The Role of Artificial Intelligence Technologies in Improving the Performance of the Management Accountant considering the Egyptian State's Trend Toward Digital Transformation

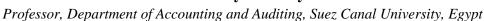**Ahmed Said Abdelazim Ahmed** iD
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Abstract

The study aimed to determine the impact of artificial intelligence techniques on the development of the role of management accountants while exploring the extent of the awareness of management accountants of the importance of artificial intelligence techniques, and the study reached a set of results, the most important of which is that expert systems enable management accountants to store and interpret human experience and use it in providing advice and advice to management accountants and help reach appropriate decisions in the light of the evidence provided to expert systems, and data analytics enable the management accountant to detect patterns New relationships in large amounts of data to reach a lot of conclusions that benefit decision makers in companies, and neural networks enable the solution of complex problems in the fields of machine learning, systems engineering, market forecasting, complex systems, continuous improvement of systems, processes, non-linear systems, financial and economic analysis, the study also recommended the need for governments to provide strong support for the application of artificial intelligence systems in the field of accounting with the guidance of corporate management sufficient attention to the application of intelligence systems Artificial with improved quality of accounting curricula and learning programs in universities.

Keywords: Artificial Intelligence/ Management Accountant/ Digital Transformation

First: Introduction and Research Problem

The emergence of artificial intelligence is the inevitable scientific and technological product of society and the orientation towards human development in the future, where artificial intelligence works to change the traditional working methods of management accountants, especially in light of the emergence of advanced artificial intelligence machines and the emergence of the Internet of Things devices (Ping, (2021)), through its tremendous ability to accomplish fast calculations and accurate analyzes, which supports the capabilities of administrative accountants and their performance levels and contributes significantly to the facilitation, storage, recovery and analysis of data. This leads to overcoming the constraints of time and space. (Li, 2020 June); (Marques.,2021)

Artificial intelligence with its main pillars represented in the company's strategy, technological infrastructure, corporate governance, personnel preparation and data availability,(IMishra, S. et al.,2022) and its advanced devices, tools and modern technologies will revolutionize the development of the role of the management accountant in industrial companies by influencing the way management accountants perform their work and how they deal with data and information and contribute effectively to facilitating the processes of identification, analysis, interpretation and delivery of information to the concerned authorities of companies. (Oberoi, Kumar, Sharma, & Gaur, 2022); (Mohammed, Sulaiman, & Zin, 2022). So that the management accountant can provide very important information that can be used in making many decisions in a way that contributes to achieving the desired goals of companies in various sectors.

The development of the capabilities and skills of the management accountant is an imperative necessity in a way that enables him to achieve the maximum benefit from technological developments during the performance of his job tasks, which reflects on the level of performance and efficiency and improves performance in a way that meets the needs of different parties in companies to information, which leads to improving the process of management decision-making and achieves the objectives of short and long-term companies, the tools and techniques of traditional management accounting are no longer sufficient to meet the needs of different parties to information in light of these tremendous developments, and the Artificial intelligence has the automatic ability to perform tasks that require human intelligence, as well as its ability to perform tasks that are usually performed by humans, and therefore the achievement of the full use and employment of artificial intelligence systems is natural and necessary to achieve the maximum utilization of the capabilities of artificial intelligence in facilitating the performance of human tasks efficiently and effectively.

In light of the above, the problem of the study appears in the existence of a gap between what the contemporary business environment requires and the capabilities, skills and experience of the management accountant in the Arab Republic of Egypt, as management accountants need to refine their skills, abilities and potential in line with the tremendous technological developments witnessed by the global and local business environment alike and enable them to benefit from these technological developments, especially artificial intelligence systems, in performing their job tasks to improve their performance levels and support the decision-making processes of their organizations.

To support the achievement of its objectives, the problem of the study can be formulated in the following main question: "Do artificial intelligence techniques lead to the development of the performance of the management accountant? Branching out from this question is a set of the following sub-questions:

1- What are the advantages offered by artificial intelligence technologies? What is its role in facilitating and developing the functional tasks of the management accountant?
2- What is the role of expert systems in developing the role of the management accountant in the Egyptian business environment?
3- What is the role of big data analytics in developing the role of the management accountant in the Egyptian business environment?
4- What is the role of neural networks in improving the role of the management accountant in the Egyptian business environment?

Second: Research Objectives:
1- Explore the extent to which working management accountants are aware of the importance of AI systems
2- Determine the impact of AI systems on the performance of management accountants
3- Clarify the role of expert systems, big data analytics and neural networks in the development of the functional tasks of the management accountant
4- Provide a set of important findings and recommendations that can benefit those interested in the field of management accounting.

Third: Research Importance
The importance of research of its importance at the scientific and practical level is as follows:

A- Scientific significance
- Current research contributes to providing theoretical evidence on how to utilize AI systems in developing the performance of management accountants in the Egyptian business environment.
- The importance of research stems from the intrinsic advantages offered by contemporary technological developments, which supports the pivotal role of management accountants.
- There is a dearth of studies – within the limits of the researcher's knowledge – that have dealt with how to employ AI systems to improve the performance of management accountants in industrial companies.

B- Applied importance
1- Analyze and discuss the repercussions of recent technological developments on the performance of management accountants in industrial companies in Egypt
2- Assisting management accountants and the professional community in the field of management accounting in Egypt on understanding how to employ artificial intelligence systems in performing the functional tasks of management accountants in a way that reflects positively on improving their performance levels in industrial companies in Egypt

3- Preparing a field guide from the reality of the Egyptian environment on how to employ artificial intelligence techniques in developing the performance of the management accountant in order to serve the public interest of their organizations.

Fourth: Study Assignments

In the light of the problem of the study, its objectives and importance, the following hypotheses have been formulated:

- The first hypothesis: There is a statistically significant effect of neural networks on the development of the performance of the management accountant
- Second Assumption: There is a statistically significant effect of expert systems on the development of the performance of the management accountant
- Third Assumption: There is a statistically significant effect of data analytics on the development of the performance of the management accountant

Fifth: Divisions of the study

First Theme: Presentation and analysis of previous studies and identification of the research gap

Second Theme: The nature of artificial intelligence systems in light of contemporary developments

Third Theme: Reflections of Artificial Intelligence Systems on the Development of the Performance of the Management Accountant

Fourth Theme: Obstacles to the application of artificial intelligence systems in the development of the performance of the management accountant and the most important proposals for improvement

Fifth Theme: Findings and Recommendations.

The First Theme: Presentation and Analysis of Previous Studies and Identification of the Research Gap.

A: Presentation and analysis of previous studies.

The study (Tang,2019) was interested in identifying the future trends of management accounting in light of the developments in the era of artificial intelligence and big data, and the study concluded that management accounting will be integrated with financial accounting as a result of the developments of artificial intelligence and big data, and that artificial intelligence and big data have an influential role in influencing the development and change of the function of the management accountant and aimed to study (Zhang, Xiong, Xie, Fan, & Gu, 2020) to test the impact of artificial intelligence on the accounting profession as well as determine the relationship between blockchain and the accounting profession, and the study found a statistically significant fundamental impact of artificial intelligence on accounting practices in companies, and artificial intelligence technology plays a pivotal role in developing the capabilities and skills of accountants while performing job tasks with maximum efficiency and effectiveness by relying on the descriptive approach during the review of research and periodicals related to the topic.

Using the descriptive analytical approach by relying on the personal interviews of (9) companies that use AI-based accounting software, a study (Lee & Tajudeen, 2020) found that there are varying levels of adoption of AI-based accounting software in public organizations in Malaysia and AI-based accounting software is used to store images, collect audio information automatically, monitor invoice adoption, manage theories and track users' activities, which works. To improve

efficiency, support customer service, increase process governance and production speed associated with minimum employment.

While the study (Lehenchuk, Horodysky, & Maistrenko, 2021) confirmed that the Internet of Things enables to improve the quality of accounting information and the speed of providing accurate information to decision-makers, in addition to improving accounting procedures and improving the audit process, relying on the descriptive and analytical approach through survey data collected from companies that have applied IoT technology.

In the same context, the study (Shen, 2021) found that the applications of artificial intelligence work to improve the work system, improve internal functions and raise the quality of accounting information in a way that supports the long-term growth and development of organizations while achieving economic and social advantages for them, which leads to positive effects on the function of the management accountant in organizations in light of modern technological developments, relying on the method of office study through the review of researches, studies, letters and literature related to the subject of study, and relying on The analytical descriptive approach using data from secondary sources The study (Wang, 2021) confirmed the need for management accounting to keep pace with new and new developments in the contemporary business environment, and therefore it is necessary to develop the style and methods of management accounting in enterprises in light of the digital developments in the business environment, and the study concluded that when achieving compatibility between artificial intelligence and management accounting, management accounting will play a pivotal role in companies where it helps heads of companies in obtaining effective information Such as the ability to predict financial situation, operational results and cash flows can also support efficient work effectively and manage manpower and material resources more efficiently and effectively.

A study (Budding & Wassenaar, 2021) discovered that there is a expectations gap regarding the expectations of managers about the role of management accountants in the company, and the results show that management accountants and managers think in a similar way regarding the tasks they have to perform and the results confirm that management accountants see themselves more objectively than their managers see, as it is seen that management accountants focus excessively on operational aspects and that management accountants would like to be more independent in their judgment than their managers. Managers see it

Applying to one of the largest companies listed on the stock market in Shenzhen in China, a study (Ping., 2021) found that artificial intelligence plays an effective role in improving and developing management accounting information, in addition to the application of extended business reporting technology in the process of management accounting information does not represent a simple integration but requires the coordination of various enterprise teams including the management of the enterprise, the management accounting team and the programmers of financial applications, while the study (Korobeynikova, Korobeynikov, Popova, Chekrygina, & Shemet, 2021) recognized on the effects resulting from the employment of artificial intelligence in management accounting for a sample of companies operating in the agricultural products sector, the study found that the use of artificial intelligence in management accounting raises the efficiency, credibility and completeness of information provided to management and improves the performance of tasks by raising the efficiency of the process of data collection and operational readiness and data processing

of management accountants, and also concluded that artificial intelligence can become one of the essential tools of management accounting in operating companies In Russia's agricultural sector and may lead to the expansion of its traditional capabilities and skills.

The results of the study (Qiu, 2021) indicated that the impact of artificial intelligence on management accounting appears by accelerating the flow of all information, supporting the change of the company's management pattern and improving the decision-making process, the study also confirmed that the model of the management accounting system has improved by (6%) due to the use of artificial intelligence and the decrease in delay time significantly, which supported the overall efficiency of the company's management and contributed to saving cost and enhancing competitiveness by relying on the theoretical study method through the review of research and studies However, a study (Xie, 2021) found that management accountants need to develop their skills in line with the era of artificial intelligence and the shift towards the adoption and application of artificial intelligence technology in management accounting, and the results confirm that the technology of artificial intelligence will make a breakthrough in improving the function of management accounting and its role in organizations and help management accountants in performing the job tasks required of them.

The study (Hassan, 2022) noted that artificial intelligence can play an effective role in bringing about radical transformations in both accounting and auditing and achieves many advantages in the form of raising efficiency and improving productivity and accuracy of information, and the study emphasizes the need for technological readiness through the training of workers in the field of accounting and auditing and the development of their skills to support their ability to benefit from artificial intelligence systems and employ them to serve the achievement of sustainable development goals, relying on the entrance of the study theoretical study Through the review of books, periodicals and literature related to the subject of study, while the study (Mozan & ALmashkor, 2022) aimed to test the impact of environmental management accounting tools on reducing costs in industrial companies operating in Iraq, and the study concluded that management accounting methods have a strong positive and statistically significant relationship to create competitive advantage in the industrial companies under study as they have a statistically significant effect on reducing risks in industrial companies, and the study concluded that the adoption and use of Management accounting technologies in industrial companies depend on gender, age, job grade and years of experience.

The study (Wu, 2022) revealed that the use of big data and artificial intelligence in the field of management accounting has increased by up to (75%), and the study concluded that the technologies of artificial intelligence and big data have significantly influenced the practices and methods of management accounting applied in companies, and that management accounting has become more important under the technologies of artificial intelligence and big data, and the study recommended the need to direct more attention to the development of management accounting practices in line with developments. Technological in the contemporary business environment by relying on the descriptive and analytical approach using survey data on the nature of management accounting practices and applications under artificial intelligence and big data.

B: Evaluation of studies and identification of the research gap:

1- A study (Zhang, Xiong, Xie, Fan, & Gu, (2020).), a study (Shaffer et al., 2020) and a study (Lenenchuk et al.,2021) showed that artificial intelligence improves the quality of accounting

information and leads to the development and improvement of accounting practices in companies

2- (Hassan, 2022) (Wu, 2022) noted that AI interacts and integrates with other technologies and technologies and directly affects corporate accounting practices and the digital transformation of accounting activities and practices.

3- Previous studies (Mozan & ALmashkor, 2022), (Lee & Tajudeen, 2020) have confirmed on the importance of management accounting practices in companies and their effective role in influencing financial performance and supply chain, reducing costs, improving competitive advantage and management decisions in companies.

4- Studies (Xie, 2021), (Korobeynikova, Korobeynikov, Popova, Chekrygina, & Shemet, 2021) have shown the role of modern and advanced technology, expert systems, and artificial intelligence systems in improving management accounting practices and methods in companies

5- The following studies (Xie, 2021), (Budding & Wassenaar, 2021) , and (Shen, 2021), indicate that there is a gap of expectations for management accountants related to their failure to keep pace with technological developments in the contemporary business environment.

6- The current study differs from previous studies in terms of the application environment and the duration of study

7- The current study differs from previous studies in terms of dealing with expert systems, data analytics, neural systems and networks and their impact on the development of the performance of management accountants in industrial companies.

The second Theme: The Nature of Artificial Intelligence Systems In The Light of Contemporary Developments

The history of the emergence of artificial intelligence dates back to the fifties of the last century (1950) where the idea of (John McCarthy) brought about a scientific revolution at the world level, where at the beginning the foundations of artificial intelligence were researched by the mathematician and science (Alan Turing) who published his research on the idea of a simulation match or imitation, and artificial intelligence has gained high fame in a short period of time during the sixties of the last century (McCarthy, 1989), which led to a lot of research and development on artificial intelligence in the late twentieth century, where many researchers conducted many research on the applications of artificial intelligence in auditing, taxation, financial accounting, management accounting and financial planning (Moilanen, 2020), where artificial intelligence can recognize statistical patterns in data to simulate human behaviors and patterns in thinking, behaving, and learning similar to humans.

A: The intellectual framework of artificial intelligence techniques.

- **The concept of artificial intelligence**

(Zhang, Xiong, Xie, Fan, & Gu, (2020).) defines artificial intelligence as the result of the successful uses of big data and machine learning technology in absorbing the past and predicting the future using huge amounts of data, but a study (Lee & Tajudeen, 2020) knew that artificial intelligence allows machines to learn from their mistakes, adapt to new inputs and carry out human functions, where huge amounts of data can be analyzed thanks to artificial intelligence technologies and recognize patterns identified in the data, according to (Chukwuani and Egiyi.,,2020) Artificial intelligence is defined as the study of how to make computers perform tasks better than humans, so

systems have emerged that think and behave like humans logically, and therefore artificial intelligence is the ability of a machine to perform tasks that are usually performed by the human mind such as the ability to absorb and acquire knowledge, make judgments, understand relationships and produce new ideas.

The researcher believes that artificial intelligence represents the technology of self-operation, which includes the phenomenon of using automated calculations in understanding and simulating human intelligence and imitating human behaviors and behaviors, and therefore it is the science and engineering of building smart machines and computer software based on simulating the intelligence of the human mind and whose ability and potential can be developed continuously.

- **The importance of artificial intelligence in accounting.**

My study showed (Zemankova, 2019); (Rashwan & Alhelou, 2020) The importance of artificial intelligence in the following points:

1. It helps to store and process huge amounts of data and shorten the data processing cycle and artificial intelligence devices can perform accounting tasks with high accuracy and reduce error rates while performing huge and complex calculations without any errors
2. Provide and accomplish daily tasks such as bank transfer applications, payments, account reconciliation and other transactions
3. It enables to rely on it to respond to customer inquiries and complaints and reach the desired results
4. Contributes to raising the efficiency of performance, time effectiveness and low costs through its high ability to review contract machines and extract information from them with accuracy that exceeds human accuracy within a few minutes, which is what humans are unable to do.
5. It enables the provision of accounting services, which has made many companies rely on it instead of relying on traditional workers.

The researcher believes that artificial intelligence systems occupy great importance in the contemporary business environment, hardly a sector, industry or field today is free of dependence on one or another tool and techniques of artificial intelligence and the accounting profession in its various branches is not isolated from the use of artificial intelligence systems and benefit from them, but that artificial intelligence systems have become an irreplaceable necessity and a key tool in the performance and completion of accounting processes and activities, especially in the emergence of multinational companies, fields and sectors

- **AI Objectives**

By extrapolating the following studies (Zemankova, 2019); Chukwuani&Egiyi,2020; (Bizarro & Dorian, 2017) The objectives of artificial intelligence have been identified in the following elements: -

1- It works to reduce the difficulties and obstacles faced by accounting workers due to the amounts of big data they deal with so that the human mind may not be able to process it with the same efficiency, ability, speed, and accuracy of artificial intelligence devices
2- Artificial intelligence techniques work to recognize things and thus help in the performance of tasks, activities and accounting processes at a level that exceeds human efficiency
3- It works on self-development through machine learning, logic, self-correction, and programming programs and focuses on sensory learning to meet the requirements of industrial developments and various accounting applications such as supporting internal control systems, performing

large calculations, compiling, and analyzing data, disseminating information, and communicating it to different decision makers.

- **Advantages and disadvantages of applying artificial intelligence techniques**

A study (Mohammed, Sulaiman, & Zin, 2022) showed that following the continuous developments and sensitivities in artificial intelligence systems in the field of accounting and auditing will enable accountants and companies to reduce the costs of accounting systems and add value to the accounting profession by moving the focus of accountants from current routine tasks to data-driven and analytics-based decisions, as confirmed by the study (Makridakis, 2017) Companies that are willing to adopt and implement AI systems extensively and take the entrepreneurial risks to transform innovative services and products into global business success stories will continue to gain huge competitive advantages through the adoption of advanced and advanced AI systems.

As for the disadvantages of artificial intelligence, my study showed (Bizarro & Dorian, 2017) that artificial intelligence surrounds the use of artificial intelligence and includes the possibility of delaying the decision-making process due to the exploration of multiple alternatives available, the huge cost of building and establishing artificial intelligence systems within companies with the constant need to modernize and maintain artificial intelligence systems in addition to the limited knowledge base of employers and hindering the development of their personal professional estimation skills As for the problems of the application of artificial intelligence has identified a study (Kumar Doshi, Balasingam, & Arumugam, 2020) These problems in the absence of sufficient experience in the initial stages of the application of artificial intelligence systems, the need to improve the quality of professional talent, huge investments with slow returns, the need to provide training programs for employees of accounting departments in companies in addition to the provision of strong support by the government to the application of artificial intelligence systems in the field of accounting.

Third Theme: Reflections of Artificial Intelligence Techniques on the Development of Management Accountant Performance

The most important techniques of artificial intelligence applied in different sectors, industries and professions can be clarified and we will know those techniques indicating their reflections on the development of the performance of the management accountant

1- The impact of expert systems on the development of the performance of the management accountant

They are defined as computer programs that store expert knowledge and simulate their reasoning and reasoning processes when solving problems in a specific topic (Odoh, Echefu, Ugwuanyi, & Chukwuani, 2018), or are knowledge-based subsystems that include expert expertise in the system knowledge base, and in management accounting and cost accounting expert systems are applied in inventory control, variance analysis, cost analysis, diagnosis of management control systems and investment decision-making (Jans & Hosseinpour, 2019).

Expert systems are an attempt to integrate the reasoning, reasoning and decision-making processes of human experts in computer systems and programs in a way that contributes to the provision of consulting and guidance supported by computer systems and artificial intelligence technology where expert systems pose a series of questions and apply the main rules acquired from the human expert to analyze answers and make recommendations (Qasaimeh, Al-Gasaymeh, Kaddumi, & Kilani, 2022) Thus,

expert systems affect the performance of the management accountant by assisting him in the implementation of his responsibilities related to planning, evaluation, control, accountability for resources and preparation of external reports, where the responsibilities of the management accountant in industrial companies include seven main activities, namely the preparation of reports, interpretation of results, resource management, development of information systems and technological implementation. The management accountant can rely on expert systems efficiently and effectively, and expert systems also help corporate accountants in the implementation of validations of financial statements and verify the accuracy and credibility of financial and accounting information in companies. (Carlsson- Wall, Goretzki, Hofstedt, Kraus, & Nilsson, 2022)

In the same context, a study (Liu&Zou, 2022) showed that expert systems enable management accountants to store and interpret human experience and use it to provide advice and advice to management accountants and help reach appropriate decisions in the light of the evidence provided to expert systems and in a way that is very similar to the way professional experts provide advice and advice to decision makers in companies, and the study (Riinawati, 2021) confirmed provided that expert systems can be used in many areas of management accounting in companies, where it enables to determine the transfer price or sale price of specific items for other companies or departments and departments within the same organization and evaluate performance, develop performance reward plans and incentives, plan and prepare planning budgets, pricing products and prepare capital budgets in the form of long-term investments in machinery, equipment, buildings, etc., and analyze variance by comparing actual data with planned data. Testing appropriate information systems and training management accountants

A study (Hosseinzadeh & Davari, 2018) showed that companies allocating part of the required resources to capital expenditures required by the expert system or using the system irregularly may lead to the failure of expert systems to support the performance of the management accountant. **The researcher believes in** the need to activate the expert systems in companies because of the simulation of human experience, thinking style and human understanding by the machine to provide advice, advice, guidance, and accurate and appropriate information to decision makers in organizations to allow access to the most appropriate and accurate decisions based on the timing information provided by the expert systems. **Based on the foregoing, the following hypothesis was formulated the first hypothesis**: There is a statistically significant effect of expert systems on the development of the performance of the management accountant

2- The Impact of Data Analytics on Improving Management Accountant Performance

The development of modern technologies such as big data has changed business practices in a wide range of corporate jobs while creating a lot of new and entirely new jobs across industries such as big data analysis, application development and software design.

The following studies have been confirmed (Asiaei, Bontis, Alizadeh, & Yaghoubi, 2022); (Oesterreich & Teuteberg, 2019) on the fact that data analytics is of great importance to the management accountant as it enables him to detect new relationship patterns in large amounts of data to reach a lot of conclusions that benefit decision makers in companies, and a study (Vu, Dam, & Ha, 2022) showed that there is a clear relationship between data analytics and business intelligence and the performance of the management accountant in companies and this relationship is of great importance because data analytics and business intelligence occupy a prominent place in the agenda of many companies , managers see that improved data analysis and decision support (Gao, 2022). and **the researcher believes** that the technology of data analytics enables to draw new patterns of relationships among them and provide useful conclusions and inferences to decision makers in companies and without data analysis tools the management

accountant will not be able to perform tasks efficiently and effectively in the era of digital transformation. **Based on the foregoing, the following hypothesis was formulated** There is a statistically significant effect of data analytics on the development of the performance of the management accountant

3- The impact of neural networks on the development of the performance of the administrative accountant.

A study (Odoh, Echefu, Ugwuanyi, & Chukwuani, 2018) showed that neural networks are used to determine the level of compliance with policies in companies and institutions of various types and detect misleading transactions in areas where managers make daily trading decisions worth millions of dollars, due to the fact that neural networks represent a good and effective tool for detecting fraud due to the value of data available for network construction and the need to detect unusual transactions, but a study will result (Mohammed & zin , 2022) that companies can use neural networks to identify the main characteristics of the best customers and search for the list of the most profitable customers, and neural networks are used in customer support service and rearrange business processes

In the same context, a study (Fu, Cheng, Tu, & Zhang, 2016); (Nuruzzaman & Hussain, 2018) on the importance of neural networks to detect fraud as they are used to scan huge numbers of similar transactions to detect fraud and identify areas of fraud and potential fraud, and this ability to scan all transactions has extraordinary importance in preventing fraud and industries with fraudulent problems such as credit card industry and health insurance, and that Neural networks enable the solution of complex problems in the fields of machine learning, systems engineering, market forecasting, complex systems, continuous improvement of non-linear systems, processes, systems, and financial and economic analysis (Chen, Guo, Huang, & Lin, 2022). **The researcher believes** that neural networks as one of the techniques of artificial intelligence enable to enhance the performance of the management accountant as it works to process large amounts of accounting data and the difficulty of predicting prices and identify the possibilities of fraud and fraud as well as identify the relationships and trends between Financial, accounting, and administrative statements. **Based on the foregoing, the following hypothesis was formulated** There is a statistically significant effect of neural networks on the development of the performance of the management accountant

Fourth Theme: Obstacles to The Application of Artificial Intelligence Systems in The Development of the Performance of the Management Accountant and The Most Important Proposals for Improvement

Despite these multiple advantages, there are many risks resulting from the implementation of artificial intelligence techniques in corporate accounting systems and improving the performance of the management accountant, and these obstacles are the limited knowledge base of new employees and hinder the development of their personal professional estimation skills (Hu, 2022) reliance on artificial intelligence systems may cause raising unemployment rates and reducing new hiring processes every year, the risks of transferring the applied tools to competitors and the possibility of using them against companies. And its employees, as confirmed by the study (Oberoi, Kumar, Sharma, & Gaur, 2022) that despite the capabilities and competencies of artificial intelligence techniques, they cannot completely replace the human element in the practice of reasoning, inference,

expression of feelings, practices of professional doubt and the practice of professional judgments and estimates, in addition to the absence of sufficient experience in the initial stages of the application of artificial intelligence systems, and the development proposals are as follows (Munir, Rasid, Aamir, Jamil, & Ahmed, 2022)

1. The need for governments to provide strong support for the application of AI systems in the field of accounting while directing corporate governance to pay sufficient attention to the application of AI systems
2. Improving the quality of accounting learning curricula and programs in universities
3. Embrace the idea of lifelong learning
4. The need to improve the quality of professional talent, the need to provide training programs for employees in the accounting departments of companies

Fifth Theme: Findings and Recommendations.
Based on the above, the most important results can be determined as follows:

1- Artificial intelligence interacts and integrates with other technologies and technologies and directly affects corporate accounting practices and the digital transformation of accounting activities and practices.
2- Artificial intelligence occupies a great importance in the contemporary business environment, and there is hardly a sector, industry or field today without reliance on one or another of the tools and techniques of artificial intelligence.
3- Artificial intelligence techniques work to recognize things and thus help in the performance of tasks, activities and accounting processes at a level that exceeds human efficiency
4- Expert systems enable management accountants to store and interpret human expertise and use it to advise and advise management accountants and assist in reaching appropriate decisions in the light of the evidence provided to expert systems
5- Data analytics is of great importance to the management accountant as it enables him to detect new relationship patterns in large amounts of data to reach a lot of conclusions that benefit decision makers in companies.
6- Neural networks enable the solution of complex problems in the fields of machine learning, systems engineering, market forecasting, complex systems, continuous improvement of non-linear systems, processes and systems, and financial and economic analysis.

Recommendations

The study recommends the need to provide governments with strong support for the application of artificial intelligence systems in the field of accounting with the guidance of corporate management sufficient attention to the application of artificial intelligence systems while improving the quality of accounting learning curricula and programs in universities with the use of companies neural networks in identifying the main characteristics of the best customers and searching for the list of the highest profitable customers in addition to the need to improve the quality of professional talent, with the need to provide training programs for employees of accounting departments in companies as management accountants should use Expert Systems due to its ability to store and interpret human experience and use it to provide advice and advice to management accountants

Reference:

Asiaei, K., Bontis, N., Alizadeh, R., & Yaghoubi, M. (2022). Green intellectual capital and environmental management accounting: Natural resource orchestration in favor of environmental performance. . *Business Strategy and the Environment,*, 31(1), 76-93.

Bizarro, P. A., & Dorian, M. (2017). Artificial intelligence: The future of auditing. . *Internal Auditing,*, 5(1), 21-26.

Budding, T., & Wassenaar, M. (2021). New development: Is there a management accountants' expectation gap?. . *Public Money & Management,*, 41(4), 346-350.

Carlsson- Wall, M., Goretzki, L., Hofstedt, J., Kraus, K., & Nilsson, C. J. (2022). Exploring the implications of cloud- based enterprise resource planning systems for public sector management accountants. *Financial accountability & management,*, 38(2), 177-201.

Chen, Y., Guo, J., Huang, J., & Lin, B. (2022). A novel method for financial distress prediction based on sparse neural networks with $$ L\_ \{1/2\} $$ L 1/2 regularization. *International Journal of Machine Learning and Cybernetics, ,* 13(7), 2089-2103.

Fu, K., Cheng, D., Tu, Y., & Zhang, L. (2016). Credit card fraud detection using convolutional neural networks. . *In International conference on neural information processing, Springer, Cham,*, pp. 483-490.

Gao, J. (2022). Analysis of enterprise financial accounting information management from the perspective of big data. . *International Journal of Science and Research (IJSR), ,* 11(5), 1272-1276.

Hassan, R. A. (2022). Artificial Intelligence (AI) in Accounting and Auditing: a Literature Review,. *Open Journal of Business and Management,*, 10, 440-465.

Hosseinzadeh, A., & Davari, B. (2018). The impact of enterprise management systems on management accounting in private companies of Iran. *International Journal of Economics and Financial Issues, ,* 8(1), PP. 83-85.

Hu, J. (2022). Partial Differential Equation-Assisted Accounting Professional Education and Training Artificial Intelligence Collaborative Course System Construction. . *Scientific Programming, 2022.*

Jans, M., & Hosseinpour, M. (2019). How active learning and process mining can act as Continuous Auditing catalyst. *International Journal of Accounting Information Systems,*, 32, 44-58.

Korobeynikova, O. M., Korobeynikov, D. A., Popova, L. V., Chekrygina, T. A., & Shemet, E. S. (2021). Artificial intelligence for digitalization of management accounting of agricultural organizations. In IOP Conference Series: Earth and

Environmenta. *In IOP Conference Series: Earth and Environmental Science* , (Vol. 699, No. 1, p. 012049). IOP Publishing.

Kumar Doshi, H. A., Balasingam, S., & Arumugam, D. (2020). Artificial Intelligence as a Paradoxical Digital Disruptor in the Accounting Profession: An Empirical Study amongst Accountants. . *International Journal of Psychosocial Rehabilitation, ,* 24, 873-885.

Lee, C. S., & Tajudeen, F. P. (2020). Impact of artificial intelligence on accounting: evidence from Malaysian organizations. *Asian Journal of Business and Accounting*, 13(1).

Lehenchuk, S., Horodysky, M., & Maistrenko, N. (2021). Protection of Accounting Data in the Conditions of Using Internet of Things: Problems and Prospects of Accounting Digitalization. *Accounting and Finance, ,* (1), 12-19.

Li, Z. (2020 June). Analysis on the Influence of Artificial Intelligence Development on Accounting. In 2020 International Conference on Big Data, . *Artificial Intelligence and Internet of Things Engineering (ICBAIE)* , (pp. 260-262). IEEE.

Makridakis, S. (2017). The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms. Futures, . 90, 46-60.

McCarthy, J. (1989). Artificial intelligence, logic and formalizing common sense. *In Philosophical logic and artificial intelligence, Springer, Dordrecht,*, (pp. 161-190).

Mohammed, A., Sulaiman, S., & Zin, N. M. (2022). The effect of management accounting system on circular economic: Using agileadaptive balanced scorecard as mediator. . *International Journal of Accounting*, 7(40), 78-94.

Moilanen, K. (2020). Artificial Intelligence: An analysis of perceptions of the impact of AI on the financial labour market, Dissertation,. *ARCADA University of Applied Sciences,*, PP. 9-10.

Mozan, A. R., & ALmashkor, I. A. (2022). THE IMPACT OF MANAGEMENT ACCOUNTING TOOLS ON COST REDUCTION APPLIED STUDY IN IRAQI MANUFACTURING FIRMS. *World Bulletin of Management and Law,*, 6, 34-41.

Munir, S., Rasid, S. Z., Aamir, M., Jamil, F., & Ahmed, I. (2022). Big data analytics capabilities and innovation effect of dynamic capabilities,. *organizational culture and role of management accountants*, foresight.

Nuruzzaman, M., & Hussain, O. K. (2018). A survey on chatbot implementation in customer service industry through deep neural networks. . *In 2018 IEEE 15th International Conference on e-Business Engineering (ICEBE),*, pp. 54-61.

Oberoi, S., Kumar, S., Sharma, R. K., & Gaur, L. (2022). Determinants of artificial intelligence systems and its impact on the performance of accounting firms. In Machine Learning, Advances in Computing,. *Renewable Energy and Communication*, (pp. 411-427).

Odoh, L. C., Echefu, S. C., Ugwuanyi, U. B., & Chukwuani, N. V. (2018). Effect of artificial intelligence on the performance of accounting operations among accounting firms in South East Nigeria. . *Asian Journal of Economics, Business and Accounting, , 7(2).*

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. *Journal of accounting & organizational change,*, PP. 332-333.

Ping, W. ((2021).). Data mining and XBRL integration in management accounting information based on artificial intelligence. . *Journal of Intelligent & Fuzzy Systems,*, 40(4), 6755-6766.

Ping, W. ((2021)). Data mining and XBRL integration in management accounting information based on artificial intelligence. *Journal of Intelligent & Fuzzy Systems,*, (Preprint), P. 2.

Ping, W. (2021). Data mining and XBRL integration in management accounting information based on artificial intelligence. *Journal of Intelligent & Fuzzy Systems,*, 40(4), 6755-6766.

Ping. (2021). Data mining and XBRL integration in management accounting information based on artificial intelligence. *Journal of Intelligent & Fuzzy Systems,*, 40(4), 6755-6766.

Qasaimeh, G., Al-Gasaymeh, A., Kaddumi, T., & Kilani, Q. (2022). Expert Systems and Neural Networks and their Impact on the Relevance of Financial Information in the Jordanian Commercial Banks. *In 2022 International Conference on Business Analytics for Technology and Security (ICBATS)*, (pp. 1-7). IEEE.

Qiu, J. (2021). Analysis of Human Interactive Accounting Management Information Systems Based on Artificial Intelligence. . *Journal of Global Information Management* , (JGIM), 30(7), 1-13.

Rashwan, A. R., & Alhelou, E. M. (2020). The impact of using artificial intelligence on the accounting and auditing profession in light of the Corona pandemic. ,. *Journal of Advance Research in Business Management and Accounting*, 6(9), PP. 100 – 101.

Riinawati, R. (2021). The Development of Information Technology and Its Influence on the Field of Management Accounting. . *Journal of Financial and Tax,*, 1(2), 131-149.

Shen, X. (2021). Research on the Transition from Ginancial Accounting to Management Accounting in the Era of Artificial Intelligence. *In E3S Web of Conferences*, Vol. 257, p. 02033.

Vu, T. K., Dam, B. H., & Ha, T. T. (2022). Factors Affecting the Application of Strategy Management Accounting in Vietnamese Logistics Enterprises. . *Journal of Distribution Science,*, 20(1), 27-39.

Wang, Y. (2021). Research on the Application of Enterprise Management Accounting in the Age of Intelligent Accounting. In 2021 2nd International Conference on Computers,. *Information Processing and Advanced Education* , (pp. 1531-1534).

Wu, Y. (2022). Application Exploration and Practice Research of Management Accounting Under the Background of Big Data Artificial Intelligence. *In Innovative Computing* , (pp. 279-286). Springer, Singapore.

Xie, D. (2021). Management Accounting Innovation System Based on Artificial Intelligence Technology. . *In 2021 3rd International Conference on Artificial Intelligence and Advanced Manufacture* , (pp. 812-816).

Zemankova, A. (2019). Artificial Intelligence in Audit and Accounting: Development, Current Trends, Opportunities and Threats-Literature Review. *In 2019 International Conference on Control, Artificial Intelligence, Robotics & Optimization (ICCAI*, (pp. 148-154).

Zhang, Y., Xiong, F., Xie, Y., Fan, X., & Gu, H. ((2020).). *The Impact of Artificial Intelligence and Blockchain on the Accounting Profession. IEEE Access,*, 8, 110461-110477.

Zhang, Y., Xiong, F., Xie, Y., Fan, X., & Gu, H. (2020). The Impact of Artificial Intelligence and Blockchain on the Accounting Profession. *IEEE Access,*, 8, 110461-110477.

Zhang, Y., Xiong, F., Xie, Y., Fan, X., & Gu, H. (2020). The Impact of Artificial Intelligence and Blockchain on the Accounting Profession. . *IEEE Access,*, 8, 110461-110477.