



The Role of Management Accounting in Mitigating the Risk of Artificial Intelligence

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Abstract:

The purpose of this study is to examine the role of management accounting in mitigating the risk of artificial intelligence (AI). A questionnaire is used to collect data from four categories of respondents: management accountant, chief executive officer, chief financial officer and internal auditor. The sample of this study is those four categories in Iraqi industry and service companies as 144 questionnaires equally distributed to avoid any bias in the results. All 144 questionnaires were returned and analysed using regression analysis tests in the Statistical Package for the Social Sciences (SPSS) version 22. The finding of the study show that the management accounting has significant positive effect on mitigating the risk of AI from the perspective of all four categories of respondents. Moreover, among the four categories of respondents, chief executive officer shows more positive perspective toward using management accounting information and practices in mitigating the risk of AI. In addition, the finding of the study indicate that the management accounting is more effective in mitigating the risk of AI in the large companies that audited by big 4 audit economic entity s while the small companies that audited by the big four auditing economic entity s are focusing on companies of management accountant.

Keywords: - Management Accounting, Artificial Intelligence, Management accounting Information, Management Accounting practices, Management Accountant Competencies.

Introduction

Artificial intelligence (AI) has brought global change as it has uniquely impacted industries by increasing productivity and improving decision-making processes. AI has become popular due to its capabilities in data analysis, predictive analytics, process automation, and handling large amounts of data across most industries, such as manufacturing, healthcare, finance, and logistics. However, it also has disadvantages, such as data privacy issues, algorithmic biases, ethical concerns, and job displacement. For countries such as Iraq, which are currently experiencing economic growth and development, the introduction of artificial intelligence is linked to specific conditions that make risk management essential for proper implementation.

The importance of this study is based on the importance of management accounting, which is used primarily to focus on cost and budget management and reporting. However, it has now become an essential component of organizational risk management. Management accountants are now more involved in acquiring new technology, measuring the risks associated with it, and proposing measures to mitigate those risks. Although artificial intelligence is still in its early stages of development in Iraq, the application of management accounting in this field is of strategic value to organizations in achieving the intended purpose of artificial intelligence and their own objectives.

It should be noted that management strategies, such as dynamic risk accounting, depend on the characteristics of the economic entity, the sector, and the surrounding environment. Given the dynamic nature of the risks posed by artificial intelligence, management accounting systems in institutions in Iraq must be sensitive to contextual characteristics such as technological readiness, the legal environment, and workforce capabilities.

This study primarily focuses on examining the role of management accounting in mitigating AI risks in Iraqi industries and service companies. I selected this topic because the role of management accounting in mitigating AI risks needs to be discussed. The study is designed to identify the contributions of management accounting practices and systems, as well as the competencies of

management accountants, to AI risk mitigation. The paper presents three hypothesis statements that demonstrate a positive and significant relationship between management accounting and AI risk management.

The study model is presented as in the following diagram:

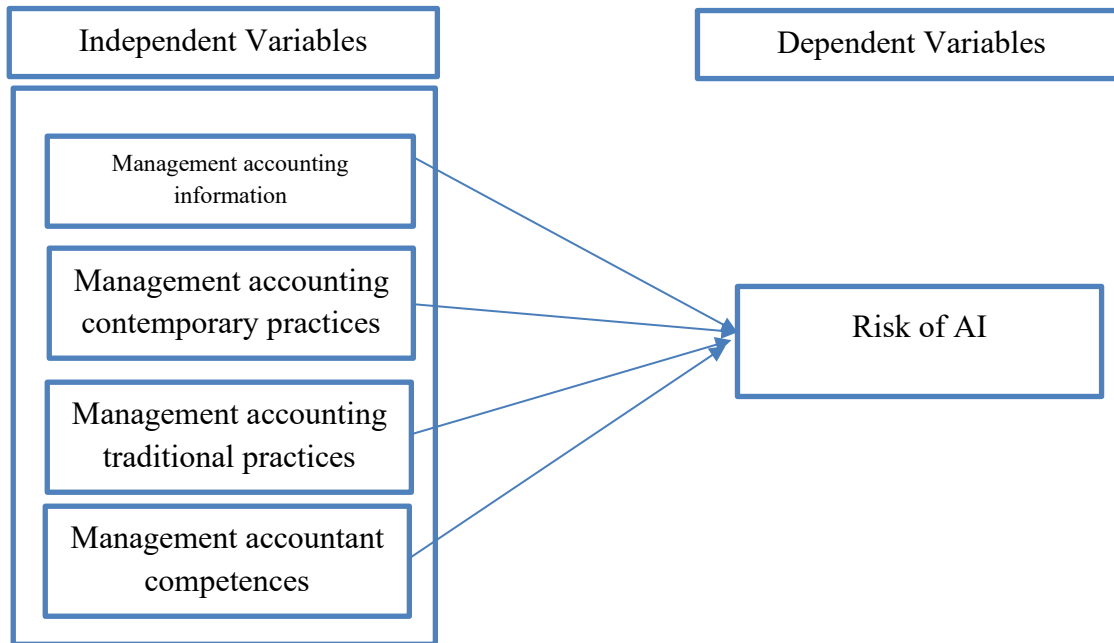


Figure 1. The model of the study

Source: Prepared by the researcher.

The structure of the paper consists of the following sections:

- 1- Literature Review
- 2- Methodology
- 3- Result Discussion
- 4- Conclusions
- 5- Limitations and Recommendations

1. Literature Review

1-1- Management Accounting

Many management accounting scholars have suggested that management accounting information serves functions related to decision-making, budgeting, and performance evaluation. In recent years, risk management has also become part of management accounting, particularly in the context of technology (Rautiainen et al., 2024). Management accountants also evaluate the feasibility of implementing technology, including AI, and educate organizations on associated risks that must be mitigated (Hussin et al., 2024). According to Värzaru et al. (2022), management accountants use cost-benefit analysis, variance analysis, and tools such as balanced scorecards to help economic entities cope with uncertainty. Cost-benefit analysis, for example, allows management accountants to examine the potential implementation of AI from a cost-benefit perspective. Another strategic tool is scenario planning, which anticipates potential future risks and gathers information on various possibilities based on specific assumptions (Miller & Waller, 2003).

Currently, AI usage in Iraq is relatively new, so management accountants serve as primary consultants for various organizations, helping them navigate the AI landscape. Using risk assessment frameworks and strategic planning tools, management accountants can help organizations identify potential risks such as data leaks, algorithmic biases, and employee redundancy (Adeniran et al., 2024). This role is especially important when considering the unique challenges that Iraqi organizations face, including a lack of an enabling physical and legal environment, unclear and standardized regulations, and limited human capital in AI fields.

1-2- Management Accounting and Contingency Theory

According to contingency theory in management accounting, the most effective implementation of best practices depends on the business and economic environment of entities (Otley, 2016). In the context of AI adoption, however, this theory suggests that management accounting practices must align with the risks and opportunities presented by AI technologies (Abedin, 2021).

Nguyen et al. (2023) propose an emergency approach to management accounting that recognizes the field's flexibility and adaptability. When economic entities adopt new technologies, such as AI, management accounting must adapt to the new risks these technologies pose. For instance, risk management for economic entities in Iraq may differ from that in other developed countries due to Iraq's unique technological, regulatory, and labor conditions (Mahmood & Ahmed, 2022).

Based on contingency theory, this study proposes ways in which management accounting can mitigate the risks of AI in Iraqi institutions. By applying current accounting practices to the context of AI implementation, management accountants can help economic entities overcome the challenges of AI adoption and ensure that the benefits outweigh the risks.

1-3- Artificial Intelligence and Its Risks

AI is increasingly recognized as an innovative tool for improving economies worldwide and in different areas including accounting (Rashid & Kausik, 2024). Rane et al. (2024) posited that, due to emerging technologies, AI technologies such as machine learning, natural language processing, and robotics are revolutionizing how economic entities operate, making decisions, and analyzing data, with the central aim of predicting consumer behavior. AI is most effective at increasing economic entities' efficiency, decreasing expenditures, and stimulating creativity (Licardo et al., 2024). However, any growing business that uses AI systems must consider and adequately manage the consequences as AI systems become more crucial for operating successfully.

Data security is a particularly problematic risk associated with AI due to the vast amount of data required for its algorithms and models (Jada & Mayayise, 2024). Security is a major concern for AI since data is vulnerable to different perils. AI systems tend to work with big data, and if this data is leaked or misused, it can cause many problems (Aldoseri et al., 2023). Additionally, bias in AI systems can lead to discrimination against the public, exposing organizations to legal action or

reputational damage (Varona & Suárez, 2022). A lack of ethical considerations in decision-making processes, such as selecting performers or purchasing durable goods and services from specific vendors, poses enormous risks (Gurjar et al., 2024). Furthermore, artificial intelligence raises concerns about the potential elimination of human labor, which could lead to changes in the work environment with economic and social consequences (Shen & Zhang, 2024).

Sunyaev et al. (2025) explore the concept of high-risk AI. They argue that high-risk AI's risks are primarily socio-technical, arising from the interaction between algorithms, data, organizations, users, and regulatory environments rather than being purely technical. Central to these risks are ongoing trade-offs. For instance, enhancing predictive performance can exacerbate bias and discrimination, while escalating data usage improves system effectiveness but jeopardizes privacy. In addition, Hupont et al. (2023) found that increased transparency is necessary for accountability and trust, but it may expose systems to security risks in accounting systems. These challenges are particularly acute when high-risk AI is integrated into critical digital infrastructures, where system failures, cyberattacks, or biased automated decisions can lead to widespread societal harm. It is emphasized that regulatory compliance alone is insufficient, and multidisciplinary approaches combining information systems research, ethics, law, and computer science are called for to design governance mechanisms, regulatory practices, and technical solutions that balance fairness, privacy, transparency, security, and performance.

For Iraq, a country with an emerging technology platform, the adoption of AI carries specific risks. The country's lack of a developed digital technology ecosystem and insufficient number of qualified AI personnel increase the risks of operational carelessness and data readiness issues (Perifanis & Kitsios, 2023). Furthermore, Iraq has not yet developed adequate protections to shield its population from the risks associated with AI. Its regulatory frameworks for integrating AI into business operations are still in their infancy (Alkinani & Aljabry, 2024). For this reason, management accounting plays an important role in identifying, assessing, and mitigating the potential risks associated with AI.

1-4- Management accounting and AI

Management accounting is essential in facilitating the use of artificial intelligence (AI) by providing economic entities with relevant financial and non-financial data. Cost allocation tools, such as cost-benefit analysis and business scenario planning, enable management to assess the potential benefits and risks of AI, ensuring that this technology enhances the performance of economic entities (Farea et al., 2024). Given that AI has only recently been implemented in Iraq, effective support and contribution from management accounting in the use of AI is critical for economic entities to successfully integrate it (Dhahe et al., 2024).

The information gathered from traditional management accounting techniques, such as financial reports, risk assessments, and performance measurements, provides the basic data that economic entities need to prevent potential risks related to the integration of AI (Abdullah & Almaqtari, 2024; Alkoutaini et al., 2024). Economic entities that integrate management accounting information into their AI-related decisions are better able to manage risks such as data leaks, algorithmic biases, and operational interventions (Vărzaru, 2022). In Iraq, where AI-related risks are accompanied by challenges in infrastructure and regulatory framework, the ability to use management accounting information to address these risks is critical. Therefore, Hypothesis 1 is:

H1: management accounting information has a positive impact and significant impact on mitigating the risk of AI.

According to Kalifa et al. (2020), management accounting is defined as the various methods, procedures, processes, and rules used in a particular field or profession. These practices are particularly important in industrial companies because they support corporate infrastructure and management accounting processes. Examples of management accounting practices include

budgeting, performance evaluation, decision-making information, and strategic analysis. In addition, these practices help companies maintain their competitiveness and adapt to a changing world. They provide a significant competitive advantage by guiding management actions and strategic objectives. Management accounting practices are divided into two categories: traditional (MATPs) and contemporary (MACPs). Traditional management accounting practices (MATPs) include budgeting, standard costing, variance analysis, cost-volume-profit analysis, and performance measurement. Contemporary management accounting practices (MACPs) include total quality management, value-based management, activity-based costing, non-financial performance measurement systems, activity-based management, balanced scorecards, and strategic management accounting (Tirado and Mavlutova, 2023). Activities and techniques such as risk assessment and scenario analysis are generally associated with assessing costs and benefits. Specifically, scenario analysis is a management accounting practice used to mitigate threats posed by AI (Adeyelu et al., 2024). Management accounting offers the necessary tools to estimate such risks and develop measures to minimize them in the context of AI application (Rana et al., 2022). Consequently, management accounting practices play a central role in Iraq, where the adoption of AI is limited by technological and regulatory environments that increase the risks associated with AI adoption while limiting the technology's potential benefits. Therefore, Hypothesis 2 is:

H2: The management accounting has a positive impact and significant impact on mitigating the risk of AI.

The skills and competencies of management accountants, such as their ability to interpret and analyze data and identify and understand technological risks, are important for managing the risks associated with artificial intelligence (Cahyono & Ardianto, 2024). This means that management accountants in highly skilled organizations will be aware of the risks associated with AI, enabling these organizations to manage these risks efficiently (Das, 2021). In Iraq, where there is a significant shortage of skilled workers in the field of artificial intelligence, the competencies of management accountants play a critical role in enabling organizations to better manage the risks inherent in artificial intelligence. Their skills can compensate for the shortage of specialized AI experts by improving governance, oversight, and monitoring of AI applications within organizations. By continuously assessing the costs, benefits, and risks associated with AI, management accountants help organizations reduce uncertainty and prevent potential financial and operational losses (Minerio et al., 2025).

Thus, according to Budding et al. (2022), high levels of competence among management accountants are expected to enhance an organization's ability to mitigate the risks associated with AI by improving risk identification, assessment, and monitoring. Competent management accountants can translate the complex data generated by AI into useful financial and managerial insights. This enables organizations to anticipate potential threats and implement preventive measures. Their expertise also supports the development of robust internal controls and governance mechanisms for AI systems, reducing the likelihood of errors, misuse, and unethical outcomes (Ballantine et al., 2024). Consequently, organizations with highly competent management accountants are better positioned to manage uncertainty and safeguard organizational performance in the context of AI adoption. Therefore, Hypothesis 3 is:

H3: The competencies of management accountants create a positive and important effect on mitigating the risk of AI.

2- Methodology

2-1- Sampling and data gathering

The study sample consisted of management accountant, CEO, CFO and internal auditor working in 36 industrial and services companies listed on the Iraq Stock Exchange (ISE). This sample represents 37% of the total companies listed in ISE. The total sample of this study is 144 (36*4) as there is at

least one position of management accountant, CEO, CFO and internal auditor in each economic entity.

2-2- Research Tool

The study uses a five-point Likert scale survey it contains two parts. The first part includes the demographic information of the respondents, job title, education level, and years of work experience. Table 1 shows the demographic information of the respondents.

Table 1. Demographic data of respondents

Personal characteristics	type	Questionnaire	
Job title	Management Accountant	36	0.25
	CEO	36	0.25
	CFO	36	0.25
	Internal Auditor	36	0.25
Education level	Bachelor	109	0.76
	Postgraduate	35	0.24
Year of experience	Less than 5 years	56	0.38
	5-10 years	40	0.28
	More than 10 years	48	0.33

Source: Prepared by the researcher

In section two, there are 25 questions related to the independent variable, which is management accounting with its all four dimensions, while there are 9 questions for the dependent variable (risk of AI).

2-3- Variable measurement and Model specification

Following the previous studies (e.g., Adeyelu et al., 2024; Cahyono et al., 2024; Hussin et al., 2024), my study includes two variables., the independent variable is the management accounting which includes three main dimensions; management accounting information- MAI, management accounting contemporary practices-MACP, and management accounting traditional practices-MATP, management accountant competences- MAC. On the other hand, the dependent variable is the risk of AI. The study aims to examine how the risk of AI- RAI is mitigated by management accounting. Accordingly, the following model will be under the consideration in the study:

$$RAI = \alpha + \beta_1 MAI + \beta_2 MACP + \beta_3 MATP + \beta_4 MAC + \varepsilon \quad (1)$$

Note:

RAI= Risk of AI

MAI= Management Accounting Information

MACP= Management Accounting Contemporary Practices

MATP= Management Accounting Traditional Practices

MAC= Management Accountant Competences

β = fixed value

α = parameter

ε = standard error

The study uses regression analysis within Statistical Package for the Social Sciences (SPSS) version 22 to test the hypotheses because it is the most appropriate statistical method for this study. Additionally, ANOVA is used to determine the effect of demographic variables on independent and dependent variables.

2-4- Cronbach's alpha Reliability Test

Cronbach's alpha Reliability was calculated to test the scale's stability. Table 2 shows how well the internal consistency of items measuring a concept as a set. The value is 0.867 for the entire questionnaire and 0.918 for the MAI. The values are also 0.889 for the MACP, 0.877 for the MATP, 0.887 for the MAC, and 0.856 for the RAI. These results indicate reliability high.

Table 2. Cronbach's alpha Results

Variable	Questions number	Cronbach's alpha reliability coefficient
MAI	10	0.918
MACP	6	0.889
MATP	6	0.877
MAC	8	0.887
RAI	9	0.856
Total	34	0.867

Source: Prepared by the researcher based on the results of the statistical program

2-5- Descriptive statistics

The statistical description includes calculating the mean and standard deviation, were calculated for all variables. Table 3 presents the results.

Table 3. Statistical description

Variable	N	Mean	SD
MAI	108	4.21	0.143
MACP	108	3.41	0.259
MATP	108	4.01	0.411
MAC	108	3.98	0.187
RAI	108	4.10	0.356

Source: Prepared by the researcher based on the results of the statistical program (SPSS v.22)

Table 3 shows that the mean of MAI is 4.21, indicating that respondents believe MAI management accounting information is very important for decision-making. The mean of MACP is 3.41 indicating that the contemporary management accounting practices are not common practices in the industrial and services companies in Iraq, while the mean of MATP is 4.01 indicating that the traditional management accounting practices are the common practices that are used in these companies. The mean of MAC is 3.98 indicating that management accountant in Iraq has moderate competences

2-6- Multicollinearity and Correlation

Table 4 displays the multicollinearity and Correlation of the model.

Table 4. Multicollinearity and Correlation

variable	MAI	MACP	MATP	MAC	RAI
MAI	1.000				
MACP	-.10 [^]	1.000			
MATP	0.322**	0.448**	1.000		
MAC	.206	.318**	0.256	1.000	
RAI	-.618**	-.598**	0.152	-.601**	1.000

Source: Prepared by the researcher based on the results of the statistical program (SPSS v.22)

** . Correlation is significant at the 0.01 level (2-tailed). * . Correlation is significant at the 0.05 level (2-tailed).

The data are presented in the Table 4 that there is a negative and correlation at 0.01 between to variables MAI and RAI, indicating that reducing RAI needs more information of management accounting MAP. In addition, MACP and RAI have negative and significant correlation at 0.01 indicating that contemporary practices could reduce RAI while MATP is not. Finally, MAC has negative and significant association with RAI, which indicates that the competencies and skills of

management accountant are required to reduce the risk of AI. On the other side, Table 6 presents that the model does not have multicollinearity problems, as the correlations between them are less than 0.80.

2-7- Regression Analysis

Table 5 displays the regression analysis results. The study tested the relationship between management accounting (MAI, MACP, MATP and MAC) and IAs.

Table 5 Regression of the model

variable	B	T-Value	Sig.
MAI	-0.716	-2.771	0.000
MACP	-0.662	-1.365	0.000
MATP	0.153	0.419	0.216
MAC	-0.569	-1.093	0.000
F-Value	12.56		
Sig.	0.000		
R-Square	0.715		

Source: Prepared by the researcher based on the results of the statistical program (SPSS v.22)

Table 5 shows that the model is significant (F-value= 12.56, P<0.01) and R-square is 0.715 which is good enough to explain how management accounting mitigates the risk of AI. The coefficient of MAI is the highest ($\beta = -0.716, p < 0.01$) among other variables indicating that management accounting information are very required to mitigate the risk of AI. MACP are also required to mitigate the risk of AI because the business environment are totally changed as the traditional management accounting practices are not align with AI. Accordingly, MATP has no effect on reducing risk of AI because ($\beta = -0.153, p > 0.05$) is greater than 5%. MAC has negative and significant effect on RAI ($\beta = -0.569, p < 0.01$) indicating that the management accountant should have high level of competences and skills to mitigate the risk of AI. The results of regression analysis support all hypotheses to test how management accounting mitigates the risk of AI indicating that all hypotheses and associations are valid.

2-8- Additional analysis

Role of management accounting: job title differences

The study is conducting one-way ANOVA analysis to find the relationship between job title and independent and dependent variables of the study. Table 6 shows that the results of this analysis.

Table 6. One-way ANOVA for job title

Variables	Job Title	Mean	F-value	Sig.
MAI	MA	4.0243	7.656	0.000
	CEO	4.0035		
	CFO	4.2632		
	IA	3.7056		
MACP	MA	3.9470	9.871	0.000
	CEO	4.0354		
	CFO	3.5073		
	IA	3.5046		
MATP	MA	3.7153	3.899	0.010
	CEO	3.9352		
	CFO	3.6810		
	IA	3.5111		
MAC	MA	4.2431	64.887	0.000
	CEO	4.3939		
	CFO	4.1444		
	IA	3.9630		
RAI	MA	3.5919	8.755	0.000
	CEO	3.8511		
	CFO	4.0926		
	IA	3.2870		

Source: Prepared by the researcher based on the results of the statistical program

Table 6 shows that there are differences among all variables related to job title because sig, value is ($p < 0.01$) indicating that the four groups of the respondents have different opinion on the management accounting and it is role in mitigating the risk of AI. For the management accounting information (MAI), it is noted that the mean of CFO (4.26) is the highest followed by MA, CEO and IA indicating that CFO believes that the management accounting information that provided by management accountant for the preparation of financial and non-financial reports like budgets, forecasts and predications for supporting them in decision making. In relation to management accounting contemporary practices, the average of CEO (4.03) is the highest among the other groups which indicate that CEO prefers to use these contemporary practices to improve the economic entity performance. For the management accounting traditional practices, the mean of CEO (3.93) is the highest followed by MA, CFO and IA indicating that CEO and MA are more familiar with using management accounting traditional practices. For the management accountant competences, the mean of CEO (4.39) is the highest among the other groups followed by MA, CFO and IA indicating that the competences of MA are very required to perform the task that needed for CEO and CFO. Finally, the mean of CFO (4.09) is the highest among the other groups indicating CFO is more sensitive to the risk of AI. However, the results indicate all the four groups of the respondents are thinking that the management accounting has positive role in mitigating the risk of AI with different opinions.

Effect of type of external auditor

The sample is divided into two type based on the type of external auditor in Iraq; Big 4 and non-big 4 who is responsible for audit the financial statements of Iraqi industrial and services companies. Table 7 presents the result of effect the impact of the external auditor type.

Table 7. The result of effect the impact of the external auditor type

Variables	Sample with BIG4 (BIG4=1)	Sample with non-BIG4(non-BIG4=0)
	RAI	RAI
MAI	0.331(0.185)	0.104(0.540)
MACP	-0.589*(0.020)	-0.032(0.817)
MATP	-0.128(0.669)	-0.053(0.751)
MAC	-0.070(0.666)	-0.214*(0.040)
Constant	1.275**(0.004)	0.680**(0.003)
R-Square	0.166	0.274
F-Value	1.934	1.925
Sig.	0.004	0.003

Source: Prepared by the researcher based on the results of the statistical program

The results reveal clear distinctions between economic entity with big 4 audit economic entity and with non-big 4 audit economic entity. In economic entity where BIG 4 is the auditor, only MACP ($\beta = -0.589$, $p < 0.05$) which significantly reduces RAI indicating that MACP are very required in the industrial and service environment in Iraq to reduce the risk of AI. . In contrast, for economic entity s with non-BIG 4 audit economic entity s, only MAC ($\beta = -0.214$, $p < 0.05$) significantly reduces RAI indicating that non-BIG 4 auditor gives more weight to the competences of management accountant to reduce the risk of AI. The R-squared values of 0.166 (BIG4=1) and 0.274 (non-BIG4=0) highlight the greater explanatory power when non-BIG4 is present because the Iraqi business environment are under developed.

Effect of economic entity Size

The sample is divided into two subsamples based on the size of the economic entity Iraqi industrial and services companies. Table 8 presents the result of effect economic entity size.

Table 8. The result of effect economic entity size

Variables	Sample with Size (Size \geq 4.5)	Sample with Size(Size $<$ 4.5)
	RAI	RAI
MAI	0.226(0.175)	0.334(0.223)
MACP	-0.08(0.585)	-0.257(0.266)
MATP	-0.095(0.608)	-0.215(0.391)
MAC	0.058(0.600)	-0.291*(0.043)
Constant	0.772(0.185)	0.772*(0.031)
R-Square	0.177	0.409
F-Value	0.718	2.264
Sig.	0.185	0.031

Source: Prepared by the researcher based on the results of the statistical program

In larger economic entity s (SIZE \geq 4.5), management accounting has role in mitigating the risk of AI. Insignificant effects are observed for all dimensions of management accounting showing no effect of it on reducing AI. On the other hand, in smaller economic entity s (SIZE $<$ 4.5), management accountant competences play an important role in reducing the risk of AI at 0.05 ($\beta = -0.291$, $p < 0.05$) suggesting that greater competences lead to more mitigating of RAI. In this group, the model explains 40.90% of the variance in RAI, indicating a better model fit compared to smaller economic entity.

3- Discussion

The results indicate that management accounting and the information, practices, and competencies of management accountants are necessary to reduce AI risk. In the new business environment, AI poses the greatest challenge to companies. There are several AI risks in an industrial environment because it works with advanced technology. These risks include those related to data, privacy, human impact, and ethics. To work in this type of environment, companies must adopt a system capable of mitigating these risks.

It is important to discuss the results of this study in relation to prior studies. Zhang et al. (2023) found that the management accounting system can provide information in complex industrial environments to help decision-makers achieve their strategic goals. However, AI presents an issue because it integrates data from different sources in various patterns, including both structured and unstructured data, which makes it difficult for decision-makers to extract useful information. Our results demonstrate that management accounting is well-positioned to mitigate the risks associated with AI by providing information, practices, and competencies. Our findings are consistent with those of Abdullah and Almaqtari (2024), Vărzaru (2022), Adeyelu et al. (2024), and Cahyono and Ardianto (2024) regarding the role of management accounting in mitigating AI risk. When Iraqi industry and service companies integrate AI into their operations and processes, management accountants are well-suited to represent the economic entity in preparing the requirements for this integration, such as smart AI contracts. Adeyelu et al. (2024) pointed out that integrating AI with management accounting reduces the need for intermediaries and ensures the accuracy of contractual agreements. Zhang et al. (2023) assert that management accountants are well-suited to diagnose the ethical risks of AI. According to our study, management accountants, CEOs, CFOs, and internal auditors believe that accounting management can play an important role in mitigating AI risk because management accounting is an appropriate system for collecting data from different sources. This data can be financial or non-financial, and can take the form of numerical data, charts, or figures. All of this data supports decision-makers in achieving their goals. Additionally, Iraqi industry and service economic entities prefer to begin using AI in their operations and processes because it will facilitate the adoption of new technologies, the production of new products, and the attraction of more investments. This result is supported by Allami et al., (2023) who find that Iraqi firm should use technology in their process for management accounting purposes. Increasing management accountants' competencies is

crucial for dealing with AI risks because they are willing to accept AI risks as they have accepted other types of risks generated by contemporary management accounting practices, such as activity-based costing and activity-based management.

4- Conclusion

This study examines the management accounting and its role in mitigating the risks associated with adopting AI in Iraqi industrial and service companies. The study reached to the following conclusions:

- A. The proposed hypotheses suggest that management accounting is useful for assigning value to AI and managing the risks associated with its adoption. As AI use increases in Iraq, management accountants will play a critical role in ensuring effective AI adoption with minimal consequences.
- B. For the CEO, management accounting is the best information system for supporting decision-making in the AI era. CEOs use management accounting information to make strategic decisions, allocate resources, and improve economic entity performance. AI facilitates access to data, reducing the risk associated with these types of decisions, and uses solid scenarios to generate possible strategies and achieve strategic competitiveness.
- C. CFOs can efficiently use AI to improve financial forecasting and budgeting decisions. They can become powerful strategic advisors by improving predictive analytics for forecasting, automating routine tasks, and increasing their ability to detect fraud and risk. AI helps management accountants become the key people who provide all the required information.
- D. With AI, management accountants can spend less time on manual data entry and more time analyzing and interpreting data to make informed strategic decisions. This can help companies make more informed decisions and stay competitive in the market.
- E. The analysis showed that the coefficient of MAI is the highest among other variables indicating that management accounting information is required to mitigate the risk of AI.
- F. The analysis showed that the MACP are required to mitigate the risk of AI because the business environment has totally changed as the traditional management accounting practices do not align with AI.
- G. The analysis showed that the MATP has no effect on reducing risk of AI indicating that the traditional management accounting techniques are not effective in mitigating risk of AI.
- H. The analysis showed that the MAC has negative and significant effect on RAI indicating that the management accountant should have high level of competences and skills to mitigate the risk of AI.
- I. The results of regression analysis support all hypotheses to test how management accounting mitigates the risk of AI indicating that all hypotheses and associations are valid.
- J. The additional analysis showed that all the four groups of the respondents are thinking that management accounting has positive role in mitigating the risk of AI with different opinions.
- K. The additional analysis showed in economic entity where BIG 4 is the auditor, only MACP significantly reduces RAI indicating that MACP are very required in the industrial and service environment in Iraq to reduce the risk of AI. In contrast, for economic entity s with non-BIG 4 audit economic entity only MAC significantly reduces RAI indicating that non-BIG 4 auditor gives more weight to the competences of management accountant to reduce the risk of AI.
- L. In larger economic entity, management accounting has role in mitigating the risk of AI, while in smaller economic entity, management accountant competences play an important role in reducing the risk of AI.

5- Limitations and recommendations

- A. The study used a questionnaire to collect data on the role of management accounting on the risk of AI because no secondary data was available to examine this effect. However, questionnaires are subject to sampling bias. Therefore, companies should keep records of their AI investments to better study AI risk in the future.
- B. The study did not analyse the effect of each type of AI used by industrial and service economic entities because each type of AI is expected to have a different level of risk. Future studies examining each type of AI could improve management accountants' ability to reduce the risk associated with different types of AI.
- C. The study focused on a business environment transitioning to AI use, so the results' generalizability is limited. Future studies can include more economic entities from all sectors in Iraq.
- D. The study uses only the primary data through questionnaire because no data is available about investments in AI or other secondary data. Future studies may use other research approaches such as interviews to collect data on this topic and provide more insights on the relationship between management accounting and AI.
- E. This study is focused only on relationship between management accounting and AI, future studies can examine other related areas such as indicators that uses to measure the risk of AI and the management accounting. In addition, future studies may study the effect of AI on financial performance.

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