the up-coming technologies while the managers recruiting organizations showed greater confidence in the competence of universities to meet the demands for emerging skills.

Methodology

In alignment with Parker (2017) and Peace (2021), this work employed historical research design. The study data were obtained and synthesized and from many sources, while past events were employed to draw conclusions and make predictions concerning the future. The reason for using this method was to enable the researchers to find out all empirical evidence that fit the pre-specified inclusion criteria for answering the research questions (Snyder, 2019). Clear and systematic approaches were used while review in the related articles in order to minimize bias. The essence was to obtain the results that are reliable and from which valid conclusions could be made (Moher, Liberati, Tetzlaff & Altman, 2010). The study used secondary data to provide background information

Trend, Opportunities, Challenges and Threats of Emerging Technologies

Trend of Emerging Technologies

With the emergence of new technologies, changing regulations have compelled accounting companies to be fast in embracing innovation and increasing their investment in technology. Businesses firms today expect more from accountants. Much more than was the case before, professional accountants are now compelled acquire proficiency and trust in. business strategy, growth planning as well as future vertical industry trends which are all areas they should be acquainted with. According to the Washington Post - US household data, today's world has been changed radically by technology.

According to Kavangh (2019), there are notable advances in technology across several fields. These include information ICT, artificial intelligence (AI), nanotechnology, space technology and biotechnology to mention but a few. These breakthroughs are expected to be highly disruptive and bring about major transformative shifts with regard to how societies operate.

Gartner Consulting Firm is reported estimating the number of connected devices as growing by 5.5 million units per day and that it could reach 20.8 billion by 2020. Freidman (2016), the Netscape founder observed that "Software is eating the world", while the Tesla founder, Elon Musk, warned that AI is the biggest risk that would be encountered by humanity (Leins, 2017).

Risks, Opportunities and Problems of Emerging Technologies

Up-coming technologies have rapidly reshaped the enterprising world with both risks, opportunities and challenges (Grove, Clouse & Xu, 2020).

Risks

Grove et al. (2020) enumerates key risk and challenges that boards of directors and corporate governance encounter as a result of emerging technologies Grove et al., (2020) reveal that while dealing with emerging technological and societal changes these two experience deep shift risks, global risks, digital risks and opportunities, AI initiatives risks and business reputational risks. Every novelty carries its risks, obstacles, and challenges. Several authors have identified the willingness and readiness of accountants in practice to adapt and adjust to the demands of the emerging technologies as one of the major risks (Burns & Igou, 2019; Feung & Thiruchelvam, 2020).

Opportunities

- i. Accounting robotization is capable of saving accountants from myriad of mundane, trivial, and manual functions which they perform on daily basis, in addition, it leads to efficiency improvements, cost reductions and overall accuracy (Brands, 2016).
- ii. With transactions documented immediately by a workflow software an entity, experiences faster processing time, providing information quicker and easier (Brands, 2016).
- iii. Internal controls are improved as human error and negligence is replaced by consistent application of the processes of business (Brands, 2016).
- iv. Robotic Process Automation (RPA) will make the dreaded month-end close for accounting professionals smoother and less frantic because they no longer need to spend hours on manually matching transactions, combining large data sets, and assembling Excel reports which they must update repeatedly (Tuker, 2017).
- v. The manual jobs that are prone to error are removed from human responsibility through the RPA. This enables organizations to make improvements in efficiency and accuracy at lower costs while simultaneously leaving their accountants with higher-level, more human-adapted activities like strategy and analysis (Tuker, 2017).
- vi. The financial close period is an aspect of particular importance that automation can change
- vii. The record-to-record model employed generally squeezes an extensive quantity of work into a short time period and delays processing and reporting until the end of the period or time for actual analysis (Tuker, 2017).
- viii. Inversely, the current practice of continuous accounting changes both an organization's accounting function and the entire organization itself.
- ix. Continuous accounting changes business processes as it gives more emphasis on real-time processing by

workers paired with sizeable component of deep analysis

- x. When it comes to big data, the auditor's judgment will assume a more significant role data analysis environment than in the sample-based audit as a result of the capacity for evaluating large amounts of anomalies (Earley, 2015).

Challenges

- i. The law of diminishing return might contribute in in slowing down the advancement in further automation in organizations. The reason is that, at some point, increasing automation may be met with incrementally less marginal return. This means that certain firms may hesitate to incorporate some of the up-coming technologies if they discover that the return on investment is not worth incorporating (Brands, 2016).
- ii. Some of the software packages for tax do not have the ability to provide 100 percent accuracy for tax practitioners that use optical character recognition (OCR) to input their client's data (Tuker, 2017).
- iii. As far as block chain is concerned, several platforms and rules for block chain transactions, with no particular platform being the primary system preferred (Tucker, 2017)
- iv. Another impediment lies in organizational leadership. According to Tucker (2017), among the 977 senior finance professionals who took part in a survey in 2017, only 40% believed that the financial close would be replaced by real-time reporting by 2030. This potentially reflects either a resistance or fear of changing their current reporting systems (Tucker, 2017).
- v. An obstacle observed for both financial accounting and relates to the standards that generally applied since their standards currently do not [provide for speculative financial information.
- vi. As highlighted by Earley (2015), regulators are worried that auditors might lack the requisite competence to apply data analytics techniques properly.
- vii. Another challenge identified by Al-Htaybat and vonAlberti-Alhtaybat (2017) is the risk of the absence of the knowledge of big data and data analytics by accountants.
- viii. Finally, the supply of business analytics knowledge and IT skills in the profiles of the management accountant tends to plummet with company size. For this reason, there is an assumption that management accountants in large organizations may not require business analytics knowledge and advanced IT skills (Oesterreich and Teuteberg 2019).

Emerging Technologies and the Faith of Accounting Profession in the Future

The findings of this work indicated that the effect of emerging technologies on the functions and competences of accountants is not direct. The outcome of their primary impact on the accounting profession is expected to change the tasks or the manner they are performed.

These changes might affect the part played by accountants. The latter may be compelled to complete existing tasks differently or even perform new tasks. As the part that accountants play is closely linked to the tasks executed and the functions assumed, all these transformations may ultimately affect the role of the accountant. In like manner, the expertise needed by accounting professionals perform their profession may affected also. The emergence of new technologies, especially those that are connected with the accounting profession has been astronomical.

The up-coming of new technologies points draws attention to the possibility that even petty businesses would become more empowered as regards their record-keeping needs. Conversely the major growth areas of accounting practice seem to lie in the domain of business advisory services. Consequently, future accountants might be compelled to start acting as essential part of an accountant's skill-set. More important will be the expertise in analysis, innovative solving, communication and client relations (Howieson,2003) Some technology analysts explain that, machines will eventually replace anything capable of being converted into data.

Just like spreadsheets and databases AI is a tool that is only valuable if people are knowledgeable about how it can be used to streamline business processes. Nevertheless, AI is not likely to be capable of displacing accountants and auditors when it comes to exercising human inventiveness and judgments.

The Future of the Accounting Profession

As predicted by Islam (2017), it is probable that the accounting profession will encounter three important changes in the next decades.

Islam (2017) contend that these changes will have some remarkable impact on professional organizations, their members and educational institutions. The three changes include:

- i. Trending smart and digital technology
- ii. Continued globalization of disclosure standards and
- iii. New forms of regulation.

The accounting profession has some major challenges. The Association of Chartered Certified Accountants (ACCA) carried out some research titled “Drivers of Change and Future Skills” and which investigated these important changes.

- i. Accountants shall be compelled to work with increasingly sophisticated and smart technologies in order to improve on the status quo. These technologies might even replace the traditional approach entirely.
- ii. As globalization continues, it will create more opportunities and challenges for the professional accountants. Just as globalization will encourage free flow of finance from one capital market to another and enhance oversea outsourcing activities and the transfer of technical and professional know-how, it will at the same time continue to present risks for settling domestic problems that having different cultural, monetary and tax systems. Boost in regulation and the associated disclosure rules are likely to create the greatest impact on the accounting profession for years to come.

Implications for Research

At present, big firms of professional accountants are seriously carrying out some surveys concerning cloud accounting, big data, change in technology new patterns of fraud and corruption and corporate sustainability. The reason for this is to address the present and future opportunities and problems that confront the accounting profession. Islam (2017) presents KPMG as an example of those firms that have produced survey reports regarding cloud computing, fraud/corruption/bribery and corporate sustainability. A growing number of accounting academics are also investigating similar issues.

Responses of the Market to Changes brought by Emerging Technologies

People expect that the reaction of the market to the changes caused by emerging technologies will ultimately affect how audits are to be carried out. In addition, accountants and auditors are expected to have the competence to respond promptly to the changes in user demand and the creation of new and unfolding metrics of organizational performance different from the traditional financial statements. It is necessary to centralize and standardize the auditing profession which is shifting from apprenticeship model toward the areas that have deeper specialization.

It is likely that in the near future the accountants and auditors will experience a renaissance, with great opportunity bestowed on the individuals entering the profession to drive innovations and progress (Accounting Today, 2017). Furthermore, it is envisaged that the essential concept in the center of auditing, such as enhancing information confidence, shall be constant. However, as technology and analytics are moving forward, the manner that engagement teams perform audits will definitely differ from what it has been.

The ability of auditors to exercise judgment and professional skepticism will be more important than they have been before when they begin to apply new technologies. Many scholars believe that AI will not replace accountants. Instead of replacing accountants, AI will only shift their focus. In addition, no matter the magnitude of the harm that the disruption from AI might cause on the accounting profession in the future, there will no longer be some necessity for human professionals.

Response of the Accounting Profession to the Disruption caused by Emerging Technologies

The accounting profession is responding to the disruption caused by the up-coming technologies in the following ways:

- i. Investing massively in emerging technologies;
- ii. Deploying new solutions in auditing
- iii. Leveraging data for business intelligence;
- iv. Adopting cloud computing services
- v. Developing fresh business models gradually;
- vi. Upskilling the accounting professionals through trainings;
- vii. Reviewing the strategies of professional accountants
- viii. Acquiring niche players.
- ix. Introducing new rules designed to improve audit quality and innovation in the accounting profession where some aspects of the task have the possibility of being replaced by machines.

In due recognition of the fact that the actions of accountant's impact those of others the International Accounting Education Standards Board, (IAESB)), and the International Federation of Accountants (IFAC) developed some framework for international education statements. According to Delloite (2007), IAESB issued two fresh International Education Practice Statements. The new practice statements assist IFAC members, associates and other educators to develop ethics education programs and implement the information technology knowledge component of a professional accounting education program. Kavanagh (2019) reports that there is a lot of efforts outside the accounting profession which are already under way to tackle the emerging problems and threats of up-coming technologies. Some of those actions are spearheaded by national governments, while others originate from several actors from across an equally wide array of disciplines and sectors. These efforts may be complex, fragmented, wide-ranging and at times nonproductive. However, they should be acknowledged.

Conclusion

Improvements in IT have altered the whole education function in business and the part played by different professionals, especially professional accountants.

This examined the future of accounting education practices given the up-coming technologies. It employed the historical research approach. The study concluded that the momentum at which new technologies are emerging is astronomical and is likely to continue that way in the near future. The automation of the tasks that are repetitive in nature will bring about some significant decrease in the work-force required for traditional assurance task.

However, it will at the same time increase the quest for the employees that possess skills related to information technology and data analysis. At present, it is obvious that there is a serious gap between the expertise imparted in accounting students and that required for coping the emerging technologies. Consequently, it is necessary and urgent to adjust the prevailing accounting education practices by blending theory with the relevant and up-to-date practical knowledge both on the side of both the educators and learners. The professional accountants that fail to acquire the requisite skills may end up losing their jobs in the future. Despite the threats of job losses that may arise from the introduction of artificial intelligence and other related technologies, the part played by the accountant will only shift to more challenging and responsible levels.

The emerging technologies will make for greater level of efficiency for organizations that embrace them. This work therefore concludes that the relevant stakeholders in the accounting profession ought to be proactive enough to reap the benefits accruable from emerging technologies. As already suggested by several researchers, it is necessity to carry out further empirical analyses of big data analytics (Earley, 2015; Richins et al., 2017, Kend & Nguyen, 2020; Al-Htaybat et al., 2017), AI (Burns & Igou, 2019) and block chain technology (Tan & Low, 2019) in other to harness broader insights.

References

- Accounting Today (2017, June). Scoping out the Audit of the Future.
<https://www.accountingtoday.com/news/scoping-out-the-audit-of-the-future>
- Al-Htaybat, K.; Von Alberti-Alhtaybat, L. (2017). Big Data and corporate reporting: Impacts and paradoxes. *Account. Audit. Account. J.* 3, 850–873. [CrossRef]
- Al-Zoubi, A.M. (2017). The effect of cloud computing on elements of accounting information system. *Global Journal of Management And Business Research* 17(3):1-9.
- Asuquo, A. I., Dan, N. O. & Effiong, G. T. (2020). Impact of Information Technology on Accounting Line of Works. *International Journal of Recent Technology and Engineering (IJRTE)*,9(2), DOI:10.35940/ijrte.B3522.079220
- Brands, K. (2016). Ready or Not, Here Comes Accounting Automation. *Strategic Finance*, 97(9), 70-71.
- Bourdieu, P. (1977), Outline of a theory of practice, Cambridge University Press, Cambridge
- Beukes, B., Kirstein, M., Kunz, R., & Nagel, R. (2018). Innovators to laggards – how South African students adopted and perceived technologically enhanced learning. *Accounting Education*, 27(5), doi:
- Burns, M.B.; Igou, A. (2019). Alexa, Write an Audit Opinion: Adopting Intelligent Virtual Assistants in Accounting Workplaces. *J. Emerg. Technol. Account.* 16, 81–92. [CrossRef]
- Cloete, M. B. (2018). The impact of an integrated assessment on the critical thinking skills of first-year university students. *Accounting Education*, 27(5). doi: 10.1080/09639284.2018.1501717 [Taylor & Francis Online], [Google Scholar]
- Coetzee, S. A., Schmulian, A., & Coetzee, R. (2018). Web conferencing-based tutorials: Student perceptions thereof and the effect on academic performance in accounting education. *Accounting Education*, 27(5), doi:10.1080/09639284.2017.1417876 doi: 10.1080/09639280903411328 [Taylor & Francis Online], [Google Scholar]
- Davis, F. D.; Bagozzi, R. P. & Warshaw, P. R. (1989), [User acceptance of computer technology: A comparison of two theoretical models](#), *Management Science*, 35 (8): 982–1003, doi:10.1287/mnsc.35.8.982, S2CID 14580473
- Denyer, D.; Tranfield, D. (2009). Producing a systematic review. In *The Sage Handbook of Organizational Research Methods*; Buchanan, D. A., Bryman, B.A., Eds.; Sage Publications Ltd.: Thousand Oaks, CA, USA, 2009; 671–689. DOI: [10.1080/09751122.2013.11890071](https://doi.org/10.1080/09751122.2013.11890071)
- Earley, C. (2015). Data analytics in auditing: Opportunities and challenges. *Bus. Horiz.*, 58, 493–500. [CrossRef]
- Feung, J.L.C.; Thiruchelvam, I.V. (2020). A framework model for continuous auditing in financial statement audits using big data analytics. *Int. J. Sci. Technol. Res.*, 9, 3416- 3434.
- Fouché, J. P. (2013). A Renewed Call for Change in Accounting Education Practices The results of a survey amongst first year. *Int J Edu Sci*, 5(2): 137-150
- Fourie, H., & Erasmus, L. (2018). Inclusive accountancy programmes in higher education: A revised teaching approach. *Accounting Education*, 27(5). doi: 10.1080/09639284.2018.1507828 [Taylor & Francis Online], [Google Scholar]
- Freidman, T. L. (2017, August 2). Climate shifts aren't limited to the weather. *The New York Times*. Retrieved from <https://www.nytimes.com/2017/08/02/opinion/climate-change-technology-globalization-china.htm>
- Grebe (2017). Bourdieu's Social Practice Perspective for Accounting Education Conference Paper · June Available at <https://www.researchgate.net/publication/328804033>
- Howieson, B. (2003). Accounting practice in the new millennium: is accounting education ready to meet the challenge? *The British Accounting Review* 35(2), 69-103 [https://doi.org/10.1016/S0890-8389\(03\)00004-0](https://doi.org/10.1016/S0890-8389(03)00004-0) [Get rights and content]
- Ibidunni, O.M., Ogundana. A.S. & Jinadu, O. (2015). ICT Integration in Accounting Education: Evidence from Two Private Higher Institutions in Nigeria *ACTA UNIVERSITATIS DANUBIUS*, 9 (2), 114-126 Available at: <https://www.researchgate.net/publication/324039933>
- Ikechukwu, V.O & Egiyi, M. A. (2021). Impact of Information Communication Technology on Accounting Practice in Nigeria. *Contemporary Journal of Management* 3(3), 67-77
https://airjournal.org/cjm/journal_article/impact-of-information-communication-technology-on-accounting-practice-in-nigeria-2/
- Imene, F. & Imhanzenobe, J. (2020). Information technology and the accountant today: What has really changed? *Journal of Accounting and Taxation* 12(1),48-60, DOI: 10.5897/JAT2019.0358

- Imene F. O, Egbe K.O (2018). Information Technology and The Accountant Tomorrow: What Is Coming? *International Business Research* 5(5):158-163.
- International Federation of Accountants (IFAC). (2016). *ACCA to Support iCPAR in building capacity through DFID-funded program*. Retrieved from <http://www.ifac.org/news-events/2016-01/ifac-selects-acca-strategically-strengthen-accountancy-profession-rwanda> [Google Scholar]
- Islam, M. A. (2017). Future Of accounting profession: Three major changes and implications for teaching and research. International Federation Of Accountants. QUT, Brisbane, Australia. February 10
- Jackson, D. Michelson G. & Munir, R. (2022). Developing accountants for the future: new technology, skills, and the role of stakeholders <https://doi.org/10.1080/09639284.2022.2057195>
- Johnson, R. (2019). Emerging Technology for Accounting Professionals. Available at: <https://www.k2e.com/news/emerging-technology/Journals Menu>
- Jarzabkowski, P. and Kaplan, S. (2015), Strategy tools-in-use: a framework for understanding 'technologies of rationality' in practice, *Strategic Management Journal*, 36(4), 537-558..
- Kavanagh, C. (2019). New Tech, New Threats, and New Governance Challenges: An Opportunity to Craft Smarter Responses? Available at <https://carnegieendowment.org/2019/08/28/new-tech-new-threats-and-new-governance-challenges-opportunity-to-craft-smarter-responses-pub-79736>
- Kend, M.; Nguyen, L.A. Big Data Analytics and Other Emerging Technologies: The Impact on the Australian Audit and Assurance Profession. *Aust. Account. Rev.* 2020, 30, 269–282. [CrossRef]
- Kroon, N.; Alves, M.d.C.; Martins, I. (2021). The Impacts of Emerging Technologies on Accountants' Role and Skills: Connecting to Open Innovation A Systematic Literature Review. *J. Open Innov. Technol. Mark.Complex.* 7, 163 .<https://doi.org/10.3390/joitmc7030163>
- Leins, C. (2017, July 16). Elon Musk: Artificial intelligence is the biggest risk that we face as a civilization. U.S. News & World Report. Retrieved from <https://www.usnews.com/news/nationalnews/articles/2017-07-16/elon-musk-artificial-intelligence-is-the-biggest-risk-that-we-face-as-a-civilization>
- Littleton, A.C. (2016). The Purpose of Accounting Education. 'A. C. Littleton's Final Thoughts on Accounting: A Collection of Unpublished Essays (*Studies in the Development of Accounting Thought*, 20), Emerald Group Publishing Limited, Bingley, 47-55. <https://doi.org/10.1108/S1479-35042016000020021>
- Moher, D.; Liberati, A.; Tetzlaff, J.; Altman, D. G. (2010). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Int. J. Surg.*, 8, 336–341. [CrossRef]
- Oesterreich, T.D.; Teuteberg, F. (2019). The role of business analytics in the controllers and management accountants' competence profiles: An exploratory study on individual-level data. *J. Account. Organ. Chang.*, 15, 330–356. [CrossRef]
- Otuya, S., Egware, N. O., Eginwiwin, J.E., Ofeimun, G. & Akporien, F. (2021). ICT proficiency and the accounting profession in Nigeria. *African Journal of Accounting and Financial Research* ISSN: 2682-6690. 4(2), 1-10.
- Parker, L.D. (1997). Informing Historical Research In Accounting And Management: Traditions, Philosophies, And Opportunities. *The Accounting Historians Journal* 24(2), 111-149.
- Peace, C. (2021). Implications of Emerging Technologies on the Accounting Profession. Undergraduate Honors Theses Student Works 5-2021. East Tennessee State University.
- Richins, G.; Stapleton, A.; Stratopoulos, T.; Wong, C. (2017). Big Data Analytics: Opportunity or Threat for the Accounting Profession? *J. Inf. Syst.*, 31, 63–79. [CrossRef]
- Samkin, G., & Schneider, A. (2014). The accounting academic. *Meditari Accountancy Research*, 22(1), 2–19. doi: 10.1108/MEDAR-05-2014-0041 [Crossref], [Google Scholar]
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *J. Bus. Res.* 104, 333–339. [CrossRef]
- Tucker, I. (2017). Strategic Finance. Retrieved from The Blueprint for Continuous Accounting: <https://sfmagazine.com/post-entry/may-2017-the-blueprint-for-continuous-accounting/>
- Woods, D. (2019). The Role of Accounting in Business and Why It's Important. Available at: <https://www.pdr-cpa.com/knowledge-center/blog/role-of-accounting-in-business37-47>. [CrossRef]
- World Economic Forum (2018). Agile Governance: Reimagining Policy Making in the Fourth Industrial Revolution, January, http://www3.weforum.org/docs/WEF_Agile_Governance_Reimagining_Policy-making_4IR_report.pdf.