

Applications of Modern Technology in Developing Management Accounting Systems and How They Affect the Organizational Performance

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Abstract: - Organizations are progressively using modern technology in the present corporate climate, such as artificial intelligence (AI) and blockchains, to redesign their management accounting systems and aid in justifying decisions. This study evaluates the significant effects of modern technical advancements on accounting and financial performance by examining their application in the creation of management accounting systems. This study explores how management accounting techniques are changing due to a variety of technological tools and platforms, including cloud computing, AI, big data analytics, and advanced software. This study examines how real-time data analysis, predictive modeling, and task automation enabled by modern technologies are transforming traditional management accounting procedures. This affects how well businesses can make decisions, how cost-effective they are, and how well they plan strategically. The difficulties and possibilities of incorporating contemporary technology into management accounting frameworks are covered in this essay, along with their effects on performance and data security, skills gaps, and managing organizational change. Based on an analysis of the study data, the findings presented in this article demonstrate that automating routine tasks with technology such as robotic process automation (RPA) and AI improves organizational performance, lowers the risk of errors, and frees up accountants' time to work on strategic projects. Predictive analytics and enhanced organizational performance go hand in hand, and management accountants can forecast future patterns and outcomes with more accuracy by utilizing machine-learning algorithms. Can foresee possible hazards and openings, enabling preventive management techniques.

Key-Words: - Technology, Artificial Intelligence, Managerial Accounting, Systems, Organizational Performance, Automation, Routine Tasks, Predictive Analytics.

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1 Introduction

Today's fast-paced business world has made contemporary technology essential to all facets of a company, including accounting, [1]. Consequently, the convergence of modern technology and management accounting systems has emerged as a key success factor for organizations, [2]. Utilizing recent technological advancements in management accounting procedures has become crucial for businesses that are adaptable and competitive in a constantly changing marketplace, [3]. With the aim of enhancing organizational and financial performance, these technologies—from automation to sophisticated analytics—are changing the way

businesses handle their finances, make investments, and make decisions, [4], [5]. The potential for revolutionizing management accounting is vast, ranging from blockchain and artificial intelligence to cloud computing and big data analytics, [6], [7]. This allows it to produce reports that support management in making informed decisions, [8]. Through efficient utilization of these technologies, businesses can increase productivity, reduce errors, and obtain priceless insights into their daily operations, financial performance, and organizational structure, [9]. The opportunities provided by modern technologies in the field of management accounting are accompanied by a need to improve skills, which are achieved through training and developing human capabilities to use these technologies, [10], [11]. Understanding how

contemporary technology can influence management accounting systems is vital for enterprises that hope to prosper in the current digital era, [12]. Businesses may improve their financial management techniques and foster sustainable growth and competitiveness in the market by embracing innovation and keeping up with the times, [13], [14]. We will learn tactics and best practices from this investigation to help businesses use technology to its fullest potential for success and efficiency, [15].

This study aims to examine the various ways in which contemporary technology is being applied to the development of management accounting systems and how this has a significant impact on organizational performance. We explore various technological tools and approaches to learn how they are transforming conventional management accounting procedures, strengthening decision-making skills, and optimizing resource allocation. Additionally, field research has been designed to elucidate the advantages and outcomes attained by organizations through the implementation of these technologies.

This study adds to the expanding corpus of research on modern management accounting techniques. In addition to urging businesses and organizations to automate repetitive processes such as data input, reconciliation, and the creation of recurring reports, contemporary technology also makes this possible, [16]. This frees up accountants' time to concentrate on more strategic tasks, such as analysis and decision-making, by reducing the time spent on manual processes, [17]. As a result, businesses can increase the accuracy and efficiency of their management accounting reports, [18]. By examining the degree of adoption and effects of cloud accounting systems on small and medium-sized businesses (SMEs), this study also advances the field of modern technology applications in the creation of management accounting systems and their effects on organizational performance, [19]. The effects of cloud computing on data accessibility, cost savings, and real-time decision-making are examined, [20]. This sheds light on the flexibility and scalability of accounting procedures. It aids businesses in comprehending the costs and benefits of switching to cloud-based solutions, [21]. The second is big data analytics in management accounting, which focuses on how big data analytics are integrated into accounting for strategic planning and predictive analysis, [22]. Additionally, research has been

conducted on how data analysis tools improve the precision of financial planning and forecasting. This demonstrates the benefits of data-based decision-making. It promotes the use of cutting-edge analytics to enhance both strategy alignment and financial performance, [23]. Using AI and Machine Learning (ML) in Accounting This study investigates how typical accounting operations such as transaction classification and anomaly detection can be automated with the help of AI and ML, [6], [24]. Additionally, we examined how artificial intelligence affects the speed, accuracy, and efficiency of financial report preparation. This illustrates the possibility of considerable labor costs and error reduction. This encourages accountants to take on increasingly strategic positions that emphasize analysis and decision support, [6]. The author advances this argument by examining how blockchain technology might improve accounting records' traceability, security, and transparency. Additionally, we assess case studies of businesses that use blockchain technology for financial and accounting activities. This offers a foundation for comprehending the ways in which blockchain technology may guarantee data integrity and prevent fraud. Promoting accountability and confidence in financial systems, [25]. Internet of Things (IoT) and Management Accounting Utilization The article makes a contribution to this topic by analyzing how the Internet of Things is used to gather real-time financial data from several operational sources. Additionally, we examine how integrating the IoT might enhance operational effectiveness and cost control. This illustrates how IoT may enhance resource allocation and offer precise financial insights. It draws attention to these advancements and promotes IT investment for thorough financial monitoring, [26], [27].

2 Literature Review and Development of Hypotheses

A comprehensive evaluation of the relevant literature and research published in prestigious publications was conducted specifically for this investigation, [28]. An analysis of earlier publications was conducted when needed in order to comprehend the development of management accounting ideas, [29]. A literature evaluation confirmed that management accounting research has adhered to various trends

pertaining to various subjects within this field of study, [30]. The information features of management accounting systems are among the most commonly researched topics. In this case, several holes were found in the methodologies employed, [31]. The advancement of management accounting systems through modern technology has resulted in notable enhancements in the operations of organizations, [18]. Blockchain Technology, Big Data Analytics, Cloud Computing, Robotic Process Automation (RPA), Machine Learning (ML), Internet of Things (IoT), (AI), and Advanced Software Solutions are some of the main uses of contemporary technology that support the development of management accounting systems and their effects, [6].

2.1 Modern Technology Applications and Organizational Performance

Most governments target modern technology applications as part of their high-tech strategies. These applications are based on information and communication technology, and provide a high degree of production flexibility, monitoring, real-time measurement, high efficiency, and reduced material waste. The fundamental tenet of this vision is to leverage the digital revolution to boost productivity in commerce, [32]. By enhancing the decision-making process, contemporary technological applications impact many facets of an organization's performance, [33]. First, real-time data access through cloud computing and big data analytics provides firms with rapid access to current information, enabling them to make quicker and better-informed decisions. This results in better responses to shifting consumer demand and market shifts, [34]. Second, boost productivity and efficiency by employing artificial intelligence to automate repetitive and time-consuming processes, such as robotic process automation (RPA), [35]. This will lessen the strain on staff members and free them up to concentrate on higher-value jobs. Consequently, productivity and operational efficiency increase. Third, we cut expenses by using the Internet of Things and big data analytics to allocate resources optimally. By providing insights into resource utilization, IoT and data analytics enable enterprises to optimize resource allocation and minimize waste. As a result, expenses are reduced, and operational effectiveness increases, [36]. Fourth, compliance and accuracy can be increased by utilizing artificial intelligence and blockchain technology to improve

data correctness. Artificial intelligence reduces human error in data processing, whereas blockchain provides data integrity and security. Decision-making and financial reporting have become more accurate, [6].

Compared to earlier studies, there is a positive link between technology adoption and organizational effectiveness, [11], [32], [37]. By reviewing previous studies and discussing that took place about the variables in this article, the author proposes the following hypotheses:

H1: There is a positive correlation between modern technology applications and organizational performance.

2.2 Management Accounting Systems and Organizational Performance

Globally, management accounting has grown in significance as a decision-making tool in enterprises, [38]. An organization's value is derived from its capacity to make money, function well internally, and address social problems in the community it serves [39]. The success of an organization is greatly impacted by management accounting systems because they offer pertinent non-financial and financial data to assist control, organization, strategic planning, and decision-making, [39]. The use of contemporary technology-based management accounting systems to make data-driven decisions improves decision-making. Managers may make well-informed decisions on product pricing, resource allocation, and investment opportunities with the support of management accounting systems MAS's comprehensive and precise financial data, [6], [40]. Managers can assess many elements of operations and make better decisions in line with strategic objectives by using MAS to monitor key performance indicators (KPIs), [41]. Using contemporary technology-based MAS also improves control and accountability through budget control, where the MAS system assists in budget formulation and guarantees that the actual performance is in line with the projected amounts, [42]. This makes it easier to identify deviations early and implement remedial measures. Cost control ensures that organizational resources are used effectively by keeping track of and managing expenditures. Performance evaluation strengthens performance culture by using the MAS system to generate performance reports that hold managers and departments responsible for their output.

Many previous studies support management accounting in improving organizational performance, [39], [43], [44]. Previous research has found that companies, particularly the accounting department, have numerous advantages and benefits when using digital applications to handle their financial work tasks. These benefits are all helpful in enhancing the accounting performance of the company and are based on the analysis and discussion of data, as in [45]. Based on a review of earlier research and conversations regarding the variables in this study, the author proposed the following theory:

H2: There is a positive correlation between management accounting systems and organizational performance.

3 Methodology

The research questions of this study were empirically conjectured using a quantitative approach with a descriptive and interpretive cross-sectional research design. Saudi non-financial enterprises were identified as the target group for information collection on this topic among companies in various industries in the service and commerce sectors. When the sample was chosen, there were 216 firms. This study used a sample of staff members and senior management representatives. Furthermore, suitable sampling approaches were used to select the employee samples. Both secondary and primary data sources were used in this study, keeping in mind their goals. The company's management representatives and personnel were the main sources of data. A sample size calculator was used to establish the sample size, which, according to the companies' annual reports, was 326 employees. Comprehensive fieldwork was conducted from January to August 2024 to collect data. A questionnaire was created to gather information from the responders. One of these surveys was conducted specifically with companies' employees.

3.1 Population and Sampling Techniques

Accountants and IT administrators from non-financial companies are among the target audiences, with an emphasis on those who have integrated contemporary technological solutions into their management accounting systems. Using databases such as Tadawul, a list of non-financial sector organizations was compiled to create the sample frame. Method of sampling To guarantee diversity

across industries and company sizes, stratified random sampling was employed. To gather quantitative data on the adoption of modern technologies, their roles in creating management accounting reports, and their effects on organizational performance, surveys or questionnaires were sent to accounting and finance departments, as well as IT personnel within the sampled organizations.

3.2 Measure

Costing systems, decision support systems, control and reporting, budgeting and planning, and modern technology applications are the first independent variables of a management accounting system (MAS). As Figure 1 (Appendix) shows that the dependent variable was organizational performance evaluation. The second independent variable was contemporary technological application. There were 15 opinion statements in the questionnaire. After a review of the pertinent literature, the statements were constructed using the three key variables. There are five opinion statements for the management accounting system variable, five statements for the current technology variable, and five opinion statements for the performance variable. Five points were scored on a Likert scale, with 1 denoting strongly disagree, 4 denoting agree, 3 denoting neutral, and 5 strongly disagree, [11].

3.3 Reliability and Validity

Alpha coefficients between 0.50 and 0.60 are deemed appropriate for exploratory research, according to [46] The questionnaire was created and pre-tested using an opinion-leader survey. The overall management accounting system's Cronbach's alpha coefficient was 0.892 (very reliable), the overall current technical applications were 0.851 (very reliable), and the overall organizational performance was 0.837 (very reliable).

4 Data Analysis and Findings

Using SPSS V-22 software, the gathered primary data were sterilized, tabulated, and analyzed. Descriptive and inferential statistics were obtained from the study's data to examine the variables, [47]. The major components of the article were examined using exploratory factor analysis in conjunction with an extraction approach for the same goal. KMO and

Bartlett's test of identification were also used to extract reliable findings to determine sample adequacy.

Descriptive statistics for the variables in the management accounting system are shown in Table 1. According to the results, the first management accounting system statement had the highest mean (4.131; standard deviation = 0.748), while the fourth statement had the lowest mean (3.885; standard deviation = 0.638). The mean of nearly all statements is higher than that of the test result (3), and it falls within the predetermined range. This indicates that each variable statement was significant. The p-value for each statement in the variable measurement test was 0.000 (<0.01), suggesting that all statements had a highly significant divergence from the mean score.

Table 1. Survey respondents' viewpoint on the management accounting system in Saudi companies

	N	Mean	Std. Deviation	t value	p-value	Remarks
MAS1	326	4.131	0.748	27.442	0.000	Sig.
MAS2	326	3.955	0.649	24.841	0.000	Sig.
MAS3	326	3.961	0.616	26.172	0.000	Sig.
MAS4	326	3.885	0.638	22.447	0.000	Sig.
MAS5	326	3.917	0.671	22.608	0.000	Sig.

Table 2 displays the descriptive statistics of the variables used in contemporary technical applications. The mean score for the second statement on modern technical applications was 4.048 (standard deviation = 0.733), while the mean score for the third statement was 3.807 (standard deviation = 0.625). Nearly all assertions have a mean that is higher than the test result (3) and falls within the predetermined range. This finding suggests that every variable statement is important. In the variable measurement test, every statement's p-value was 0.000 (<0.01), indicating that every statement had a significant divergence from the mean score.

Table 2. Survey respondents' viewpoint on the applications of modern technology in Saudi companies

	N	Mean	Std. Deviation	t value	p-value	Remarks
AMT1	326	3.875	0.636	24.344	0.000	Sig.
AMT2	326	4.048	0.733	26.893	0.000	Sig.
AMT3	326	3.807	0.625	21.998	0.000	Sig.
AMT4	326	3.882	0.604	25.649	0.000	Sig.
AMT5	326	3.839	0.658	22.156	0.000	Sig.

The last statement, OP5, had the greatest overall mean of the respondents regarding organizational effectiveness, according to the average shown in

Table 3 (score of 3.969; standard deviation = 0.986). With a score of 3.753 and a standard deviation of 0.889, the statement with the lowest score was OP1. The p-value for each opinion statement was 0.000 (<0.01), meaning that all statements were significant variables to test for a significant deviation from the mean score. Profitability, productivity, sound decision-making, a solid financial position, service quality, the grabbing hold of new business prospects, customer contentment, gaining a competitive edge, and other factors all contribute to an organization's overall performance. With the majority of respondents agreeing on the level of organizational performance, the outcome demonstrated that the overall situation was satisfactory.

Table 3.: Survey respondents' viewpoint on the organizational performance in Saudi companies

	N	Mean	Std. Deviation	t value	p-value	Remarks
OP1	326	3.753	0.889	20.124	0.000	Sig.
OP2	326	3.781	0.918	20.267	0.000	Sig.
OP3	326	3.814	0.898	22.236	0.000	Sig.
OP4	326	3.820	0.869	23.410	0.000	Sig.
OP5	326	3.969	0.986	24.530	0.000	Sig.

5 Structural Model (Inner Model) and Hypotheses Testing

The outcome in Table 4 (Appendix) demonstrates that the performance of organizations is significantly impacted by contemporary technology implementations of management accounting systems. Additionally, it demonstrates a strong correlation between organizational success and modifications to the technical applications of management accounting systems. Modern technical management accounting system applications are a significant predictor of organizational success according to the results of a multiple regression study conducted between these applications and performance. According to the R-value of 0.714 ($F = 34.021$, $p < 0.01$), there is a moderate to considerable positive correlation between organizational performance and modern technical applications of management accounting systems. Similarly, the R-squared value of 0.456 suggests that the combined independent variables account for 45.6% of the performance change. Similarly, the standard error of the estimate of 0.551 shows that there is a 0.551 unit variance in the observed value of organizational performance, as determined by the regression line. Given that the VIF of neither of the independent variables is less than

10, this model does not have a multicollinearity issue. As a result, it was found that there is a strong relationship between the performance of the organization and the contemporary technological applications of management accounting systems. With the exception of return on assets, every variable of the contemporary technology applications of the management accounting system has a substantial impact on the performance of the dependent variable. The effects of contemporary technological applications of management accounting systems on performance evaluation, return on assets, costing and decision-making systems, budgeting and planning, customer and market retention, and performance evaluation have been found to be 25.44%, 33.06%, 1.34%, and 1.24% of the total impact on organizational performance.

Table 5 (Appendix) shows that the variables' t-values—modern technical applications of management accounting systems and their effect on organizational performance—are statistically significant at the 1% level. This suggests that these factors have an effect on the explanation of performance variance inside the organization. Organizational performance, the dependent variable, has poor values, nonetheless. Therefore, there is enough data to conclude that the performance of the company is improved by the contemporary technological implementations of management accounting systems.

As suggested in [48], VIF values below the threshold of 10 further demonstrate the robustness of the model, as indicated by the analysis. This demonstrates the robustness of the model and the potential for deciphering research findings to understand how independent factors affect the dependent variable. The results of the regression analysis indicate that management accounting systems ($\beta = 0.316$) and contemporary technology applications ($\beta = 0.284$) are significant determinants of organizational success. The results of this study are more reliable because a standard error of 0.551 indicates a relatively low variance in the regression model's predictions to study the impact of modern technology applications of management accounting systems on the dependent variable of Saudi companies' organizational performance.

6 Discussion

Over the last 20 years, the non-financial sector in Saudi Arabia has emerged as the most significant and rapidly expanding sector in the Kingdom. Technological revolution and non-financial liberalization make non-financial institutions face more intense competition. A well-designed management accounting system combined with modern technical applications can guide organizations to improve organizational performance more effectively and efficiently.

This study's analysis demonstrates the soundness of the methodology, which is based on a thorough approach to data collecting and precise statistical analysis conducted specifically for this study. It is evident from the analysis that the performance of the sample companies is significantly affected by the exploited variables, which are represented by the employment of contemporary technology. The findings emphasize the role of contemporary technology applications and management accounting systems as independent variables that improve the dependent variable of organizational performance. Companies in the Kingdom of Saudi Arabia's non-financial sector in particular will find these insights invaluable as they navigate the rapidly changing technological landscape of the rapidly evolving digital age.

7 Conclusion

The main goal of this study is to examine the relationship between the results of organizational performance experiments and contemporary technical applications of management accounting systems. In Saudi businesses, the current state of sophisticated technical management accounting system applications has been sparingly applied. With a mean score of 3.863 (SD = 0.701), employees' assessment of the dimensions of contemporary technical applications of the management accounting system may be simply comprehended. Similarly, the costing system had the lowest mean score (3.636, SD = 0.604) among the characteristics that included budgeting and planning, return on assets, performance evaluation, and a decision support system. For Saudi businesses, the average score for planning and budgeting was 3.868 (SD = 0.701).

The main purpose of this study is to determine how organizational performance and contemporary

technical implementations of the management accounting system relate to one another. Considering the theoretical framework found in the literature and its application to the Saudi business environment, this study's overall conclusions are drawn. This study empirically investigated the research objectives with a focus on the compatibility between contemporary technical implementations of the management accounting system (MAS) and organizational performance. This was accomplished by examining the cross-sectional and descriptive links between the metrics and how they affect organizational performance.

The study's findings and conclusions have significant ramifications for both theory and practice. The findings of this study indicate that technological platforms are now required in accounting in general, and management accounting in particular. According to these findings, the adopted paradigm is broadly relevant in the Saudi context. A positive correlation exists between organizational success and the contemporary technical implementation of the management accounting system. MAS is a crucial measure of how well a company performs.

8 Implication of Study

Given that one outcome of technical advancement is globalization, Saudi businesses must always keep these principles in mind while creating their strategies. With these ideas, Saudi businesses can now apply contemporary management accounting system techniques to develop and implement organizational strategies that are more competitive and result in high organizational performance when measured against other contexts.

Similarly, the Saudi non-financial industry and other economic sectors place high value on corporate governance and corporate social responsibility concerns. An organization's governance is always essential to its survival, and Saudi businesses can benefit from the advanced technological applications of management accounting systems, which promote internal controls and sound governance. A robust management accounting system that improves organizational performance must have modern technical applications to satisfy the need for sufficient disclosure and transparency for efficient decision-making.

9 Limitation of Study and Future Suggestion

Future research in this field is warranted given the current body of knowledge regarding the relationship between organizational performance and contemporary technical applications of management accounting systems. The data were self-reported and cross-sectional, as is typical in survey research. Future study has to take into account a number of significant challenges. The sample size might be gathered from the financial and non-financial sectors throughout the nation (Saudi Arabia) to enhance future studies. New technologies in management accounting present benefits and obstacles, including the need for enhanced skills, implementation complexities, and concerns about data security. As a result, new research from all fields may provide a fresh perspective on the topic under investigation. As this study only examines the non-financial sector in Saudi Arabia, more research can be conducted using samples from other non-financial sectors. Furthermore, quantitative data can be collected and analyzed using a structural equation modeling approach to examine mediating or moderating factors.

Since strategy adoption changes over time and has a significant impact on the organizational performance of companies listed in the Saudi market, it would be interesting to broaden the scope of the study and provide quantitative data that finds a longitudinal expansion of the change in modern management accounting techniques.

Declaration of Generative AI and AI-assisted Technologies in the Writing Process

During the preparation of this work, the author used Paperpal and Quilbal for proofreading and grammar correction. After utilizing these tools/services, the author reviewed and edited the content as needed and assume full responsibility for the content of the publication.

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Conflict of Interest

No conflicts of interest the authors have to declare.

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APPENDIX

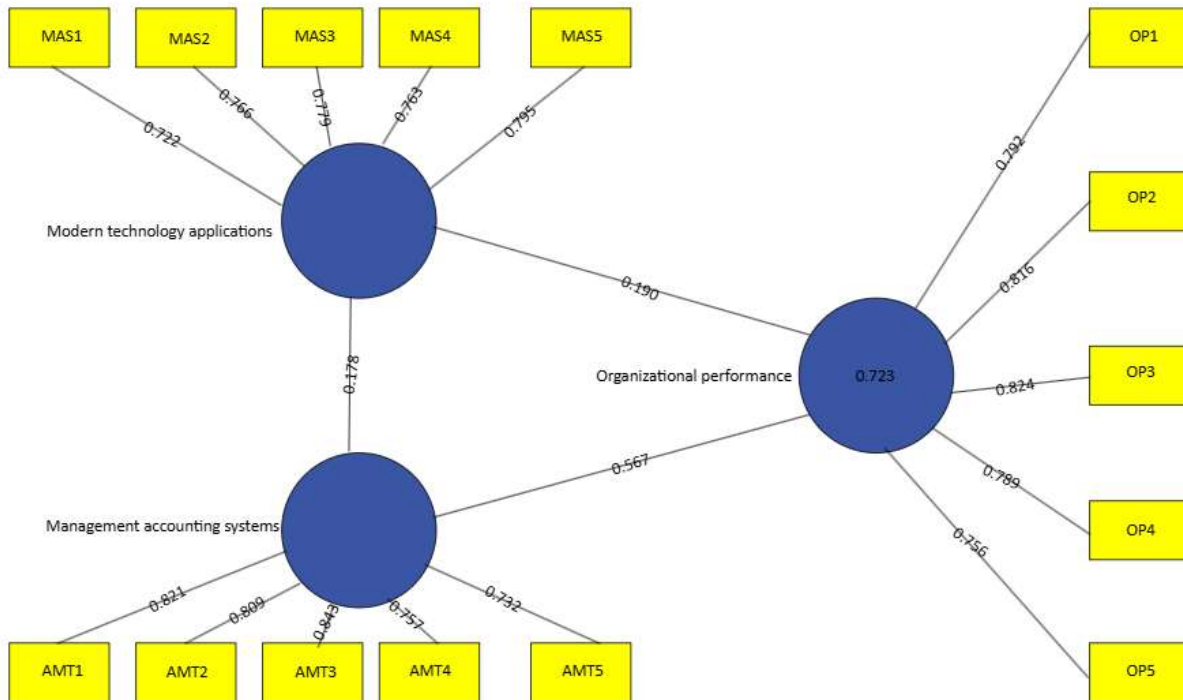


Fig. 1: Measurement model (modeling of structural equations)

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Deviation of the Estimate	Durbin- Watson	F	p-value
1	0.714	0.456	0.443	0.551	2.033	34.021	0.000

Table 5. Multiple Regression Analysis: Coefficients

	β	STDEV	T	Sig.	Tolerance	VIF
Modern technology applications	0.284	0.049	5.657			
Management accounting systems	0.316	0.070	5.166	0.000	1.788	0.189
Organizational performance	0.138	0.054	0.269			