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THE IMPACT OF INTELLIGENT SYSTEMS ON COST EFFICIENCY IN MANAGEMENT ACCOUNTING

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ABSTRACT

This study investigates the impact of intelligent systems on cost reduction and efficiency enhancement in management accounting processes, an increasingly important issue as organizations adopt digital technologies to strengthen competitive advantage. The study responds to the need for empirical evidence on the extent to which intelligent systems can transform management accounting practices, a research area that remains relatively underexplored despite its potential to improve operational efficiency. Data collected through a Likert scale survey administered to management accounting professionals across multiple industries. The results indicate strong agreement that intelligent systems significantly enhance organizational efficiency and contribute to cost reduction. In particular, the findings show that the use of intelligent systems in the preparation of management accounting results and reports leads to measurable cost savings and supports more effective managerial decision-making. By providing empirical evidence on the efficiency and cost benefits of artificial intelligence–enabled intelligent systems, this study highlights their role in advancing management accounting practices. The findings contribute to the digital transformation literature and offer practical insights for organizations seeking to align intelligent systems with strategic performance objectives.

KEYWORDS: Artificial Intelligence, Business Process Management, Data Processing, Decision Support System, Management Systems, Structured Equation Modelling.

1. INTRODUCTION

Intelligent systems, including artificial intelligence (AI) and machine learning, transform management accounting by improving cost control, enhancing accuracy, and enabling predictive insights (Marques et al., 2023). Empirical evidence suggests that these systems streamline processes, reduce manual work, and improve decision-making efficiency. Business intelligence and analytical tools, including AI-driven analytics, enhance management accounting functions by supporting data-driven decision-making, real-time reporting, and cost efficiency, thereby strengthening strategic alignment and operational efficiency (Rikhardsson and Yigitbasioglu, 2018). Enterprise systems and analytics reduce processing costs, improve accuracy, and allow accountants to focus on strategic roles (Appelbaum et al., 2017). Digitization and advanced analytics contribute to reducing operational inefficiencies, increasing reporting accuracy, and supporting real-time decision-making, aligning with the benefits of cost efficiency (Bhimani and Willcocks, 2014). AI technology automates routine accounting tasks, improves accuracy, and enhances cost efficiency, thus enabling more strategic utilization of accounting data (Li et al., 2020) similarly, AI-driven data-mining and reporting automation reduce manual processing costs and improve reporting efficiency (Ping, 2021).

Intelligent Systems (IS) are integrated socio technical systems that combine information technologies, data analytics, and organizational processes to support automation, learning, and managerial decision-making. In management accounting, IS include enterprise resource planning (Rikhardsson and Yigitbasioglu, 2018) (ERP) systems, business intelligence and analytics platforms, decision support systems, and robotic process automation, all of which enhance cost control, reporting accuracy, and strategic performance management (Krajnik and Demeter, 2021).

Artificial Intelligence (AI) refers to computational techniques that enable machines to perform human like cognitive tasks such as learning, prediction, pattern recognition, and reasoning. In accounting, AI supports budgeting, cost analysis, forecasting, and performance evaluation through machine learning and predictive analytics (Li et al., 2020).

In this study, AI and IS are used interchangeably, as AI represents the core analytical capability embedded within broader intelligent systems rather than a standalone technology in management accounting contexts (Appelbaum et al., 2017), (Institute of Management Accountants, 2024). Considering these transformative developments, this study comprehensively explores the impact of Intelligent Systems on the Management Accounting profession. By synthesizing insights from the relevant literature and conducting empirical research, this study aims to illuminate the changing roles, challenges, and opportunities for management accountants in the era of Intelligent Systems.

The United Arab Emirates (UAE) has transformed rapidly into a global hub for financial and professional services, driven by sustained economic diversification and technological advancement. Within this digital landscape, innovations in intelligent systems—particularly Artificial Intelligence (AI)—are increasingly reshaping organizational processes across industries. Against this backdrop, the present study examines the cost impact and efficiency implications of intelligent systems within the UAE is expanding financial and professional services sector, with specific attention to management accounting practices. The main objective of this study is to examine how intelligent systems contribute to improving cost efficiency in management accounting through automation, enhanced data accuracy, and decision-making support. Accordingly, this research addresses the following key question: How do intelligent systems enhance cost efficiency in management accounting?

This study makes three key contributions to existing literature. First, it provides UAE specific empirical evidence on the adoption and impact of intelligent systems, illustrating how these technologies are transforming management accounting practices within a rapidly digitizing economy. Second, the study highlights the strategic importance for organizations to develop the necessary skills and training within their accounting departments to effectively leverage intelligent systems. Third, it contributes to the broader research on emerging technologies by offering insights into how intelligent systems are reshaping organizational processes globally, with particular relevance to the UAE context.

The study is further grounded in several theoretical perspectives that explain the mechanisms through which intelligent systems influence management accounting. Drawing on legitimacy theory, contingency theory, signalling theory, and stakeholder theory, this research provides a multifaceted analytical foundation. Legitimacy theory posits that the evolution of management accounting and AI enhanced accountability systems depends on the justified use of organizational

resources, stakeholder approval, and the integration of internal CSR mechanisms (Zyznarska-Dworczak, 2018). Contingency theory emphasizes that the effectiveness of management accounting systems is shaped by contextual factors, such as technological adoption, organizational structure, culture, and business strategy, implying that such systems must continuously adapt to emerging digital tools to remain effective (Ismail et al., 2010). Signalling theory highlights managers' responsibility to disclose credible financial and CSR related information, which can influence investor perceptions and reduce information asymmetry (Abutaber and Maswadeh, 2022). Finally, stakeholder theory underscores how stakeholder expectations and engagement shape accounting practices, particularly in areas such as sustainability reporting and decision-making, thereby explaining why organizations increasingly incorporate broader stakeholder interests into their accounting systems (Kaur and Lodhia, 2018).

The remainder of this paper is structured as follows. Section 2 reviews the related literature on intelligent systems and their role in management accounting. Section 3 describes the research methodology, including the datasets, data collection procedures, and analytical techniques employed, as well as the demographic characteristics of the respondents. Section 4 presents empirical results and evaluates the hypotheses developed in this study. Section 5 concludes the paper and outlines future research directions.

2. RELATED LITERATURE

The increasing integration of intelligent systems and artificial intelligence has attracted growing scholarly interest within accounting and management research. Prior studies have examined how these technologies reshape accounting functions by enhancing efficiency, accuracy, and decision-making capabilities. However, literature remains fragmented, with much of the focus placed on financial accounting and auditing rather than management accounting. This section synthesizes relevant literature on intelligent systems in accounting, emphasizing their evolution, application in management accounting, impact on cost efficiency and managerial decision-making, and the theoretical foundations that inform hypothesis development.

2.1. Evolution of Intelligent Systems in Accounting

The evolution of accounting systems has closely mirrored broader developments in information technology and organizational information processing. Early accounting systems were predominantly manual and transaction oriented, relying on paper-based records and periodic reporting to support financial control and compliance. These traditional systems focused primarily on historical cost recording and stewardship functions, offering limited analytical capability and delayed managerial insights. As organizations grew in scale and complexity, the limitations of manual accounting systems became increasingly evident, particularly in terms of timeliness, accuracy, and decision relevance.

The introduction of computerized accounting systems marked the first major transformation in the accounting function. Initial applications focused on automating basic bookkeeping tasks, such as general ledger maintenance, payroll processing, and accounts payable and receivable. While these systems improved efficiency and reduced clerical errors, they largely replicated existing manual processes rather than fundamentally transforming accounting practices (Bhimani and Willcocks, 2014). Decision making support remained limited, and accounting information continued to be backward looking and fragmented across organizational units.

The subsequent development of enterprise resource planning (ERP) systems represented a significant shift toward integrated accounting and information systems. ERP systems enabled the consolidation of financial and non-financial data across organizational functions, facilitating standardized processes, real time transaction processing, and improved data consistency (Appelbaum et al., 2017). For management accounting, ERP systems provided enhanced visibility into cost structures, operational performance, and resource utilization, laying the foundation for more effective cost control and performance management.

More recently, advances in business intelligence (BI), analytics, and artificial intelligence have driven the transition from digital accounting systems to intelligent systems. BI and analytics tools extend the capabilities of ERP systems by enabling multidimensional analysis, real-time dashboards, and advanced reporting that support managerial planning and control (Rikhardsson & Yigitbasioglu, 2018). The integration of AI-driven analytics, machine learning, and automation tools further enhances these systems. These technologies enable predictive insights, anomaly detection, and automated decision support (Li et al., 2020; Deloitte, 2024).

This technological evolution has fundamentally shifted the role of accounting from a transaction based, record keeping function to a data driven decision support function. Management accounting, in particular, has transitioned toward forward looking analysis, scenario modelling, and strategic performance evaluation. Intelligent systems now support continuous monitoring of costs, real time variance analysis, and proactive decision-making, enabling management accountants to contribute more directly to organizational strategy and value creation (Rikhardsson and Yigitbasioglu, 2018, Institute of Management Accountants, 2024).

Overall, the evolution of intelligent systems in accounting reflects a progression from manual processing to integrated, analytics driven systems that embed artificial intelligence within organizational decision processes. This transformation provides the technological foundation for improved cost efficiency, enhanced managerial insight, and the strategic repositioning of the management accounting function, which forms the basis for the empirical investigation in this study.

2.2. Artificial Intelligence and Intelligent Systems in Management Accounting

The increasing adoption of Artificial Intelligence (AI) and intelligent systems has significantly transformed the scope and practice of management accounting. Unlike traditional accounting information systems, which primarily focused on transaction processing and historical reporting, AI enabled intelligent systems emphasize learning, prediction, and decision support. These technologies extend the analytical capabilities of management accounting by enabling real time insights, advanced forecasting, and automation of complex accounting tasks (Appelbaum et al., 2017, Rikhardsson and Yigitbasioglu, 2018).

In management accounting, intelligent systems integrate AI technologies such as machine learning, predictive analytics, natural language processing, and robotic process automation within broader organizational systems, including ERP and business intelligence platforms. Machine learning algorithms increasingly used for cost forecasting, budgeting, variance analysis, and scenario modelling, allowing organizations to anticipate future outcomes rather than relying solely on historical data (Elliot et al., 2020). Predictive analytics enhances planning accuracy by identifying patterns and relationships in large datasets that are often difficult to detect using traditional analytical techniques.

Robotic process automation and AI driven workflows have also reshaped routine management accounting activities. Tasks such as data collection, reconciliation, cost allocation, and report generation can be performed automatically with minimal human intervention, reducing processing time and operational costs while improving accuracy and consistency (Bhimani and Willcocks, 2014, PwC, 2023). As a result, management accountants are increasingly able to redirect their efforts toward analytical interpretation, strategic advisory roles, and performance management (Institute of Management Accountants, 2024).

Furthermore, intelligent systems enhance the decision support role of management accounting by enabling real time access to integrated financial and non-financial data. Business intelligence dashboards and AI enabled analytics provide managers with timely insights into cost drivers, operational efficiency, and resource utilization, facilitating proactive rather than reactive decision-making (Rikhardsson and Yigitbasioglu, 2018, Deloitte, 2024). These capabilities are particularly valuable in dynamic business environments where rapid responses to cost fluctuations and market changes are critical.

Despite these advances, prior research highlights that the adoption and impact of AI enabled intelligent systems in management accounting vary across organizations and contexts. Factors such as organizational size, technological readiness, skills availability, and strategic orientation influence the extent to which these systems are effectively utilized (Ahmed et al., 2023). This underscores the importance of examining intelligent systems not merely as technological tools, but as embedded organizational systems that shape management accounting practices and outcomes.

Overall, the integration of AI within intelligent systems represents a fundamental shift in management accounting—from a predominantly descriptive and control oriented function toward a forward looking, analytical, and strategic role. This transformation provides the conceptual foundation for examining how intelligent systems influence cost efficiency to implement management accounting in organisations.

2.3. Intelligent Systems and Managerial Decision Making in Management Accounting

Managerial decision making is a core function of management accounting, encompassing planning, control, performance evaluation, and strategic

resource allocation. The integration of intelligent systems has fundamentally enhanced this decision support role by improving the quality, timeliness, and relevance of accounting information. Unlike traditional accounting systems that primarily provide historical and descriptive data, intelligent systems enable forward looking, analytical, and predictive insights that support more informed managerial decisions (Rikhardsson and Yigitbasioglu, 2018, Appelbaum et al., 2017).

One of the key contributions of intelligent systems to managerial decision making lies in their ability to process large volumes of structured and unstructured data in real time. ERP integrated analytics and business intelligence tools provide managers with continuous access to up to date cost and performance information, enabling timely interventions and corrective actions (Deloitte, 2024). This real time visibility supports more effective planning and control by allowing managers to monitor cost drivers, operational efficiency, and resource utilization on an ongoing basis rather than through periodic reports.

Artificial intelligence further strengthens managerial decision making by enabling predictive and prescriptive analytics. Machine learning models support scenario analysis, demand forecasting, and cost prediction, allowing management accountants to evaluate alternative courses of action and assess their potential financial implications (Elliot et al., 2020). These capabilities enhance decision quality by reducing uncertainty and enabling managers to anticipate future cost behaviour and performance outcomes rather than relying solely on historical trends.

Intelligent systems also contribute to decision making by improving the consistency and objectivity of accounting analyses. Automated analytics and algorithm-based evaluations reduce subjective bias and human error in cost analysis and performance measurement, leading to more reliable and comparable information for managerial use (Bhimani and Willcocks, 2014, KPMG International, 2024). This increased reliability enhances managerial confidence in accounting information and supports more decisive and timely decision making.

Because of these developments, the role of management accountants has evolved from that of information providers to strategic business partners. Intelligent systems enable management accountants to focus on interpreting analytical outputs, advising management, and aligning financial insights with organizational strategy (Institute of Management Accountants, 2024). This shift reinforces the strategic relevance of management accounting and highlights how intelligent systems indirectly contribute to cost efficiency by improving the quality of managerial decisions that shape resource allocation and operational performance.

Overall, the literature suggests that intelligent systems enhance managerial decision making by enabling real time insight, predictive analysis, and objective evaluation. These decision support capabilities form a critical mechanism through which intelligent systems influence cost efficiency in management accounting, reinforcing the importance of examining their impact empirically in the present study.

2.4. Theoretical Foundations Supporting Intelligent Systems Adoption

Building a theory driven explanation of how intelligent systems (UIS) improve cost efficiency in management accounting (CEMA) requires integrating complementary perspectives. Prior accounting research indicates that the relationship between technology and performance is contingent on organizational context, shaped by legitimacy concerns, and mediated by how information signals are interpreted by external stakeholders (and, internally, by managers). This study explicitly anchored in contingency, legitimacy, signalling, and stakeholder theories, together clarifies why and when UIS should yield cost efficiency gains in management accounting. The foregoing provide brief understanding of how the theories underpin and justifies the role in the study.

Contingency theory posits that the effectiveness of management accounting systems depends on their fit with contextual factors (e.g., technology, structure, strategy, culture). In this view, UIS enhance cost efficiency when they aligned with task complexity, data intensity, and decision time pressures. Where environmental dynamism and process complexity are high—as in UAE financial and professional services—organizations that tailor UIS to their specific information needs can reduce processing costs, cycle times, and decision errors, thereby improving CEMA. This logic supports testing UIS/CEMA relationships while recognizing that effect sizes may vary with organizational contingencies (e.g., size, digital maturity).

Legitimacy theory explains adoption as a means to maintain congruence with societal norms and stakeholder expectations. Deploying UIS (e.g., ERP integrated analytics, AI enabled controls) can bolster perceptions of methodological rigor, transparency, and responsible resource use. In regulated and

reputation sensitive domains, visibility of advanced systems signals prudent stewardship and process discipline, which, in turn, encourages continued investment and organizational support for cost efficient practices in management accounting. This mechanism underscores why organizations may institutionalize UIS even beyond short-term financial benefits.

Signalling theory highlights how disclosures and visible practices communicate otherwise unobservable quality. When managers' report AI enabled analytics, real time dashboards, and automated controls, they send credible signals about data integrity, responsiveness, and efficiency orientation. These signals can reduce perceived information risk for investors and boards, lowering monitoring costs and indirectly reinforcing internal emphasis on cost efficient management accounting routines (e.g., faster variance analysis, predictive cost control). This theoretical channel links UIS visibility to economic outcomes via stakeholder interpretations of efficiency and reliability.

Stakeholder theory broadens the analysis to multiple audiences—owners, customers, regulators, and society—whose information needs shape management accounting design. UIS that integrate financial with non-financial and ESG data help address diverse stakeholder demands, enabling management accountants to allocate resources toward activities that create shared value while avoiding waste. Meeting these expectations can align internal incentives with cost efficient processes (e.g., automated data capture, standardized analytics), reinforcing the UIS/CEMA pathway.

Together, these perspectives generate testable expectations for an empirical model. Contingency theory anticipates stronger UIS/CEMA effects where technology–task fit is high; legitimacy and signalling predict that visibly robust UIS architectures foster external confidence and internal support for efficiency; and stakeholder theory suggests that systems integrating heterogeneous data (financial and ESG) enhance resource allocation and reduce waste. This integrated framework provides a coherent rationale for the hypothesis that, the use of intelligent systems leads to cost efficiency in management accounting processes and motivates examining contextual moderators in future research.

2.5. Hypothesis Development

The literature above indicate that intelligent systems enhance management accounting outcomes through multiple, interrelated mechanisms, including automation, data accuracy, analytical capability, and decision support functionality. Prior empirical studies and theoretical perspectives suggest that these components improves cost efficiency by reducing processing costs, minimizing errors, and enabling more informed managerial decisions (Rikhardsson and Yigitbasioglu, 2018, Appelbaum et al., 2017).

Drawing on contingency theory, the effectiveness of intelligent systems depends on their alignment with organizational tasks and information requirements, particularly in complex and data intensive environments. Legitimacy and signalling theories further suggest that the adoption of advanced intelligent systems reinforces disciplined cost management practices by institutionalizing efficient, transparent, and technology driven accounting processes. Stakeholder theory highlights that intelligent systems enable management accountants to integrate financial and non-financial information, improving resource allocation while minimizing waste.

Based on this theoretical grounding and prior empirical evidence, the study proposes the following main hypothesis:

H_1: Intelligent systems have a positive and significant effect on cost efficiency in management accounting processes.

To further unpack this relationship and align with the study's Structural Equation Model, the use of intelligent systems (UIS) conceptualized as a multidimensional construct comprising automation, data accuracy, analytical capability, and decision support functionality. Accordingly, the following sub hypotheses formulated:

H_1a: Automation enabled by intelligent systems has a positive and significant effect on cost efficiency in management accounting processes.

H_1b: Improved data accuracy and reliability through intelligent systems has a positive and significant effect on cost efficiency in management accounting processes.

H_1c: Advanced analytical and predictive capabilities of intelligent systems have a positive and significant effect on cost efficiency in management accounting processes.

H_1d: Decision support functionality provided by intelligent systems has a positive and significant effect on cost efficiency in management accounting processes.

These sub hypotheses allow for a more granular examination of how specific intelligent system capabilities contribute costing efficiency in management accounting as shown in figure 1.

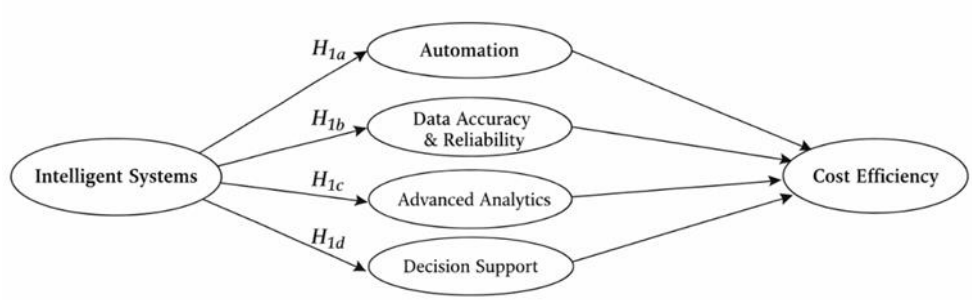

Figure 1: framework model diagram, generated based on your hypotheses (H_1, H_1 a–H_1 d).

Together, they form the basis for the study's empirical analysis using regression and Structural Equation Modelling, enabling the assessment of both the overall and component level effects of intelligent systems on cost efficiency.

Applications of AI in accounting and finance, such as cost management, fraud detection, and forecasting, have demonstrated improvements in operational efficiency and strategic decision-making (Krajnik and Demeter, 2021). AI and analytics transform financial processes into value-creating activities by enhancing efficiency, speed, and reliability (Ahmed and Gad-Elrab, 2021). The strategic adoption of AI supports decision makers by providing real-time insights, efficiency gains, and cost savings (Elliot et al., 2020). On a global scale, AI is reshaping accounting and finance by enabling automation, efficiency, and improved decision-making processes, making its adoption essential for contemporary financial reporting (Institute of Management Accountants, 2024).

A recent study strongly indicated that technological platforms are necessary for the accounting profession in general and management accounting in particular (Alnor, 2024). Recent advancements in intelligent systems, including AI, robotic process automation, natural language processing, and advanced analytics, have reshaped the role of management accounting on a global scale (Kaplan and Norton, 2023). Research indicates that intelligent systems enhance predictive accuracy, facilitate scenario modelling, and enable organizations to respond proactively to market volatility (Zhang et al., 2024). These tools integrate seamlessly with Enterprise Resource Planning (ERP) systems, reduce data latency, and provide decision-makers with near real-time insights (Deloitte, 2024). In the UAE context, where financial and professional services operate within a fast-evolving regulatory and competitive landscape, intelligent systems have the potential to bridge the gaps between operational performance and strategic objectives (UAE Ministry of Economy, 2024). Moreover, the adoption of AI-driven systems increasingly linked to sustainability goals and ESG (Environmental, Social, and Governance) reporting requirements (Bebbington et al., 2024). Management accountants equipped with these tools can better align cost-efficiency strategies with long-term corporate sustainability initiatives (Chatterjee and Watson, 2024). For instance, machine-learning models can optimize resource allocation not only for cost minimization but also for reducing environmental impact (KPMG International, 2024). This dual focus reflects a shift in management accounting from purely financial performance to integrated thinking that incorporates both social and environmental dimensions.

While the literature has extensively examined intelligent systems in financial accounting, there is a relative scarcity of empirical studies focusing specifically on management accounting, particularly in emerging economies. This study's emphasis on cost efficiency within the UAE fills a critical gap by providing context-specific evidence that may inform both regional practices and broader theoretical development.

After a thorough analysis of past literature found that there is a huge gap in the studies on the impact of intelligent systems on management accounting, especially from the viewpoint of Cost Efficiency. This study attempted to bridge this gap. Many studies that have focused on intelligent systems have analyzed the importance of these systems and their implementation in companies. Few studies highlight the effects of intelligent systems on Financial Accounting and Accounting. Few studies conducted to find the real cost impact of intelligent systems on management accounting as a standalone. This gap motivated us to concentrate on this area of research and add value to the existing literature.

Based on the research question in the previous section, the following hypotheses were formulated for the study:

Hypothesis: Intelligent systems will lead to cost

efficiency in management accounting processes.

Explanation: Automation and data analytics can reduce operational costs and improve efficiency of management accounting functions.

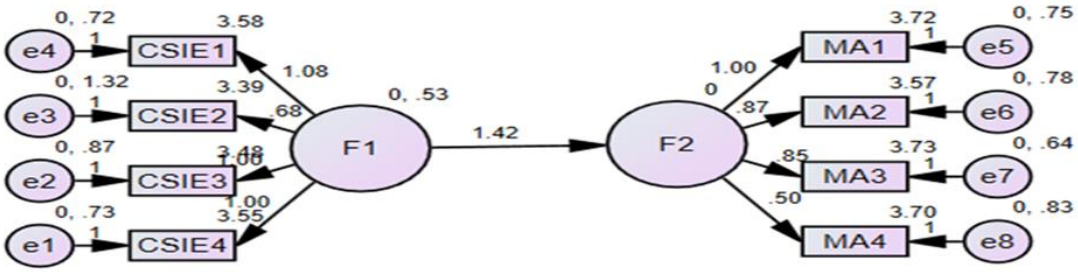

Figure 2. Conceptual Framework of SEM Model.
Where H1a to H1d = CSIE1 –CSIE4 and MA1 to MA4 = management accounting efficiency measures.

3. METHODOLOGY

This research involved the collection and analysis of numerical data to establish patterns, relationships, and statistical significance. As part of the quantitative method, a well-structured questionnaire with closed-ended questions was prepared using a 7-point Likert scale. A pilot test was conducted with a sample collection of data using 25-30 fully filled-in questionnaires. Based on the results of the pilot study, necessary adjustments were made to finalize the questionnaire for data collection from a large sample. In the empirical analysis, the questionnaire method was proven one of the best methods to test the hypotheses. The questionnaire consisted of multiple sections starting with demographics, intelligent systems, management accounting, and respondents' opinions. An online questionnaire was designed using Google Forms, so that it was convenient to share with respondents to collect data.

For data collection in the United Arab Emirates (UAE), diverse and rapidly evolving environment usage of robust and efficient sampling methods is crucial for obtaining reliable and representative data. The UAE has seven emirates, each with unique demographic and economic characteristics, and often requires a customized approach for sampling. The "systematic stratified sampling" method, though not a standard term, this can understood as a combination of both systematic and stratified sampling techniques. Stratified sampling techniques involves dividing the population into distinct subgroups, also called 'strata' that are homogeneous within themselves but heterogeneous between each other based on certain characteristics, such as age, nationality, income, or emirate. In the UAE, stratification could be predominantly useful to ensure that all major groups were included in the study, including Emiratis and expatriates from ***different regions.***

The scope of this study is limited to the Financial and Professional Services Sector in UAE. The financial and professional services sector in the United Arab Emirates (UAE) (Table 1) includes a wide range of organizations, including banking and financial institutions, law firms, accounting firms, consulting firms, and insurance companies. Table 1 presents the list of the approximate number of organizations in this sector:

Table 1: Data collected from respondents (finance officials) of these organizations.

Particulars	No.
Domestic banks	23
Foreign banks	28
Finance companies	25
Insurance companies	62
Consulting firms	224
Accounting & Audit Firms	512
Total	874

Cochran's formula was used to calculate the appropriate sample size. For a population of 4,000 respondents at a confidence level of 95% with 5% precision, the ideal sample size was calculated as follows:

Formula: Formula: $n_0 = \frac{Z^2.p\,.\,(1-p)}{E^2}$

Z = 1.96 for a 95% confidence level

Precision of 5% (E = 0.05)

This reduces to: Population size N= 4,000

Cochran's formula application = n_0 = $\frac{(1.96)^2\,.0.5\,.\,(1-0.5)}{(.05)^2}$

$n_0 = \frac{0.9604}{0.025} = 384.16$

Which is rounded to 384 respondents.

A combination of systematic and flexible strategies was employed to engage potential participants in a respectful and professional manner. The sample consisted exclusively of respondents

from the financial and professional services sector in the UAE, ensuring that the data collected were directly relevant to the study's objectives. Participants were reached through multiple channels, including professional networks, organizational contacts, chambers of commerce, online forums, LinkedIn, social media platforms, email outreach, university and academic networks, as well as digital survey tools such as SurveyMonkey and Google Forms.

The quantitative data collected were analyzed using SPSS, which facilitated the computation of descriptive statistics and the execution of linear regression analyses, including R-squared values, ANOVA, and regression coefficients. In addition, Structural Equation Modelling (SEM) was applied to assess the complex relationships among the study variables, providing a more robust and comprehensive evaluation of the proposed hypotheses.

4. RESULTS

The questionnaire designed in this research study included questions related to respondents' company size. This is important because the size of the organization can directly influence the work life experience of employees and their predictions for the future. Figure 1 depicts the results of demographic data analysis.

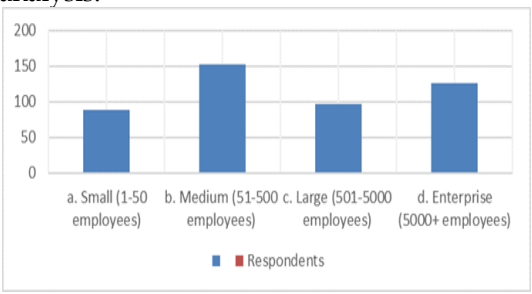

Figure 1: Demographic Analysis.

As shown in figure 1, the sample included 89 respondents from small companies (1–50 employees), 152 from medium-sized companies (51–500 employees) representing the largest group, 97 from large companies (501–5000 employees), and 126 from enterprise-level organizations with more than 5000 employees, indicating strong representation across all organizational sizes.

The data suggest a broad range of company sizes, with notable emphasis on medium-sized companies. This could reflect the distribution of company sizes within the surveyed population or be indicative of the targeted demographics for the survey. The relatively balanced distribution across different company sizes may provide a comprehensive perspective on the survey's focus area, allowing for insights that are relevant across various operational scales.

Hypotheses Testing

A linear regression analysis used to test this hypothesis. Model fit was assessed using R^2, and hypothesis testing was conducted on the model coefficients and overall model (via ANOVA). To test the hypothesis, R2 conducted and presented results in table 2.

Table 2: Results of R2 and Model Summary of Hypothesis 1.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.578[a]	.334	.331	.68768
Predictor: UIS; Dependent variable: CEMA Sample size (N) = 385; $df_1 = 1$, $df_2 = 383$				

As shown in table 2, R (0.578) indicated a moderate positive correlation between the predicted and observed CEMA values. The direction and magnitude of the UIS effect were confirmed by the coefficient analysis (Table 2). R^2 (0.334): 33.4% of the variance in CEMA was explained by UIS, suggesting that other factors not included in the model accounted for the remaining 66.6%. Adjusted R^2 (0.331): Very close to R^2, indicating that the model is not over-fitted given the number of predictors. Standard Error of the Estimate (0.68768): On the scale of CEMA, this is the average deviation of the observed values from the regression line. The statistical significance of the model is reported in the ANOVA table (Table 4), and the specific effect of UIS on CEMA is interpreted using the regression coefficient table (Table 5).

ANOVA Analysis

To evaluate whether the regression model, including Use of Intelligent Systems (UIS) as a predictor, significantly explains the variance in Cost Efficiency in Management Accounting Processes (CEMA), an ANOVA test was conducted, and the results are presented in table 3. Regression sum of squares (103.591) quantifies the variation in CEMA explained by the UIS. The residual sum of squares (206.659) reflect the unexplained variations. The F-statistic (F (1, 437) = 109.526) with a p-value of < 0.001 indicated that the regression model significantly predicted CEMA. This finding suggests that UIS is significantly related to cost efficiency in management accounting processes, providing evidence to reject the null hypothesis.

Table 3: Results Of Anova Hypothesis.

df.	Model	Sum of Squares	df	Mean Square	F	Sig.

1	Regression	103.591	2	51.795	109.526	.000[b]
	Residual	206.659	437	.473		
	Total	310.250	439			
a. Dependent Variable: CEMA b. Predictor: UIS						

TABLE 4. Coefficients

Model		Unstandardized Coefficients	Standardized Coefficients		t	Sig**
		B	Std. Error	Beta		
df .1	(Constant)	1.628	.147		11.059	.000
	UIS	0.484	0.046	0.578	10.460	0.000**

The above table 4 shows that the intercept β = 1.628, p < 0.001, indicates that the level of UIS = zero is expected to be 1.628 for cost efficiency. The coefficient for UIS, B = 0.484, p < 0.001, indicates that with a one-unit increase in the level of UIS, cost efficiency increases on average by 0.484 units with control for other variables. The Beta value of UIS (.578) indicates a strong positive relationship between UIS and CEMA.

Structured Equation Analysis

To test Hypothesis, SEM analysis was employed to examine the relationship between the independent and dependent variables. The use of Intelligent Systems we abbreviated as CSIE for factor loadings in the system, which refers to the previous discussions it, is UIS. The dependent variable Management Accounting that refers to the previous discussions it is CEMA. SEM allows for the simultaneous estimation of multiple relationships between latent constructs and their observed indicators.

Thresholds are based on common SEM guidelines (Hu & Bentler, 1999; Kline, 2015), and the model fit summary is calculated and presented in table 5. Although the model shows statistically significant paths, the fit indices suggest room for improvement in the model specification. Nevertheless, a significant chi-square test supports the existence of meaningful relationships between UIS and CEMA.

Table 5: Model Fit summary

Fit Index	Value	Threshold*	Interpretation
Chi-square (CMIN)	159.684	*Lower is better*	Significant (p = .000) – model has some misfit
Degrees of freedom (df)	20	–	–
CMIN/df	7.984	< 3 acceptable	Higher than ideal, possible model misspecification
NFI	0.871	≥ 0.90 desirable	Acceptable but below ideal
CFI	0.885	≥ 0.90 desirable	Borderline acceptable
RMSEA	0.126	≤ 0.08 acceptable	Above acceptable range – improvement needed

Through SEM analysis, the regression weights and standardized regression weights were calculated and are presented in table 6.

Table 6: Regression Weights

Path	Estimate	S.E.	C.R.	p-value	Interpretation
CEMA (F2) ← UIS (F1)	1.417	0.109	13.052	***	Strong, significant positive effect
CSIE1 ← UIS	1.082	0.091	11.896	***	Significant positive loading
CSIE2 ← UIS	0.685	0.092	7.447	***	Moderate positive loading
CSIE3 ← UIS	0.999	0.091	10.950	***	Strong positive loading
CSIE4 ← UIS	1.000	–	–	–	Perfectly scaled indicator
MA1 ← CEMA	1.000	–	–	–	Reference loading
MA2 ← CEMA	0.873	0.060	14.468	***	Strong positive loading
MA3 ← CEMA	0.852	0.057	15.014	***	Strong positive loading
MA4 ← CEMA	0.498	0.051	9.748	***	Moderate positive loading

As per the results given in table 6 above, the direct path from UIS to CEMA is both statistically significant and positive, indicating that a greater use of intelligent systems is associated with higher cost efficiency in management accounting processes. All the measurement items loaded significantly onto their latent constructs, supporting construct validity.

Table 7: Squared Multiple Correlations (R^2)

Variable	R^2	Interpretation
MA1	0.586	UIS explains 58.6% of variance via CEMA

MA2	0.509	UIS explains 50.9% of variance via CEMA
MA3	0.547	UIS explains 54.7% of variance via CEMA
MA4	0.240	UIS explains 24.0% of variance via CEMA
CSIE1	0.460	UIS explains 46.0% of variance
CSIE2	0.158	UIS explains 15.8% of variance
CSIE3	0.375	UIS explains 37.5% of variance
CSIE4	0.419	UIS explains 41.9% of variance

As per the results provided in table 7 for squared multiple correlations (R2), the explained variance (R^2) values indicate that the model has substantial explanatory power for several management accounting efficiency measures, with MA1 and MA3 showing the highest explained variances.

4.1. Discussion

The SEM results are consistent with earlier linear regression and ANOVA analyses, both of which indicate a statistically significant and positive effect of the use of intelligent systems (UIS) on cost efficiency in management accounting processes (CEMA). The regression model showed that the UIS accounted for approximately 33.4% of the variance in CEMA ($R^2 = 0.334$), with ANOVA confirming the overall model significance ($p < 0.001$). SEM extended these findings by simultaneously validating the measurement model and confirming the structural relationship between UIS and CEMA with a strong standardized path coefficient ($\beta = 1.417$, $p < 0.001$). While the SEM fit indices suggest room for improvement, the convergence of results across both methods strengthens the evidence supporting the rejection of the null hypothesis and acceptance of the alternative that intelligent systems enhance cost efficiency in management accounting processes.

The present research clearly proves that AI approaches to management accounting have improved efficiency, precision, and decision-making capabilities by automating tasks. In addition, it supports the removal of inaccuracies and access to immediate data through advanced analysis. In addition to minimizing expenses, these methods have also helped management accountants make a successful shift towards strategic consulting, aligning all financial planning and performance measurement activities.

In the context of the UAE, the successful adoption of intelligent systems enables companies to gain a competitive advantage as well as innovate and strengthen the country's position as a global leader in financial and professional services. While the benefits are substantial, ranging from improved reporting quality to better resource allocation, successful implementation requires addressing challenges, such as ethical considerations, data privacy, and upskilling.

The findings underscore that embracing AI is not merely a technological choice but also a strategic imperative for advancing the management accounting profession and enhancing organizational decision-making in a rapidly evolving business environment. The findings of this study align closely with recent global research underscoring the strategic role of intelligent systems in enhancing cost efficiency and decision making in management accounting.

Recent research has shown that AI enhances the overall purpose of management accounting while paying high attention to cost efficiency. In the future, more tasks will be automated using Artificial Intelligence, Machine Learning, and analytics. Sustainability accounting will also come to the fore in light of the increased focus on environmental and societal imperatives (PwC, 2023). The development of management accounting mirrors the overall trends in production efficiency, which is associated with the industrial era of decision-making. Future research could expand on these findings by examining the long-term impact of intelligent systems on management accounting performance across different sectors and geographical contexts in multinational corporations, improving forecasting accuracy by over 25% while reducing operating costs by approximately 18% across financial planning cycles (UAE Ministry of Economy, 2024).

This finding parallels our SEM results, which demonstrate a statistically significant positive relationship between UIS and CEMA. In the UAE, the adoption of intelligent systems is driven by regulatory and market pressures. A 2024 report by the UAE Ministry of Economy highlights that AI integration into financial services is now considered a competitive necessity, with adoption rates among accounting firms surpassing 65% (UAE Government, 2024). These adoption patterns mirror those observed in advanced economies, but are distinguished by the UAE's emphasis on aligning technology implementation with its Vision 2031 economic diversification goals (Mathews and Perera, 2024, Ernst & Young, 2024). This offers management accountants a dual advantage: enhancing cost efficiency while meeting expanding non-financial

reporting requirements (OECD, 2024).

In this regard, the integration of intelligent systems is not merely a technological upgrade, but also a strategic enabler of corporate resilience and compliance readiness. However, successful adoption hinges on addressing barriers, such as digital skills gaps, ethical AI governance, and data privacy compliance (Association of Chartered Certified Accountants, 2023, Al-Sartawi et al., 2023 and Ismail et al., 2010)

5. CONCLUSION

The effects of intelligent systems on management accounting as a profession in the financial and professional services sectors in the UAE are revolutionary, providing opportunities for improvement in overall efficiency, decision-making, and strategic outcomes. With significant efforts by the UAE in innovation, excellence in regulations, and resource development, the country has advanced its global leadership, diversified economies, and met goals for sustainable development. The prime aim and objective of this research work is to identify and highlight how intelligent systems help improve efficiencies in cost management in management accounting, including issues related to automation, data integrity, and decision-making. In the years to come, AI, ML, and analytics will continue to automate operations and help in obtaining better, deeper, and insightful information.

As the world moves at an accelerated pace through globalization and technological change, management accounting adopts newer tools such as ERP and intelligent systems to meet global trends and address challenging issues. This study testimonies that AI affects management accounting by reducing costs and enhancing quicker and more reliable decision-making, which is useful for management. Through empirical evidence, this study advances the literature on intelligent systems in business and offers valuable guidance for academic studies and practical applications. This study also provides direction to academicians and researchers, hinting at the future of the accounting profession to guide new generations accordingly.

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