

# Artificial intelligence: navigating the new era of accountants



## Introduction

Artificial Intelligence (AI) has taken the role of game-changer in business and particularly accounting firms for a dozen years. Accounting researchers facilitated by multifarious AI-related technologies and techniques conducted the financial reporting and analysis successfully (Lam, 2004). This research will examine the relationships between accountants and AI as well as the approaches that accountants can take advantage of AI in terms of efficiency, productivity, and employability. The mastery of professional skills related to AI will improve the work efficiency, productivity, and employability of accountants, leading to comprehensive accounting talents, which is of great significance. (word count: 94)

## Research Questions

1. What are the relationships between accountants and artificial intelligence?
2. How accountants can hook up to advantages of artificial intelligence?

## Hypotheses

1. If accountants are competent in the use of AI-related techniques, they can increase efficiency and boost productivity.
2. If accountants can acquire critical certificates, they are more likely to enhance the employability.

## Background

In the past few decades, technologies and techniques that focused on creating AI-based systems have evolved. Plus, Academia and business world have also been discussing the conceptualization and practicality of AI. This epoch-making technology eventually brought some procedural changes to the whole business field, especially the expert system in the accounting field which includes auditing, taxation, and assurance (Issa, Sun & Vasarhelyi, 2016). AI can be broadly understood as “ a constellation of technologies including machine learning, perception, reasoning, and natural language processing” (Crawford & Whittaker, 2016). Several types of decision theory techniques have been applied to auditing, taxation, assurance problems that involve risk assessments, unstructured and semi-structured but often repetitive decisions, uncertainty, incomplete information(Baldwin, Brown & Trinkle, 2006).

The expert system, which can provide intelligent suggestions and make professional decisions, was first applied to auditing and tax domain at the 1980s with some success to an automatic understanding of audit task processes, knowledge transferability, and purpose demonstration. After expressing its efficiency and effectiveness, public accounting organizations made a huge investment in expert systems that with great knowledge bases, aiming to underpin audit planning, compliance testing, substantive testing, risk assessment, and decision making. Subsequently, the strengths and limitations also are investigated by accounting researchers in order to build more sophisticated systems (Brown, 1991).

Auditing, therefore, was reformed predominately in terms of audit types, auditing rules, and audit work quality. Management auditing, environmental <https://assignbuster.com/artificial-intelligence-navigating-the-new-era-of-accountants/>

auditing, and computer audit emerged at that time. Plus, the number of complex auditing rules was increased. Also, the quality of the audit work was improved. Simultaneously, assurance standards were broadened and also assurance services were modified (Vasarhelyi & Kogan, 1998). Moreover, corporate tax accrual and planning function were benefited from the development of technologies and techniques (Shpilberg, Graham & Schatz, 1986).

Fuzzy systems and hybrid systems appeared after the development of expert systems. Fuzzy systems are of importance occurrence in decision making in that their inherent allowance of qualitative factors, which are better than typical quantitative algorithms (Comunale & Sexton, 2005). In addition, hybrid systems combine qualitative judgment with quantitative analysis to be applied to a wider range of tasks such as controlling risk assessment and classifying business credit applications (Stefanowski & Wilk, 2001). Furthermore, some accounting researchers are moving the interests toward neural networks.

The development of artificial neural network provided convenience for credit scoring, bankrupt prediction and going concern prediction. (Chye Koh & Kee Low, 2004). The combination of expert system and artificial neural network can promote the implementation of modern artificial intelligence in the audit. The deep learning model generated by this combination has higher dimensions and multiple structures than the artificial neural network. In other words, the deep learning model can analyze unstructured or semi-structured data by itself. Deep learning enables you to automate many audit

tasks, such as reviewing contracts, processing documents, and analyzing financial statements(Issa, Sun & Vasarhelyi, 2016).

With the advancement of the deep learning model, big four companies have been continually digging into the field of AI and developing its role in accounting work. KPMG partnered with IBM Watson in March 2016 to apply cognitive computing technology to its professional services products. More specifically, the company's auditors will be expected to use Watson to analyze financial statements to detect anomalies. Ernst & young utilize software to simulate human behavior since 2015 while

PricewaterhouseCoopers (PwC) leverage technologies such as DeNovo to run its companies. Meanwhile, Deloitte works with contract analysis system Kira Systems Inc. to generate cognitive model, aiming to examine large volumes of complex documents, extract and construct textual information to complete analysis, and assist auditors with the daunting task of reviewing documents. (Issa, Sun & Vasarhelyi, 2016). Frankly, according to PwC's analysis, productivity gains and customer demand rises up from accelerating development and take-up of AI, which is expected to account for over fifty-five percent of all Gross Domestic Product gains (Rao & Verweij, 2017). Since the benefits of AI become apparent, accountants are expected to learn to use it for other tasks, such as analyzing data to come up with new ideas or doing more consulting for customers. However, from the perspective of general accountants, putting AI into action is theoretically appealing and practically impossible. Hence, this research will clarify the connections between accountants and AI, and point out how accountants can successfully utilize the benefits brought by AI.

The descriptive non-experimental method has been used in this research in that this research uses case studies as the methodology and there is no intervention inside study (Killam, 2013). In addition, a comparative analysis will be an approach to analyze the similarities, differences, and patterns within two case studies. (word count: 772)

### Significance of Study

AI has shown great benefits and potential and it will still be the mainstream of the development of accounting companies in the next decade. However, although artificial intelligence has been around for several decades, most general accountants still maintain the status quo. In other words, their ideas about the application of artificial intelligence are relatively vague. As a result, a series of company personnel from accountants to chief executive officers must be prepared to meet the new technological era. Therefore, it is of great significance to find out the keys, which means the real linkages between AI and accountants, and the way that accountants are able to harness AI to help them with tasks. From this research, accountants can learn how to bridge the gap between accounting and AI domains and how to raise their upper limit to meet the new era of accountants. (word count: 144)

### Implications of Study

The role of future accountants will be product pricing forecasters, business consultants, and machine failure predictors, with the continuous development of artificial intelligence. Therefore, accountants need to pay more attention to the development of a hybrid of their traditional job and advanced AI. They are supposed to endeavor to improve their employability <https://assignbuster.com/artificial-intelligence-navigating-the-new-era-of-accountants/>

skills and save employees-hours to the greatest extent by leveraging the big data analysis skills and machine learning technique. Also, company management personnel can learn how to properly schedule and develop a strategic plan for the new technological era. This research may contribute to future research about technology in other areas of AI that have never been used in the accounting environment and how to make more automated processes in the accounting field. (word count: 127)

## Case Study Analysis 1

### 1. Executive Summary

To: Professor Braxton

From: Chenyang Shan

Subject: How Accountants Are Adjusting to Robots in This US Company

Flint Hills Resources (FHR) will automatize the process of transaction in order to boost productivity, reduce costs and catch up the trend of AI soon.

Goforth, an accountant who supervised accounts payable invoice processing group for the company, was successfully enhanced his employability skills after receiving training from the company. Frankly, the number of companies adopting robotic process automation (RPA) is becoming increasingly.

Accepting advanced technology is also the turning point of accountants. This article takes Goforth, for instance, to analyze how to get through this inflection point as an accountant.

FHR is the very firm that successfully transitioned from a traditional company to a high-tech company and ended up automating processes by tens of thousands of employee-hours. The reason for the success of this company is not only because of taking experiments actively and the courage to accept quick failure, but also the accountants in the company have been trained in more employment skills such as machine learning. “ The technology is the easy part,” As Remacle (2018) proved, “ But it’s really the people.” Moreover, saving more employee-hours is expected by FHR at that time, so that new accountants can focus on higher-value tasks such as invoice discrepancies reducing and forward-looking analysis performing. Furthermore, accounting executives are looking for accountants who truly understand these high-tech tools and can demonstrate a strong competitive edge.

Indeed, technology will change the role of everyone in the future, excellent people will also take on more complex tasks. Gorforth is the very person who is ready for the future. He is one of the first staff trained by the FHR company, and he can master automation tools skillfully. In general, accountants’ skills lay the foundation for new accountants, while key knowledge such as big data analysis skills and machine learning are the core competitiveness of future accountants. (word count: 302)

## 2. Statement of Problem

Majority of accountants are still vague about artificial intelligence, both in terms of itself and the technology using it. (Hagel, 2018) In addition, while FHR achieves the successful transformation of accounting companies



effectively by adopting advanced technology and training employees, many companies will choose short-term profits rather than adjust the overall strategy to adopt artificial intelligence techniques because of the risk of low return on high investment (Luo, Meng & Cai, 2018).

The main problem is the gap between the skills that general accountants have and the capacity that new accountants need to have. Thus, accountants have to contemplate how do they improve their employability to adapt to AI using times whether the company leaders put the training into action or not. (word count: 122)

### 3. Addressing the Problem

Accountant personnel should notice the improvement of individual professional skill through course learning, company training or certificate acquisition. Advancements to its professional skills will lead to the enhancement of their employability skills.

Hence, one approach general accountants could take would be learning colleges or universities' courses to enhance employability skills. Colleges or universities have noticed the new market demand and arranged corresponding courses to cultivate applied accountants. They have strengthened the cooperation between schools and enterprises, for example, they recruit excellent and talented students through campus job fairs. Some institutions, such as University of Southern California, designed a program called " Master of Accounting with Emphasis in Data and Analytics" to teach their students to respond to rapid and continuous transformations in

different environments and to develop solutions in the areas of business,  
<https://assignbuster.com/artificial-intelligence-navigating-the-new-era-of-accountants/>

accounting, auditing, and data analysis to become the next generation leader. (University of Southern California, 2018). By acquiring a master's degree, general accountants are able to systematically study business-related computer science and to gain access to valuable alumni resources as well as school resources.

Another approach general could take would be company training. Enterprises should cooperate with technologies such as cloud computing and big data analytics to make full use of resources (Luo, Meng & Cai, 2018). Training internal accountants is an effective way for enterprises to improve their core competitiveness and also a good way for accountants to improve their employability. Accountants who do well in training can be promoted and paid more. In addition, the efficiency of enterprises can also be improved by adopting new technologies. As mentioned in summary, Gorforth is a typical example of an excellent accountant trained by the company. However, the input and expected output required by the company's training needs to be strictly calculated and considered.

The final approach general could take would be acquiring certification. General accountants can obtain certificates issued by professional institutions through their own efforts. In addition to the traditional certificated public accountant (CPA) certificates, there are now certificated management accountant (CMA) certificates that have been designed for analytical accountants. Holders of these certificates are also often the first consideration in a company's recruitment process, as it is a reflection of employability ability. (word count: 366)

#### 4. Solution to the Problem

The best way general accountants can enhance their employability skills is by obtaining relative certification. Learning courses or pursuing a master's degree usually takes time and especially money. Moreover, the curriculum setting is likely to have unitary course content, a low degree of difficulty, or a poor combination of theoretical knowledge and practical experience(Luo, Meng & Cai, 2018). Enterprise training may have problems with professionalism and investment. The training provided by an enterprise with insufficient resources is also limited thus trained accountants may be eliminated by the market in the future.

Accounting personnel that enhances their employability skills by obtaining the certification should convert their concept to actively study and creatively apply AI-related knowledge since it is of great importance to associate what you have learned with the skills you need to be competent for a job. In China, the proposed “ 13th Five-Year Plan for Accounting Reform and Development” point out the promotion of management accounting and the implement of accounting talent strategy(Luo, Meng & Cai, 2018). General accountants are more likely to become comprehensive accounting talents in this way. (word count: 182)

#### 5. Call to Action

In the increasingly fierce competition in the accounting industry, accounting personnel needs to improve their integration with big data as soon as possible. Increased employability skills can prevent elimination from rapidly changing markets. (word count: 33)

<https://assignbuster.com/artificial-intelligence-navigating-the-new-era-of-accountants/>

## Case study Analysis 2

1. Executive Summary

To: Professor Braxton

From: Chenyang Shan

Subject: PwC Australia: Accounting for change with Apigee

PwC is now adopting a new revenue model by developing an application programming interface (API) based ecosystem to provide services. Via APIs, labor-intensive services are abandoned, and proprietary data is efficiently transformed and connected between partners and clients in the platform “Next”. Also, by providing services in time by combining cloud accounting tools and integrated cloud applications, it has made a big success.

PwC intends to connect more datasets from public sources and open APIs from cloud providers in order to develop its cloud-first strategy. Moreover, instead of paying its local innovation fund for the development of its platform, PwC Australia is financed by four countries which include Australia, New Zealand, UK, and America, and therefore the platform is shared over these four countries while specific features are kept correspondingly in respond to different regulations across countries.

This enterprise is transforming into a data business from the people and services business as well. In such a process, Apigee plays a predominant role in helping them disclosing core and rich data so as to provide services today but actually demonstrate future value in the market. (word count: 184)

<https://assignbuster.com/artificial-intelligence-navigating-the-new-era-of-accountants/>

## 2. Statement of Problem

Advanced technologies such as Apigee mentioned in the case has expressed strong working ability and potential market value. Labor-intensive industries will be replaced by AI so those general accountants will face unemployment. Fewer accountant jobs and more skills required are the problems that accountants have to face in the future. Therefore, general accountants need to have a clear understanding of their current situation, analyze their correlation with artificial intelligence and whether there is the possibility of being replaced. (word count: 78)

## 3. Addressing the Problem

Analysis that focuses on how to deal with issues that may be replaced by AI is needed for accounting personnel. Changing occupation, doing customer service or improving professional skills may become three of the most effective ways to handle it.

Therefore, one method to avoid being replaced by AI is to change the occupation actively.

According to PwC (2018), transportation will be most affected by AI, while jobs in health and service industries will be least affected. When an accountant has expertise in health and services, a vocation transformation may be a viable option. Nonetheless, changing careers often requires adaptation and adjustment, which also takes a lot of time and energy.

Another method to avoid being replaced by AI is to do some customer service. Accounting firms generally have customer service jobs. In other <https://assignbuster.com/artificial-intelligence-navigating-the-new-era-of-accountants/>

words, the reception service when the customer first arrives. For example, the introduction of the company profile and other communication work. This work, which requires emotional interaction, will not be replaced by artificial intelligence for a while. However, this is not a long-term solution. The future development speed of artificial intelligence needs to be considered.

The final method to avoid being replaced by AI is to improve professional skills. Machine learning and big data analyzing are two are the two most critical skills that future accountants need to master. As detailed in the previous case study, learning these two skills helps accountants reduce employee time, improve efficiency, and improve employability in fierce job competition. In addition, it is also the only way to become a compound accounting talent. (word count: 262)

#### 4. Solution to the Problem

The best way to avoid being replaced by AI is by improving professional skills. Changing occupation is risky and uncertain since individuals need to start all over again. Time needs to be spending to get used to a new job and deal with connections. Despite your expertise, you may be unprepared to face a new job. There are high sunk costs involved. Being a customer service provider means that the compensation is poor and the risk of being fired is high.

Accounting personnel with professional skills such as machine learning and big data skills will be the mainstream of high-paying accountants in the future. Take Gorforth for instance, after mastering the relevant skills, he successfully helped the branch to improve the efficiency of the manual  
<https://assignbuster.com/artificial-intelligence-navigating-the-new-era-of-accountants/>

process and save the hundreds of employee-hours. At the same time, he was promoted to a supervisor with a high salary. (Hagel, 2018) Accounting personnel avoiding being replaced by AI in this way can maximize their own interests while having the best development prospects. (word count: 169)

##### 5. Call to Action

With the growing impact of artificial intelligence on the accounting industry, the risk of being replaced by accountants is further increased. It is the most feasible way for accountants to improve their professional skills. As their skills improve, productivity will increase dramatically, and at the same time, their compensation will grow in the future. (word count: 54)

##### Comparative Case Study Analysis

There are three differences in these two case studies in terms of narrative, problem focus and handling method. The first case study presents a story from a personal perspective. The problem focuses on how to improve employment competitiveness through course learning, company training, and certificate acquisition. Differently, the second case study shows the readers an example of the company's use of AI in the form of a PwC Australia report, focusing on the risk of accounting personnel being replaced by AI. At the same time, the second case study analyzed three ways to avoid being displaced by AI in terms of changing careers, doing customer service, and improving professional skills.

The similarities between the two case studies are that accountants need to improve their ability to increase productivity and enhance employability.

<https://assignbuster.com/artificial-intelligence-navigating-the-new-era-of-accountants/>

Additionally, the pattern of two case studies is to investigate a problem, examine possible solutions and find the best way. Moreover, through these two case studies, the goal of accounting personnel striving to become a high-level comprehensive accounting talent in the future is pointed out (Luo, Meng & Cai, 2018). In the above case studies, the two hypotheses proved to be correct and feasible. (word count: 195)

## Conclusion

As one of the vital representatives of the new round of scientific and technological revolution, artificial intelligence has been widely used in the accounting field. In spite of that, an appreciable number of general accountants are still obscure about how to cope with their relationships with AI and how to manipulate it. This research finds that the connections between accountants and AI has two types: substitution and collaboration. Jobs that overlap with AI are at risk of being displaced, and improving expertise is the most effective way to prevent that. Accountants who can make use of advanced technology will become high-level applied accountants, and obtaining key certificates is the best way. Accounting elites with enhanced employability skills can generate the outcome of high working efficiency and productivity. Hence, becoming comprehensive accounting talents in the future will be the key to general accountants. (word count: 142)

## References

- Baldwin, A., Brown, C., & Trinkle, B. (2006). Opportunities for artificial intelligence development in the accounting domain: the case for

<https://assignbuster.com/artificial-intelligence-navigating-the-new-era-of-accountants/>



auditing. *Intelligent Systems In Accounting, Finance And Management* , 14 (3), 77-86. doi: 10. 1002/isaf. 277

- Brown, C. (1991). Expert systems in public accounting: Current practice and future directions. *Expert Systems With Applications* , 3 (1), 3-18. doi: 10. 1016/0957-4174(91)90084-r
- Chye Koh, H., & Kee Low, C. (2004). Going concern prediction using data mining techniques. *Managerial Auditing Journal* , 19 (3), 462-476. doi: 10. 1108/02686900410524436
- Comunale, C., & Sexton, T. (2005). A Fuzzy Logic Approach to Assessing Materiality. *Journal Of Emerging Technologies In Accounting* , 2 (1), 1-15. doi: 10. 2308/jeta. 2005. 2. 1. 1
- Issa, H., Sun, T., & Vasarhelyi, M. (2016). Research Ideas for Artificial Intelligence in Auditing: The Formalization of Audit and Workforce Supplementation. *Journal Of Emerging Technologies In Accounting* , 13 (2), 1-20. doi: 10. 2308/jeta-10511
- Killam, N. (2013). *Quantitative Research Designs: Descriptive non-experimental, Quasi-experimental or Experimental?* [Video]. Retrieved from [http://www.youtube.com/watch?time\\_continue=368&v=10nMnh3RMp0](http://www.youtube.com/watch?time_continue=368&v=10nMnh3RMp0)
- Lam, M. (2004). Neural network techniques for financial performance prediction: integrating fundamental and technical analysis. *Decision Support Systems* , 37 (4), 567-581. doi: 10. 1016/s0167-9236(03)00088-5
- Luo, J., Meng, Q., & Cai, Y. (2018). Analysis of the Impact of Artificial Intelligence Application on the Development of Accounting Industry.

*Open Journal Of Business And Management* , 06 (04), 850-856. doi: 10.4236/ojbm. 2018. 64063

- PwC. (2018). Will robots really steal our jobs? Retrieved from: <https://www.pwc.co.uk>
- Rao, A., & Verweij, G. (2017). *What's the real value of AI for your business and how can you capitalize?* [Ebook] (pp. 3-5). Retrieved from <http://www.pwc.com>
- Shpilberg, D., Graham, L., & Schatz, H. (1986). ExpertTAXsm: an expert system for corporate tax planning. *Expert Systems* , 3 (3), 136-151. doi: 10.1111/j.1468-0394.1986.tb00487.x
- Stefanowski, J., & Wilk, S. (2001). Evaluating business credit risk by means of approach-integrating decision rules and case-based learning. *International Journal Of Intelligent Systems In Accounting, Finance & Management* , 10 (2), 97-114. doi: 10.1002/isaf.197
- University of Southern California. (2018). *Program Overview-New for Fall 2018*. Retrieved From <https://www.marshall.usc.edu/programs/graduate-accounting-programs/master-accounting-emphasis-data-and-analytics>
- Vasarhelyi, M., & Kogan, A. (1998). *Artificial intelligence in accounting and auditing* (1st ed., pp. 11-24). Princeton: Markus Wiener.