

Using Metaverse Technology to Support Continuous Accounting: the Mediating Role of Quality of Financial Reporting

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ABSTRACT

This research aims to demonstrate the role of metaverse technology in supporting continuous accounting through the quality of financial reporting for economic entities. The study reached several conclusions, the most important of which is that the application of metaverse technology leads to improved financial reporting quality through information transparency using blockchains and reducing the time and effort required to provide information related to recording all details of business activities occurring in physical reality, which contributes to adding value to the economic entity. The technology contributes to fundamental changes in accounting, maintaining its continuity.

INTRODUCTION

Metaverse technology has emerged rapidly with technological advancements in the digital age. Issues such as virtual environments, digital twins, and cybersecurity have become realities in the fields of financial reporting, accounting, and auditing. Through metaverse technology, it has become necessary to reimagine the way data is accessed and managed, thus assisting in better decision-making. Sunder believes that accounting is a product of human imagination, adding that if imagination is the source of discipline in accounting and all human progress, it may be necessary to examine the current and future state of imagination in the accounting profession. It raises a thought-provoking question: "Why don't we imagine alternative scenarios instead of simply waiting for changes to occur or having them imposed upon us?" The virtual world is a catalyst for change for industries and economies that need to rethink their physical presence in the market. It helps maintain the accounting profession's sustainability (Hussainey & Alsartawi, 206: 2024). This requires maintaining the sustainability of the accounting profession in light of industrial revolutions and the risks they pose, seizing opportunities to confront technological challenges and keep pace with dynamic changes by employing metaverse technology in the field of accounting as a mechanism to support continuous accounting in obtaining reliable outputs that can be relied upon for decision-making. This enables it to add value and create a competitive position in the digital economy market. Research Methodology and Previous Studies

LITERATURE REVIEW

Previous Studies

The research examined some Arab and foreign studies similar to the current research topic or related to one of the research variables.

1. Arab Studies

A. Study (Spring, 2023) entitled "The Accounting Information System in the Metaverse World"

The study aims to examine the accounting information system when companies enter the metaverse and conduct their activities within this world, and to address the most important technologies of the Fourth Industrial Revolution upon which the components of the accounting information system in the metaverse can be based. The study concluded that companies must enter the metaverse world to attract a broader segment of customers than they would rely on conducting their activities solely in the physical realm. It also highlighted the importance of the technologies that the metaverse relies on in protecting inputs, conducting operations efficiently, and producing outputs in a visual and interactive manner.

B. A study (Youssef and Attia, 2022) entitled "A Proposed Approach to Using Metaverse Technology as an Information Technology Innovation to Improve the Quality of Financial Reports in the Egyptian Environment"

The study aims to present a proposed approach to using Metaverse technology as an information technology technology and to extract the impact of

this use on the quality of the information content of financial reports. The study also noted the changes that will occur in the work environment as a result of the use of this technology in general and in the field of accounting specifically, and outlined the most important determinants of its proper use on the one hand, and the advantages and risks of its application on the other. The study reached a set of results, the most important of which is that the use of Metaverse technology will bring about significant changes in the form and content of financial reports, as well as their preparation methods and timing, as a result of the numerous advantages and benefits resulting from the use of digital technologies. This emerging technology also supports the presentation of different forms of financial reports and enhances accessibility and interaction with them.

Foreign Studies

- A. A study (2022) by Al-Gnbri, titled "Accounting and Auditing in the Metaverse World from a Virtual Reality Perspective: A Future Research," aimed to shed light and raise questions about the future of accounting and auditing from the perspective of virtual reality technology, also known as the Metaverse. A normative approach is considered appropriate for future research. The study reached several conclusions, the most important of which is that the Metaverse represents a vertical, rather than a horizontal, development in accounting and auditing, as their objectives remain unchanged. Metaverse technologies will serve as supporting tools. Furthermore, the Metaverse creates new digital assets that require accounting measurements to provide accurate disclosure tools and methods.
- B. (Widiyati et al. 2023:39)
"Determinant Factor Of Continuous Accounting Implementation Based on Indonesia Banking's Employees" This study aims to examine and analyze the impact of digital capabilities, cybersecurity awareness, green human capital, gender, and experience on continuous accounting implementation. The study concluded that digital capabilities have no impact on continuous accounting implementation, that cybersecurity awareness has a positive impact on continuous accounting implementation, that green human capital has a positive impact on continuous accounting implementation, that gender has a positive impact on continuous accounting implementation, and that experience has no impact on continuous accounting implementation.

The Contribution of the Current Research

This research is significant as it is one of the few studies that have addressed the topic of continuous accounting. This research complements the findings of previous studies by demonstrating the role of metaverse technology in supporting continuous accounting and its impact on the quality of financial reporting.

Theoretical Framework of the Research

First: Metaverse Technology

1. Evolution of the Concept of Metaverse Technology

The term "metaverse" emerged in the 1990s. It was first used by Neal Stephenson, author of "Snow Crash," in 1992, to denote the interaction of humans with each other and with software in a virtual reality similar to reality (Osman, 2022: 1). The story takes place in a dystopian world, and in the novel, metaverse characters are used to escape reality. In 2003, Linden Lab created the virtual world Second Life, allowing users to design their avatars and develop their world online. Roblox was released shortly after, enabling players to create games that others can explore. Roblox has its own currency, allowing users to develop their creations and purchase artifacts on the platform. In 2015, the first decentralized platform, Decentraland, was launched in a virtual world based on the Ethereum blockchain. It consists of virtual fields that can be purchased using the MANA cryptocurrency. In 2018, Sandbox, a French decentralized platform based on the SAND cryptocurrency and based on a "play to earn" model, was launched. In November 2021, Facebook CEO Mark Zuckerberg announced that he had placed himself in a virtual world and communicated his company's decision to become a metaverse company and change its name to Meta. The metaverse is described as the successor to the mobile internet (Djerrari & Bendifallah, 2022: 11).

2. Definition of metaverse technology and its basic components.

The metaverse is defined as "an extended social network that includes a diverse mix of virtual reality (VR), mixed reality (MR), augmented reality (AR), artificial intelligence (AI), and 3D environments. These interact with each other simultaneously, continuously, and in an unlimited, virtual form, as close to reality as possible. This interaction is reflected in all transactions, whether economic, financial, training, educational, or otherwise. In short, it is the integration of physical reality with virtual environments into a network that includes continuous, multi-person interactions" (Muhammad & Muhammad, 2023: 14).

The most important components and technologies used to develop the metaverse are virtual, augmented, mixed, and extended reality (Girsawale, 2022: 319-320).

1. Virtual reality (VR): A technology that replaces one's view of the physical world with a scene produced digitally using software. Head-mounted devices are used by wearing full-coverage headsets that separate the user from the real world. The computer-generated virtual environment is reflected in LCD screens within the headset lenses. These devices are usually connected to a computer or smartphone, which displays virtual images that are exact replicas of the real world.
2. Augmented Reality (AR): A technology that blends the digital and real worlds using computer vision. It recognizes surfaces and objects in the world using technologies such as object recognition, facial recognition, motion tracking, and others. AR enhances interaction between digital goods and allows for observation of the real-world environment.
3. Mixed Reality (MR): A combination of augmented reality and virtual reality, combining aspects of the real world with digital ones.

4. Extended Reality (XR): A new term that encompasses all augmented reality (AR) and virtual reality (VR) technologies and is often used interchangeably with mixed reality (MR).
3. Advantages and Disadvantages of Applying Metaverse Technology
Advantages of Applying Metaverse Technology (Al-Sawy, 2022: 140):
 - a. It allows Enjoying a mutual interactive experience by attending scientific seminars and visiting art galleries makes interaction more rewarding than looking at a flat screen.
 - b. It enables unprecedented and highly interoperable digital assets and data across different platforms and experiences.
 - c. It is characterized by continuity and stability, as there is no need to restart them.
 - d. It possesses an independent and integrated economy that enables individuals and economic units to innovate in this field and invest in a virtual economic system.
 - e. It is characterized by being a synchronous, direct, and reality-like technology, providing a real-time user experience.
 - f. H- It saves time and effort, improves performance, and fosters creative thinking.
 - g. G- It carries an experience that encompasses the physical and digital world, experiences, public and private networks, as well as closed and open platforms.

Despite the positives of using metaverse technology, it is not without challenges and drawbacks when employing the technology, the most important of which (Al-Qadi, 2023: 523-524):

- Implications for the ethical system and what relates to the individual, his or her identity, heritage, identity, the state of alienation, and dissemination. Extremism, terrorism, and violence.
- How to maintain data privacy, information security, and intellectual property rights in an open-source world.
- The high cost of advanced coding experiences makes them unaffordable for many.
- Growing concerns about the spread of misinformation through virtual reality.
- Addiction can cause long-term psychological and physical effects, as well as social alienation from prolonged use.
- To ensure its success, technology requires unified standards, interconnected platforms, and collaboration among competing technology companies.

METHODOLOGY

1. The Research Problem

The research problem is that, in light of recent developments, traditional accounting outputs cannot meet the needs of stakeholders. This has necessitated changes in accounting to keep pace with environmental events

and changes, boost stakeholder confidence, and reduce the expectation gap. The research problem can be embodied through the following questions:

1. To what extent does metaverse technology contribute to supporting continuous accounting?
2. Is the quality of financial reporting achieved in economic units based on traditional accounting?
3. To what extent does metaverse technology contribute to improving the quality of financial reporting?

2. Research Objective

The research aims to demonstrate the role of using metaverse technology in supporting continuous accounting and its impact on improving the quality of financial reporting for economic units.

3. Research Importance

The importance of the research stems from the following:

- a. Identifying the importance of metaverse technology and the role it plays in sustaining accounting and keeping pace with environmental developments.
- b. Demonstrating its effective role in training practitioners on learning and innovation.
- c. Demonstrating the impact of metaverse technology on improving the quality of financial reporting, which helps make financial reports more accurate and clear to users, thus assisting them in their decision-making.

4. Research Hypothesis

The research aims to test the following main hypotheses:

- A- Main Hypothesis 1: Metaverse technologies affect the support of continuous accounting.
- B- Main Hypothesis 2: Metaverse technologies affect the support of continuous accounting through the quality of financial reporting.

5. Research Population and Sample

The research sample consisted of a group of academics, accountants, and auditors working at Al-Mustansiriya University in Baghdad.

6. Data and Information Collection Methods

Data and information related to the research were collected from the following two sources:

- Theoretical tools: The researcher relied on contributions from researchers and writers, which she collected from academic sources such as books, university theses and dissertations, journals, and scientific studies and research in both Arabic and foreign languages.
- Practical tools: The data and information collected through the organization of the research questionnaire, which is one of the sources of information collection, will be relied upon to obtain the opinions of the

research sample, represented by a group of academics, accountants, and auditors working at Al-Mustansiriya University in Baghdad, according to the requirements of professionalism and the interests of the research.

RESEARCH RESULT

The Role of Metaverse Technology in Supporting the Shift to Continuous Accounting

1. The Concept of Continuous Accounting and Reasons for the Shift to the New Generation of Accounting

Economic entities face new challenges in the current era, namely providing real-time financial reports to stakeholders. Real-time insights are critical for making informed strategic decisions. This has necessitated replacing end-of-reporting and reporting processes with continuous accounting (Widiyati et al. 2023:39). Therefore, continuous accounting is an innovative approach to managing accounting cycles within an economic entity, which in turn embraces developments in information technology and redefines the operations and role of the financial structure of the entity. The continuous accounting approach is a new alternative to the traditional accounting method, which involves waiting until the end of the reporting period to analyze financial information for decision-making. Therefore, continuous accounting is considered a system that includes both continuous recording and continuous reporting, enhancing the quality of the entity's accounting operations and procedures by increasing the accuracy of reports, enhancing data integrity, preventing accounting errors, and freeing up skilled employees to work on other valuable tasks. Continuous accounting is defined as " An evolutionary process that integrates automation, control, comparisons, and reconciliation of transactions and period-end tasks into normal daily activities, enabling the accounting calendar to more closely reflect the daily rhythm of a business (Izzo & et al., 2021: 5).

The following are the main reasons behind the shift to continuous accounting (<https://dokka.com>):

1. Continuous accounting enables real-time financial insights, as continuous accounting bridges the gap created by traditional accounting methods between financial activities and financial statements.
2. Increased accuracy by automating many repetitive tasks, reducing human error and increasing efficiency by streamlining processes. This reduces the time and effort required for month-end or year-end closings.
4. Improved compliance, as it enables businesses to maintain a more consistent and transparent record-keeping process, which is critical for compliance with various financial regulations and standards.
5. Continuous accounting provides a steady flow of financial data that is used for planning and forecasting to make strategic decisions.

6. Reduced workload and effort associated with traditional accounting cycles, leading to increased job satisfaction.

7. Enhanced financial reporting Timely and accurate accounting enhances stakeholder confidence, as continuous accounting ensures access to the latest financial information, which positively impacts the entity's reputation.

8. As economic units grow, their financial operations need to expand with them. Since continuous accounting is more automated and streamlined, it expands more effectively than traditional accounting methods.

2. The role of metaverse technology in supporting continuous accounting

The continuous nature of continuous accounting refers to the ability of economic units to process entire transactions, reconcile audited and verified financial information, and even report in near real-time. This allows accountants to spend less time performing their routine tasks, eliminating the enormous amount of time spent daily collecting and verifying data. It also enables controllers, chief financial officers, and auditors to assess the integrity of information in real time, enabling continuous monitoring of errors, fraud, and inefficiencies. Furthermore, it allows economic units to analyze financial performance more deeply and redirect time and effort toward more strategic activities (Smith, 2018: 241).

The researcher finds that the shift toward continuous accounting is not only a reflection of developments and forces The changing nature of the economy and industries, but also the changes occurring in accounting due to the growing need for data, bridging the gap between current reports and types of information, and the need to make strategic decisions in light of dynamic changes. Therefore, Metaverse technology can be employed in accounting to maintain its sustainability.

The Metaverse relies primarily on the following five technologies: artificial intelligence, extended reality, blockchain, cloud and big data, and advanced gaming engines. It is a fusion of several technologies that provide powerful computing power to solve a large number of problems (Huang, 2023: 930).

Third: The extent of the impact of Metaverse technology on the quality of financial reporting

1. The concept of financial reporting quality and its most important trends

Financial reporting in any country reflects its political and economic philosophy. The primary purpose of financial reporting is to provide high-quality information related to economic units that is useful in making economic decisions (Naeem and Joudah, 2021: 372).

The quality of financial reporting has been defined as "the accuracy with which financial statements provide information about an organization's daily business activities, particularly its cash flows." and the expected outcome that provides insight to shareholders" (Ali, 2023: 46). While the Financial Analysts Association

(FAF) defined it as “the clarity, transparency, and availability of accounting information in a timely manner,” the Financial Reporting Committee of the American Institute of Accountants defined it as “the extent to which information can be used in the field of forecasting, and the extent to which information is appropriate for the purpose for which it was obtained” (Abdul Razzaq et al., 2020: 208).

There are three trends that reflect the level of quality of financial reporting and the nature of the financial position of the economic entity (Al-Fahd, 2021: 66):

1. **Quality in drafting financial reports:** This refers to presenting information clearly and accurately through the selection of clear and understandable terms to describe the financial statements. These terms must reflect the accuracy of the information contained in the financial reports, which requires clarity.
2. **Quality in the content of financial reports:** This refers to the accuracy of the data contained in the financial reports, meaning that the figures are real and reflect the financial position of the economic entity. Three characteristics of information must be present to achieve quality financial reporting: comprehensiveness, completeness, and accuracy, resulting in a report free of material errors.
3. **Quality in presenting financial reports:** This refers to the ease of accessing financial reports in a timely manner and the presentation of information in a clear and consistent manner that does not require additional explanations or interpretations. This type of quality financial reporting must meet four information characteristics: transparency, neutrality, timeliness, and consistency.

2. The Impact of Applying Metaverse Technology on the Quality of Financial Reporting:

Metaverse technology is itself a virtual environment in which accounting can be practiced, with highly encrypted and reliable virtual inputs. Processing is accomplished by combining the capabilities of virtual reality, augmented reality, blockchain, and artificial intelligence to produce high-quality virtual financial reports compared to the real physical environment. Economic entities can use metaverse technology as a means of communication, allowing them to better and more accurately present their data, information, and financial reports produced in the real physical environment. This concept is based on what one researcher stated, stating that the potential of virtual reality can serve as a promising platform for accountants to improve the quality of financial reports (Al-Gnbri, 2022: 35).

The use of metaverse technology has a clear impact on the quality of financial reporting in each of the following ways: (Youssef and Attia, 2022: 13)

1. **Focusing on data content, analysis, and its true value, rather than on data entry,** adds value to the accounting system's outputs, represented by financial reports.

2. Providing information to users in real time, enabling Metaverse technology to enhance the connection between physical and augmented reality.
3. Increasing the connection between financial and non-financial data, providing real-time reporting, reducing effort, cost, and time wasted.
4. Enabling transaction automation, simplifying control and synchronizing accounting records, ensuring secure operation, and protecting information from loss and unauthorized interference.
5. Reducing errors in financial reporting. Through the use of technology, reports are prepared automatically, reducing the occurrence of errors.
6. Providing a mix of accounting applications that provide unique solutions to many of today's problems.
7. The ability to generate all accounting information and present it to management using online programs with the touch of a button or a few simple commands.
8. Breaking the barrier of the traditional relationship between the economic unit and the client by enabling clients, both accountants and non-accountants, to inquire about financial and accounting matters, which are available in a database in the Metaverse world using blockchain technology. Based on the above-mentioned impact of Metaverse technology on improving the quality of financial reporting, it can be concluded that the use of Metaverse technology in accounting will effectively contribute to the shift towards more sustainable accounting in light of the challenges facing the profession. This will, in turn, impact the quality of financial reporting, preserving the continuity and competitiveness of the profession, as well as enhancing stakeholder confidence.

Practical Aspect

Level of responses to the research variables.

These three variables (Metaverse Technology, Quality of Financial Reporting, and Continuous Accounting) were measured to extract the arithmetic mean and standard deviation, as follows:

Table (1) Level of responses of the research sample to the research variables

standard deviation	mean	variables
1.1	3.3	Metaverse Technology
1.2	3.4	Quality of Financial Reporting
1.3	3.5	Continuous Accounting

The results for the above variables indicated that the sample's responses to these variables were above average and tended toward agreement, with a standard deviation indicating a high level of agreement.

Testing the Hypotheses of Impact between Research Variables

First: The Impact of Metaverse Technology on Continuous Accounting

The following table shows that the calculated (F) value between the Metaverse Technology variable and the Continuous Accounting variable reached (43). This means that there is an impact of the Metaverse Technology variable on the Continuous Accounting variable. The company confirms the existence of the effects of Metaverse Technology in achieving Continuous Accounting. From here, we conclude that the second hypothesis is accepted, according to the statistical results in Table No.(2)

Table No. (2) Impact matrix

		Metaverse Technology
Continuous Accounting	F	34
	Sig	0.000 ^b
	α	0.72
	β	0.76
	R Square	0.73 ^a

Fourth: Analyzing the direction of influence between the research variables by using path analysis to demonstrate the influence between the research variables. In this section, we will analyze the direction of influence of the Metaverse Technology variable on Continuous Accounting through the Quality of Financial Reporting variable. Path analysis was used for this purpose, which presents important statistical methods that can be used to analyze the correlation coefficients between the variables and divide them into direct and indirect effects. The results of the analysis of the influence relationships using the path method were as follows:

Table (3): shows the rejection of the hypothesis of the influence of Metaverse Technology on Continuous Accounting through the Quality of Financial Reporting:

Table (3) The impact of Metaverse Technology on the total Continuous Accounting through the Quality of Financial Reporting

Overall impact	Indirect impact through the dimensions of Quality of Financial Reporting	direct impact	Responding variable	The influencing variable
0.8	7 0.0	0.21	Continuous Accounting	Metaverse Technology

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

1. The results of the statistical analysis showed a high level of metaverse dimensions in the research community, at a good level, as the sample members' responses to all dimensions tended toward agreement.
2. The high level of financial reporting quality in the research community was also high, as the sample's responses to this variable tended toward agreement regarding the presence of this variable and its dimensions in the research community. This indicates the quality of financial reporting.
3. The results of the statistical analysis for the continuous accounting variable indicated a high level of fulfillment of this variable, as demonstrated by the research sample's responses, which expressed agreement on this variable and its dimensions. This indicates the research community's interest in continuous accounting.
4. The results of the analysis indicated a highly significant correlation between metaverse and continuous accounting, mediated by the quality of financial reports. Therefore, the second main hypothesis can be accepted.
5. The results also indicated a highly significant correlation between the metaverse and continuous accounting. This supports the first main hypothesis, which states that there is a significant correlation between the metaverse and continuous accounting.

Recommendations

1. The research community should promote and adhere to the metaverse by more broadly integrating the dimensions of this variable into its decision-making process, allowing them to offer new ideas and suggestions, or conducting a survey within the research community to learn about their attitudes, ideas, and suggestions.
2. Activate the positive components of the metaverse by activating its dimensions to achieve and support high levels of continuous accounting.
3. Activate the components of financial reporting quality by activating its dimensions to enhance and support the level of satisfaction and continuous accounting within the research community.

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