International Journal of Research in Finance and Management

P-ISSN: 2617-5754
E-ISSN: 2617-5762
IJRFM 2024; 7(1): 317-326
www.allfinancejournal.com
Received: 02-03-2024
Accepted: 08-04-2024

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The impact of digital transformation on management accounting practices: A survey study of a sample of Iraqi academics in accounting specializations

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DOI: https://doi.org/10.33545/26175754.2024.v7.i1d.312

Abstract
The research aims to identify the impact of digital transformation on management accounting practices and understand the role of accountants and the challenges they face in the context of digital transformation. The researcher adopted the descriptive analytical method to elucidate the theoretical aspect through previous studies, theses, and scientific frameworks, and analyze the research results and test hypotheses using the statistical program SPSS. A questionnaire was used as a research tool and distributed after evaluation and arbitration by specialists to a research sample consisting of accountants, academics in accounting specializations, production accountants, and data programmers in Iraq. The number of received questionnaires was 60 valid for analysis.
The research found several results, the most important of which is that embracing digital transformation had a significant positive impact on improving the adoption procedures of management accounting practices. In light of the research results, the researcher recommends the necessity of highlighting the importance of digital transformation on management accounting practices and developing the roles and skills of accountants.

Keywords: Digital transformation, big data, management accounting practices

Introduction
Digital transformation is one of the most important strategies that institutions seek to achieve and evolve within their field. This research aims to identify the impact of digital transformation on management accounting practices. It investigates the improvement in accountants' performance capabilities in the digital transformation era and their adaptation to digital technologies through a survey study targeting a sample of Iraqi academics specializing in accounting.
Digitalization is seen as a basically technological ground that influences issue of human life including management accounting. The accounting management is a field of accounting, which deals with generating the organization's and company's financial and managerial information necessary for managerial decision-making within firms and organizations. As information technology has recently progressed at a fast pace, management accounting has also been experiencing a lot of changes in the way the tasks are executed and function of accounting.
Digital transformation is not only an alteration of the operating system of an organization but also the application of operational technology that is digital technology. It has become an integral part of the accounting world as it includes control in the drive operations apart from that. Procedures of management accountants in enterprises occupy a leading place due to their ability to provide information about sustainability and performance assessment. Management accounting, per se, is of vital importance to provide the necessary rationale to manage corporate operations and make decisions about internal departments' goals and objectives by monitoring all financial and management activities within the organization.
The desirable consequences of the paper head meant for shedding the lights on the significance of digital transformation on accounting practices in Iraq and increasing awareness about the matter. Moreover, from the perspective of research, the project can offer great value to academics, professionals, and administrators who will enhance their

understanding of how to manage the process of digital transformation in order to ultimately utilize the best strategies to obtain greater effectiveness in the field of management accounting.

It must be recognized that digital technology keeps on falling apart, branching, and moving alongside very fast. Hence, there is a great need for managers to comprehend how this technology will influence management accounting disclosures in the next years so as to steer the continued growth and improvement of this field. An online questionnaire for Iraqi accounting educators in this area would help us to understand their opinions and private situations regarding the use of digital technologies and its role in their management accounting approaches.

Chapter One: Research Methodology

Firstly: Research Problem

This topic relates to the impact of modern technology and digital transformation on the implementation of management accounting practices in establishments. This is in the context of rapid progress in the digital transformation environment, represented by Internet of Things technology, cloud computing, robotics, big data, online-based manufacturing methods, and artificial intelligence. In order for businesses to maintain their presence in the market, they need to adapt quickly to the surrounding environmental changes. Hence, the current research problem lies in understanding the impact of digital transformation on management accounting practices, as posed by the following question:

"Is there an impact of digital transformation on management accounting practices?"

Secondly: Significance of the Research

The significance of the research lies in its contribution of new knowledge to researchers regarding the importance of digital transformation and its role in enhancing the quality of management accounting practices for business organizations. The research benefits companies that implement digital transformation by evaluating their experiences and understanding the factors that impact the transformation's effect on management accounting practices and the role of management accountants. Additionally, the development of management accounting to confront the challenges of the digital manufacturing environment is considered one of the most important topics of interest to corporate management. They seek to ensure continuity, growth, and achieve competitive advantages.

Thirdly: Research Objective

The primary objective of the research is to understand the nature of digital transformation and its impact on management accounting practices. To achieve this main goal, it is necessary to fulfill the following sub-objectives: identifying the shortcomings in current management accounting practices and their mismatch with the digital transformation environment, determining the necessity of developing management accounting to ensure continuous improvement in the performance of economic units operating in the digital transformation environment, and identifying the challenges faced by management accountants.

Fourthly: Research Hypothesis.

Firstly: There is a statistically significant relationship between digital transformation and management accounting practices.

Secondly: There is a statistically significant impact of digital transformation on management accounting practices.

Fifthly: Research Methodology

The researcher adopted two methods of scientific research

1. **Descriptive Method:** The researcher relied on accounting literature related to the research topic, especially concerning the theoretical aspect. This was achieved through university theses, research papers, scientific conferences, books, and articles from Arabic and foreign electronic websites.
2. **Applied Method:** The researcher utilized a questionnaire survey due to its ability to save time and effort and cover the sample size within a specific time frame. The hypotheses were analyzed and tested using the SPSS program.

Chapter Two: Theoretical Framework of the Research

Firstly: Concept of Digital Transformation

Adnan (2019: 24) refers to digital transformation as a set of rules and technologies used to represent and process information using numbers. This entails how technology is utilized within organizations to improve operational efficiency and enhance services provided to individuals. Digital transformation primarily aids company management in various areas such as computing, communications, and information technology.

Andersson (2018: 149) defines digital transformation as the transition of an organization from dealing with human resources to focusing on information resources that rely on the internet and business networks. Intellectual information capital has become the most effective factor in achieving its goals and utilizing its resources.

Guizzi (2019: 161) [16] emphasizes that digital transformation and its adoption lead to changes in product design and processes. Effective adoption of digital technologies can help reduce costs and improve the flexibility and sustainability of manufacturing systems. Pena and Lopez (2020: 570) argue that digital transformation leads to increased profits, business quality, and time and effort savings. Digital transformation primarily aids company management in three areas: customer relationships, employee performance evaluation, and talent management.

Secondly: Justifications for Digital Transformation

A study by Demartini and Evans (2019: 265) identified several primary justifications for the need for digital transformation

1. **Digital Representation:** Digital transformation deals with data using a set of numerical values, such as binary numbers (1, 0). Different information is represented by arranging these numerical values and organizing them into sequences of bits, where each bit can be interpreted as either zero or one.
2. **Digital Gates:** Digital gates are the basic components

of digital transformation, comprising electronic circuits used to perform basic digital logical operations, such as arithmetic operations like addition and subtraction. Digital gates consist of a set of electronic switches that convert incoming electrical signals into new output signals according to the specified operation.

3. **Logical Circuits:** Logical circuits consist of connecting digital gates together to execute larger, more complex functions. Logical circuits are designed to perform digital logic and complex arithmetic calculations, such as central processing units and flexible logic units.
4. **Integrated Digital Transformation:** Many modern devices and applications rely on integrated digital transformation, which includes several elements such as central processing units, random-access memory, and conductors. These elements integrate on a small scale into single chips, allowing superior performance and device miniaturization.
5. **Applications of Digital Transformation:** Digital transformation is used in various fields and applications. In computing, it enables program execution and data processing, while in communications, it is used to transmit data over communication networks and encrypt data for security. Digital transformation is also used in other areas such as industrial control, modern medicine, digital imaging, data analysis, artificial intelligence, and virtual reality.

Additionally, there is intense competition due to new digital technologies, significantly increasing competition, especially in retail sales. The emergence of digital-native companies has disrupted the competitive landscape, with the sales of relatively new digital companies overtaking those of traditional companies. Competition is no longer just global but has intensified, with information-rich, large companies in the United States (such as Amazon, Apple, Facebook) and China (JD, Alibaba) beginning to dominate many industries (Verhoef, 2019: 25) [22].

Thirdly: Foundations and Essential Requirements for Digital Transformation.

According to Al.Htaybat (2019: 11) [10], there are several foundational elements and essential requirements that must be met for organizations to transition from traditional to digital businesses. These include

1. **Infrastructure:** The decision to transition from traditional to digital work requires preparing the technical readiness based on technology and internet reliance in service delivery. This infrastructure should be characterized by efficiency in its specifications and the competency and skills of individuals.
2. **Plans and Strategies:** Plans and strategies are essential tools in executing and sustaining digital transformation, as emphasized by a study by Youssef (2018: 12). The digitization process relies on the availability of a clear strategy developed by a group of specialists in the field, containing priorities and objectives that must be achieved, with follow-up by senior management to ensure high-quality work and correct procedures.
3. **Human Resources:** Human resources are the important and fundamental element in implementing digitization mechanisms in the performance of institutions and organizations. Therefore, it is necessary for this important category to refine their skills, along with the availability of technical knowledge and expertise to ensure the ease of technology use and harnessing it to achieve goals and facilitate digital transformation.
4. **Security and Legislation:** The role of security and legislation is crucial in achieving and ensuring the success of digital transformation by regulating the relationship between service provision and receipt by the relevant authorities. Therefore, the presence of laws and regulations specific to digital transformation mechanisms and electronic transactions in the digital environment is necessary, given the difference between the nature of traditional and electronic services.

Fourthly: Information Technologies for Digital Transformation

1. Concept of Cloud Computing

Cloud computing is defined as a technology that relies on transferring processing and storage capabilities from a computer to what is known as the "cloud." This cloud consists of server devices that allow users to access them via the internet, thereby transforming software from products into services. Cloud computing is considered the optimal solution that helps organizations in storing, managing, and organizing data and files (Al-Naqoudi, 2019: 18). A study by Tarmidi (2020: 24) [20] indicates that cloud computing is a way to build computer capabilities without licensing new software and applications, investing in computer equipment, infrastructure, or training individuals to use these programs. Instead, the service and license are purchased and used over the internet.

The researcher defines cloud computing as a set of distributed computing services, applications, and access to information and data storage without the user needing to know the actual location or configure the systems that provide these services.

2. Cloud Computing Goals

A study by Shayan (2019:18) [19] pointed out four models for designing cloud computing, including

1. Cloud computing aims to provide computer resources quickly and easily upon request. Resources can be scaled up or down as needed, providing great flexibility to users. This makes the computer a mere gateway to access the server containing storage space that enables users to manage their data.
2. Most software (operational and application) is often made available for free, saving users costs, time, and maintenance. Users can independently use computer resources in cloud computing without direct intervention from system management. Application programming interfaces (APIs) and user interfaces are provided to enable users to easily access and manage resources.
3. Cloud computing can reduce operational costs for institutions and individuals by using shared resources and paying only for the resources used. This avoids large investments in hardware and software.
4. Cloud computing enables secure and reliable data storage and information preservation. Necessary security measures are implemented to protect data from loss or breach. Retrieving information is also easy

anytime, anywhere with internet access. When needed, backups can be made for information stored on personal computers.

Thirdly: The Concept of Big Data

Big data is defined as a massive amount of data with sufficient speed to access it in a timely manner. The system of big data is characterized by diversity in sources and forms, as it consists of unstructured data (Ameera, 2020:159). Ensuring data accuracy prevents interference between them and ensures reliable information (Gartner Inc, 2018:20) [15]. A study by Bauwens (2019:8) [12] presented three types of big data, including.

- **Structured Data:** Organized data in the form of tables or databases, characterized by easy searchability and analysis, representing a part of big data.
- **Unstructured Data:** Anything that cannot be easily classified or organized, such as images, graphs, and video clips, representing the largest part of big data.
- **Semi-Structured Data:** A type of structured data that is not designed in tables or databases, such as word processing programs.

A study by Thirathon (2021:155) [21] defined big data as datasets exceeding the processing capacity of traditional database tools, characterized by high levels of production and rapid circulation in a short time. Additionally, a study by Al-Salmi (2018:157) elucidated the characteristics of big data, including speed, volume, diversity, and accuracy.

The researcher defines big data as vast collections of information characterized by their size, speed, and diversity, which require innovative and efficient forms of processing. It differs from processing regular data in that it enables users to enhance insight, make decisions, and automate operations.

Fifthly: Digital Manufacturing Technologies

A study by Zidan (2023: 12) indicates that digital manufacturing relies on the use of an integrated computer system in manufacturing. One of the goals of digital manufacturing is to improve efficiency and respond to changing individual requirements in a more flexible manner. Erlane's study (2019: 21) [14] points out that the use of digital transformation in manufacturing involves a comprehensive series of processes, starting from the supply of raw materials to delivering products to individuals. Consequently, the application of digital techniques in manufacturing leads to achieving manufacturing superiority, maintaining competitiveness, ensuring company sustainability, cost reduction, improving efficiency, providing integrated work performance packages, and achieving customer satisfaction.

The researcher points out that digital transformation in manufacturing encompasses two different types of digital manufacturing transformation.

1. Utilizing the Internet of Things (IoT) in smart manufacturing and production scheduling. Through this technology, there is automated control over production processes, improvement in asset management, and prediction of necessary maintenance operations.
2. Computer-based manufacturing transformation includes.

- Computer-aided product design transformation.
- Integrated and electronically driven manufacturing transformation.
- Flexible manufacturing transformation.

Organizations that have adopted digital transformation in manufacturing have achieved several benefits, including (Adel, 2020: 22) [7]

- Increased individual demands due to product diversity to meet their preferences by producing products with various characteristics and specifications.
- Shortened cycle times and reduced response times to individual requirements.
- Manufacturing of new and innovative products with high quality and low cost.
- Production of multiple products in a single day through flexibility in the production process.

Additionally, the researcher believes it is necessary to study the impact of digital transformation on managerial accounting practices to determine the extent to which traditional managerial accounting is compatible with working in a digital manufacturing environment. This is in preparation for its development to align with the advancements in this environment. Economic units in the digital manufacturing environment rely on achieving success by focusing on individuals and ensuring their satisfaction. This requires the production of innovative products with high quality, reasonable costs, diverse specifications, and different sizes, relying on a digital manufacturing transformation environment that organizes manufacturing operations with short operational cycles. In light of this, the developments in the digital manufacturing environment have necessitated a similar evolution in managerial accounting practices to enhance their ability to keep up with the requirements of the era. This is achieved through the characteristics of this environment, which include more accurate information production and provision, faster timing, and more comprehensive details.

Sixthly: The Concept of Managerial Accounting:

Of all management accounting, decision processes within the organization are emphasized. Objectively, it is designed to offer the data and analytics usage for management and department heads in the setting of strategic and operational decision-making. Financial management practices use different methods for determining and analyzing the profit and loss making part of the organization as well as managerial operations. Below are some common practices in managerial accounting: Below are some common practices in managerial accounting.

1. **Product and service cost analysis:** This involves carrying out the detailed analysis of raw materials, labor, and overhead costs and putting this cost into the products to run a successful operation on the basis of competitiveness.
2. **Financial performance monitoring:** Doing this, we would assess and examine financial data such as incomes, expenses, profits, and losses which show the real performance of our institution and identify the factors affecting financial performance.
3. **Profitability and cost analysis:** Profit and cost analysis, which implies calculating the expected profit gained from available goods and services and indicating the related costs, is an essential step towards business

managing, contributing to prudent decision making on pricing and profitability.

4. **Resource planning and performance management:** Work planning of resource management requires the company to consider the resource needs of the organisation, and distribute it effectively. Also, a regular monitoring is made of the performance of individual and department, and if necessary, financial and managerial reports are issued.
5. **Investment analysis and decision-making:** This analysis pursues the assessment of investment objects and the cost and rewards of investment to provide a basis for knowledgeable investment decisions.
6. **Provision of managerial reports:** The reports that is prepared by the Managers include the financial performance reports and analysis that provide the essential information to the management team that helps making the necessary improvement through the strategic decisions**.**

Seventhly: Response of Managerial Accounting to Digital Transformation

The main managerial accounting techniques form the basis for digital transformations in businesses. Below are some factors representing the response of managerial accounting to digital transformation: Below are some factors representing the response of managerial accounting to digital transformation.

1. **Technology and infrastructure:** Digital system is vital, all processes should be updated and relevant infrastructure should be provided. The spectrum can be electronic accounting systems, enterprise resource planning software, cloud solutions, automation technology for the power industry workers will choose the best possible that suits their business.
2. **Vision and leadership:** The upper leadership must see clearly and have hands-on experience to transform and apply digital technologies. It is necessary for management to keep spending on information technology as well as dedicate its resources towards the grow of digital accounting capacities.
3. **Training and capabilities:** Employment of supervisory-level staff that has honed digital skills through training is equally important. They need to be trained so that they are able to manage emergent technologies, they can strategize in data collection and use digital aids accordingly.
4. **Data analysis and artificial intelligence:** Data analysis and artificial intelligence functioning well may be used in Impairing management activity. They, actually, are versatile tools that can assess financial data, they provide more advanced reports, they identify errors and make better data-driven decisions.
5. **Information security and internal control:** It is crucial to ensure that information security is maintained at all times and not just in the context of digital transformation. In addition, internal control mechanisms need to be enhanced to fit digital transformation needs. It is recommended for security policies and procedures that are strong and that lead protecting the financial data and sensitive information from unauthorized access.
6. **Integration and collaboration:** The collaboration between the management accounting function and the other organizational systems and areas in a company is essential. Consistency in connection of teams and secure of media exchange is crucial for successful digital transformation implementation.
7. **Methodology and cultural change:** Digital transformation process must manage through an effective methodology, among which are setting the goals and tracking the progress along the way. Apart from that, it is critical that an environment of change and innovation is facilitated within the organization to accelerate the digital transformation process and advance a cooperative culture towards the insistence upon achieving this.

These factors need to be comprehensively and under a process of good coordination so that they can be well tackled to achieve success in digital transformation and consequently the efficiency and effectiveness of managerial accounting will improve within the organization.

The researcher emphasizes the necessity of developing the skills of managerial accountants to deal with digital transformation technologies

- Responding flexibly to digital transformation technologies will create endless opportunities for managerial accountants, revolving around how to enhance their roles either in practice or in business.
- Developing the skills of managerial accountants in using digitalization technologies and being aware of the latest developments in this field, whether in terms of usage capabilities, software, or communication methods, including cloud computing and Internet of Things.
- Managerial accountants must be aware of the importance of digital transformation for information by increasing their ability to interpret and analyze data with the aim of improving the quality of accounting information and adding value to business organizations.
- The widening performance of digital technology in managerial accounting and how to use it strategically for improved performance and to make a public or managerial decision can be dealt with. It is expected that the evaluation outcomes will translate into practices and enhance business processes to operate in the digital economy. Management accounting procedures have significantly changed due to the digital revolution. The tremendous technological developments and the widespread implementation of accounting information systems and analytics have resulted in an improved accounting system that is more efficient and useable for financial and strategic planning by the management.

Challenges of Digital Transformation within Managerial Accounting Practices

The digital transformation management however, brings into account some major downsides that are worth mentioning as well. Among these challenges.

1. **Information Security:** Cyber threats can easily pressure the data, and so, a financially secure cutting-edge system is needed to be provided. Adoption of privileges and other security levels, along with policies

and procedures to prevent breaches and undue disclosure of data.

2. **Training and Development:** Tactics of digital transformation are about the realization of the next generation digital and technological skills by managerial accountants. Regular training and development should be afforded so that old tools and technologies can still be used properly and rather than being halted by lack of knowledge, they work well and give fruits.
3. **Integration with Current Processes:** Digital transformation has to be observed in the context of current processes in the company and should be seen as an integral part of strategic decisions. Consistency should be the main principle of working with accounting managerial systems and other systems which are in use (customer relationship management and supply chain management).
4. **Current Accountants' Roles:** Today's accountants mainly work in groups or by themselves following regular, traditional patterns on monthly basis as well as performing dull and monotonous routine tasks that consume a significant amount of time. Undoubtedly, the electronic transformation will modify managerial accountants' positions to that of advisor and analyst.
5. **Data Management Challenges:** Many such problems crop up as privacy, security, governance, and moral aspects depend directly on how data is collectively managed.
6. **Lack of Specialized Expertise:** However, managerial accountants may miss a piece of the puzzle due to they lack not only the technical expertise, but also the ability to assess big data.
7. **Operating Systems Challenges:** Operating systems are about actual methods of "doing" like data acquisition, integration, transformation, and model selection and hybridization, with the aim of the accurate evaluation of the outcomes.

It's worth noting, digital transformation is an opportunity for managerial accounting to increase the usefulness of their current tools and technologies by improving efficiency, accuracy, and the ability to make fast and informed decisions. Although transformations need to be incorporated, still, the issues arising from the procedure must be focused on the accomplishment of the desired benefits rather than the sole transformation.

The importance of digital transformation on managerial accounting practices includes

1. **Enhanced accuracy and speed:** Computer systems, as they eliminate the human factor of error, therewith increase the accuracy of data recording. Besides helping with financial reporting and analytical processes, it also hastens the data access and the analysis, thus giving room for managerial accountants to question information as well as make well informed decisions.
2. **Cost savings:** An important output of Digital Transformation is, it can eliminate the costs of managerial accounting by using less paper and material supplies. For instance, money documents and accounts payable can be put into the electronic database which will allow storage and data maintenance at a lower cost.
3. **Enhanced analysis and decision-making:** Digital transformation which can carry detailed reports and excellent reporting tools. Managerial accountants may apply methods such as data analytics and artificial intelligence to the existing statistical and financial data, which hence will lead to disclosure of qualitative information, and accordingly the managers will make decisions delegated with great managerial acumen and achieve the targets of the business.
4. **Improved collaboration and communication:** Integration of digital technology gives rise to closer cooperation of managerial accounting team with other departments thus raising overall organizational performance. Machine-based information architecture and collectivity of various software are effective media to induce ideal communication environment between different units.
5. **Adaptation to legal and regulatory changes:** Digital transformation could be a great step for adaption to legal and regulatory change because the digital systems can quickly respond and adapt to the changing laws and regulations. If legal changes are made, then management accountants can use accounting information systems to update the operations that are already in place and can make sure that they can comply with new legal requirements.

Research Methodology

The research relies on using the descriptive-analytical approach as it is one of the prevailing approaches employed in the field of social and human sciences. The primary objective is to obtain coherent outcomes that substantiate the study assumptions. Utilized were secondary sources, encompassing literature assessments of published research and scientific theses pertaining to the subject matter under investigation. Additionally, primary data was collected to address the analytical aspects of the research topic through a questionnaire as the main research tool. The statistical software SPSS was used to analyze the questionnaire and test the research hypotheses.

1. Population and Sample

The research community consists of accountants, data programmers, and academics in managerial accounting in Iraq. Questionnaires were distributed, and (60) valid questionnaires were received for analysis.

2. Description of the Research Tool and Measurement of Variables

The questionnaire included a set of statements to measure the research variables. The questionnaire was formulated to measure these variables, represented by the independent variable, digital transformation, with (7) statements in the questionnaire based on a study by (Fraj, 2021). As for the dependent variable, managerial accounting practices, (6) statements were identified, and these statements were formulated based on a study by (Rashwan, 2022) [2]. Table (1) shows the sequence of questionnaire statements for each research variable. Responses to the questionnaire statements were based on a five-point Likert scale.

Table 1: Research Variables and Statement Numbers in the Questionnaire

Research Variables		The Number	The Sequence
Independent	(DT)	7	7-1
Dependent	(MAP)	6	13-8
Total		13	13-1

***Source*:** Prepared by the researcher

The fourth section: Characteristics and Features of the Research Sample

Regarding the distribution of the sample individuals according to the characteristics and features of the research sample, Table (2) illustrates the distribution of the sample members based on personal characteristics.

Table 2: Shows the distribution of the research sample individuals according to demographic variables

The characteristics	The statement	"Frequency"	"The Percentage (%)".
"Education Level"	"Bachelor's degree"	25	41%
	"Master's degree"	19	32%
	"Ph.D." (Doctor of Philosophy)	16	27%
	Total	60	100%
Job Title	"Accountant"	16	27%
	"Production Accountant"	9	14%
	"Data Programmer"	11	19%
	"Academic"	24	40%
	Total	60	100%
Years of Experience	Less than 5 years	18	30%
	From 5 to 10 years	17	28%
	More than 10 years	25	42%
	Total	60	100%

***Source*:** Compiled by the researcher based on the outputs of the SPSS program

From Table (2), the following can be observed

1. **Educational Qualification:** The number of respondents holding a bachelor's degree was 25 individuals, representing 41.7% of the total sample size (60). Those with a master's degree amounted to 19 individuals, accounting for 31.7%, while those with a doctorate degree were 16 individuals, making up 26.7%.
2. **Job Title:** The number of respondents who were accountants was 16, constituting 27% of the sample. There were 9 respondents in production accounting, representing 15%. Data programmers accounted for 11 respondents, comprising 19%, while academics in managerial accounting were 24 individuals, representing 40% of the total sample size.
3. **Years of Experience:** The number of respondents with less than 5 years of experience was 18, making up 30% of the sample. Those with 5-10 years of experience amounted to 17 individuals, representing 28%. Respondents with more than 10 years of experience were 25 individuals, accounting for 42% of the total sample size.

Thirdly: Testing the Validity and Reliability of the Research Tool

The validity of the questionnaire refers to its inclusiveness of all the elements necessary for analysis, the clarity of its items and vocabulary, ensuring that it is acceptable and understandable. In other words, it confirms that it measures what it is intended to measure. The researcher ensured the reliability of the questionnaire by calculating Cronbach's Alpha coefficient, as shown in Table (3).

Table 3: Cronbach's Alpha Coefficients for Research Variables

"Variables"	"Items"	"Cronbach's Alpha Coefficient"	"Validity Coefficient"
(DT)	07	0.73	0.01
(MAP)	06	0.80	0.01
Total	13	0.84	0.01

"The source: Prepared by the researcher based on the outputs of the SPSS program."

Through Table (3), it is evident that all values of Cronbach's alpha reliability coefficients for both dimensions and the total score are (0.73, 0.80, 0.84), indicating a high level of reliability at a significance level of (0.01). This indicates that the tool possesses a high degree of reliability, which is the accepted level in the statistical treatment of this study.

Fourthly: Descriptive Analysis

Table (4) presents the mean, standard deviation, relative importance, and variance coefficient for the phrases and research variables, reflecting the degree of variation around the research variables.

Table 4: Descriptive Analysis of Phrases and Research Variables

S. No.	The phrases	Arithmetic mean	Standard deviation	Relative importance	Coefficient of Variation
1.	"The digital transformation process requires a comprehensive strategy that includes updating systems and processes, as well as training employees on new technology."	4.53	0.56	90.6%	0.12
2.	"Digital transformation requires a change in organizational culture and a spirit of initiative among institutions to enable them to seize upcoming opportunities."	4.40	0.61	88%	0.13
3.	"Converting data into valuable information is a critical component of digital transformation to enable smart and strategic decision-making."	4.48	0.62	89.6%	0.13
4.	"Digital transformation is not just about adopting technology; it is a cultural and methodological shift that requires continuous adaptation and change."	4.50	00.59	90%	0.13
5.	"Digital transformation represents a fundamental change in how institutions and individuals interact with technology and data."	4.27	0.77	85.4%	0.18
6.	"Digital transformation is the process of adopting digital technology to enhance operations and develop traditional business models."	4.35	0.68	87%	0.19
7.	"Digital technology is a key factor in the economic, social, and cultural transformation that we are currently witnessing."	4.22	0.58	84.4%	0.13
	"Overall average"	4.4	0.63	76%	0.15
S. No.	**phrases**	**Arithmetic Mean**	**Standard Deviation**	**Relative Importance**	**Coefficient of Variation**
1.	Management accountants need to analyze and estimate costs accurately to assist management in making decisions related to setting product prices and estimating expected revenues.	4.35	0.88	87%	0.20
2.	Profitability analysis is used to evaluate the performance of products and key business lines, and to identify products or services that contribute significantly to profit generation.	4.32	0.56	86.4%	0.12
3.	Financial reports play a key role in managerial accounting, where management accountants prepare detailed financial reports to aid in evaluating company performance and making strategic decisions.	4.32	0.77	86.4%	0.17
4.	Performance evaluation in managerial accounting is used to measure the performance of activities, financial departments, and employees. It helps identify areas that need improvement and achieve operational efficiency.	4.35	0.65	87%	0.12
5.	The practice of managerial accounting aims to utilize technology and accounting software to facilitate the process of collecting and analyzing financial data and preparing financial reports efficiently and accurately.	4.42	0.69	88.4%	0.15
6.	Managerial accounting practices utilize financial planning to set financial goals and achieve them through the development of robust financial plans. This requires analyzing past financial data and forecasting future financial information.	4.47	0.59	89.4%	1.25
7.	Overall Average	4.4	0.69	87%	0.34

"The source: Prepared by the researcher based on the outputs of the SPSS program."

The above table presents the descriptive statistics of the research sample's opinions on the impact of digital transformation on managerial accounting practices. From the results of Table (4), it is evident that the arithmetic means of the independent variable of digital transformation range from (4.22-4.53). Thus, we observe that the highest means endorsed by the research sample were for item (1), which relates to "The digital transformation process requires a comprehensive strategy that includes updating systems and processes and training employees on new technology." This item obtained a mean of (4.53), with a standard deviation of (0.56) and a relative importance of (10.6). On the other hand, the lowest mean was for item (7), which relates to "Digital technology is a key factor in the economic, social, and cultural transformation that we are currently witnessing." This item obtained a mean of (4.22), with a standard deviation of (0.58) and a relative importance of (84.4). Thus, the overall arithmetic mean for all items was approximately (4.4), with a relative importance percentage of (76%). The standard deviation for all items was approximately (0.63), indicating relatively consistent and similar responses from the respondents. This also suggests a lack of variance and dispersion among the research sample's responses, indicating an impact of digital transformation on managerial accounting practices.

As for the dependent variable, managerial accounting practices, the arithmetic means of the independent variable, digital transformation, range from (4.32-4.47) according to the results of Table (4). Thus, we notice that the highest means endorsed by the research sample were for item (6), which relates to "Managerial accounting practices utilize financial planning to set financial goals and achieve them through the development of robust financial plans. This requires analyzing past financial data and forecasting future financial information." This item obtained a mean of (4.47), with a standard deviation of (0.59) and a relative importance of (89.4). On the other hand, the lowest mean was for item (2), which relates to "Profitability analysis is used to evaluate the performance of products and key business lines, and to identify products or services that contribute significantly to profit generation." This item obtained a mean of (4.32), with a standard deviation of (0.56) and a

relative importance of (86.4). Thus, the overall arithmetic mean for all items was approximately (4.4), with a relative importance percentage of (86%). The standard deviation for all items was approximately (0.67), indicating relatively consistent and similar responses from the respondents. This also suggests a lack of variance and dispersion among the research sample's responses, indicating a relatively high level of agreement and endorsement among the research sample regarding the impact of digital transformation on managerial accounting practices.

Fifthly: Hypothesis Testing: One main hypothesis was formulated to test the relationship between the variables as follows.

Primary Hypothesis

A notable correlation exists between the process of digital transformation and the use of managerial accounting procedures. The Pearson correlation coefficient between the research variables was computed to examine this hypothesis, as presented in Table (5). The data was processed using the Pearson correlation coefficient, and the results are illustrated in the following table.

Table 5: Demonstrates the relationship between digital transformation and managerial accounting practices

Variable	Pearson correlation coefficient	(MAP)
DT	Pearson correlation coefficient sig	0.56
		0.00

"The source: The table was prepared by the researcher based on the outputs of the SPSS program."

Analysis: From Table (5), the significance value for the level of significance equals (0.00), indicating significance at the (0.05) level. Additionally, the Pearson correlation coefficient value equals (0.56), significant at the (0.01) level. This indicates a positive direct correlation between the digital transformation variable and the managerial accounting practices variable. Therefore, it can be concluded that there is a statistically significant correlation between digital transformation and managerial accounting practices.

Secondary Hypothesis: There is a statistically significant effect of digital transformation on managerial accounting practices

To test this hypothesis, a simple linear regression equation was prepared to estimate the level of managerial accounting practices due to digital transformation significance, to determine the extent of the latter's impact on managerial accounting practices. Table (6) illustrates this impact.

Table 6: Illustrates the results of simple linear regression analysis

Dependent Variable	Independent Variable	Correlation Coefficient (R)	Coefficient of Determination (R2)	F-value	F-statistic	Standardized Coefficient (B)	T-value	T-statistic	Variance Inflation Factor (VIF)
Managerial Accounting Practices	Digital Transformation	0.56	0.31	26.08	0.00		0.56	0.31	26.08

"The source: Table prepared by the researcher based on the outputs of SPSS software."

Through Table No. (6), the F-value was found to be (26.08) with a probability value of (0.00), which is smaller than the significance level (0.05). Therefore, we reject the null hypothesis and accept the alternative hypothesis, which states that the regression is significant, indicating a relationship between the dependent variable (Managerial Accounting Practices) and the independent variable (Digital Transformation).

Additionally, as indicated in the table above, the correlation coefficient value is (0.56) significant at the (0.01) level of significance. The coefficient of determination value is (0.31), meaning that the independent variable (Digital Transformation) explains 31% of the variance in the dependent variable (Managerial Accounting Practices).

This is evident from the regression equation

Organization Performance = 1.29 + (0.70) Managerial Accounting Practices.

The value of (B) representing the relationship between Managerial Accounting Practices and Digital Transformation is (0.56), statistically significant, as indicated by the t-value and its associated significance. Thus, it can be inferred that for every one-unit change in Digital Transformation, Managerial Accounting Practices change by (0.56) units.

Conclusions and Recommandations

Conclusion

Through the previous theoretical framework of the research and upon completing the field study and testing the research hypotheses, there are several expected results for the current research.

1. Enhancing the performance of managerial accounting in the field of managerial decision-making as a result of using big data techniques as one of the digital transformation and digital information technologies.
2. Improving the quality of accounting information provided by managerial accounting due to the use of big data.
3. Current managerial accounting does not meet the needs of the digital manufacturing transformation environment.
4. There are essential impacts for developing managerial accounting due to the use of digital transformation in the manufacturing environment.
5. There are a set of challenges facing managerial accountants arising from the significant and rapid growth in digital transformation.

6. The application and use of digital transformation necessitate the development of tasks assigned to the managerial accountant to suit digital systems.

Recommendations

The research findings lead to a set of recommendations as follows

1. It is essential to clarify and explain the importance of digital transformation for the managerial accountant through conferences, lectures, and seminars.
2. Industrial companies should train their employees on using managerial accounting software and applications in the context of digital transformation technology.
3. There is a need for an integrated information system for managerial accounting in the digital transformation environment.
4. Managerial accountants must be competent and knowledgeable about the importance of using digital transformation.
5. It is necessary to develop students and establish guidelines for accounting curricula in the context of digital transformation and include such technology in the syllabi.

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