

# Internal auditing in metaverse world: between the prospects of virtual reality and the possibilities of augmented reality

Mohamed Kais Adel Al-Gnbri

Libyan Academy for Graduate Studies, Janzour, Tripoli, Libya

## ARTICLE INFO

### Article history

Received 16 December 2021

Revised 22 February 2022

Accepted 25 February 2022

### JEL Classification:

M42

### Key words:

Auditing,  
Augmented Reality,  
Internal Audit,  
Metaverse,  
Virtual Reality

### DOI:

10.14414/tiar.v12i2.2848



This work is licensed under a Creative Commons Attribution 4.0 International License.

## ABSTRACT

The research aimed to anticipate the reality of internal auditing under the world of Metaverse, and focused on the two most important technologies in this world, namely: virtual reality and augmented reality. To achieve this goal, this study adopted the normative approach. The added value of the research is it is the first scientific research to link the internal audit with the world of the Metaverse. The most notable findings are: The implications of the Metaverse on internal auditing will be in two directions: The first direction: virtual reality and augmented reality devices will be used in performing the internal audit process on virtual economic activities and business in the Metaverse world, which requires updating and developing some audit methodologies and methods, and the second direction: that the audit The internal audit examines and confirms the Metaverse technology itself, which requires additional audit tasks, and no matter how quickly these two trends move, it can be argued that both necessitate an expansion of the range of services provided by internal audit.

## ABSTRAK

Penelitian ini bertujuan untuk mengantisipasi realitas internal auditing di bawah dunia Metaverse, dan berfokus pada dua teknologi terpenting di dunia ini, yaitu: virtual reality dan augmented reality. Untuk mencapai tujuan ini, ia mengadopsi pendekatan normatif. Nilai tambah dari penelitian ini adalah penelitian ilmiah pertama yang menghubungkan audit internal dengan dunia Metaverse. Temuan yang paling menonjol adalah: Implikasi Metaverse pada audit internal akan ada dalam dua arah: Arah pertama: perangkat virtual reality dan augmented reality akan digunakan dalam melakukan proses audit internal pada kegiatan ekonomi virtual dan bisnis di dunia Metaverse, yang memerlukan pembaruan dan pengembangan beberapa metodologi dan metode audit, dan arah kedua: bahwa audit internal memeriksa dan mengkonfirmasi teknologi Metaverse itu sendiri, yang memerlukan tugas audit tambahan, dan tidak peduli seberapa cepat kedua tren ini bergerak, itu dapat dikatakan bahwa keduanya memerlukan perluasan jangkauan layanan yang diberikan oleh audit internal.

## 1. INTRODUCTION

Recently, the world has moved towards removing the barrier between the physical world and the digital world by taking advantage of the advanced level of development in the field of information and communication technology. This shift is intended to improve the interaction between man and machine, without replacing one with the other; believing in the importance and necessity of the two

parties' existence. The world continued to search and explore to reach this destination, and its weapon was the technologies produced by the third Industrial Revolution and the Fourth Industrial Revolution, from computers and the Internet, through to Artificial Intelligence (AI), Cloud Computing, and Virtual Reality (VR) and ending with Augmented Reality (AR), Robotics, Internet of Things (IoT), Big data, Block chain (BC) and other integrated

\* Corresponding author, email address: moh.ali\_std@academy.edu.ly

technologies with huge potentials (Schwab, 2016).

The latest in the process of research and exploration is the combination of previous technologies and other modern and ancient technologies to build the world of Metaverse, which was announced on October 28, 2021. This was officially by one of the largest businessmen and programmers in the world Mark Zuckerberg, founder, and CEO of Facebook and the announcement stated that the name of the Facebook company will be changed to Meta, and the company will work under this new name to help build an Internet that consolidates social relationships, embodies experiences, and makes the user an element within it, not just a viewer of it, and this is what called the Metaverse, where anyone can meet another person anywhere they want within Metaverse world (López Díez, 2021).

## 2. THEORITICAL FRAMEWORK AND HYPOTHESIS

### Metaverse World

This world may be a virtual embodiment of our real physical world with all its features and characteristics or a completely virtual world with new features and characteristics. Whatever the geography of the Metaverse is, Everyone can do anything they can imagine so far, like meeting with friends and family, working, learning and playing, shopping and creating, and having different new experiences that don't resonate with the current way we interact with machines. More clearly, the ultimate goal of the Metaverse world is for the user to truly feel his presence with another person, and to be able to move virtual instantaneously as an anthropomorphic to anywhere he wants without moving from his place in the real physical world. This would open the door to more opportunities for everyone regardless of the place they live in. Finally, it will reduce congestion and reduce the total negative effects of emissions resulting from individuals, companies or events, which are called the carbon footprint.

The most prominent role of companies in the coming period will be to accelerate the development process to renew life and weave this world with Current social media for better social experiences (Zuckerberg, 2021).

The Metaverse is not something that Facebook owns or is responsible for developing on its own, it is just a big investor in it, and it is not something new. The term Metaverse dates

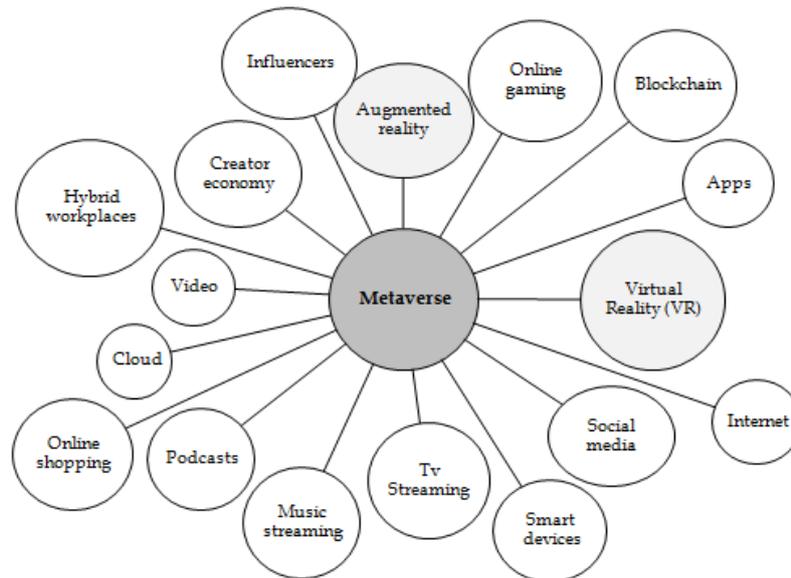
back to the 1992 science fiction novel *Snow Crash*, by Neal Town Stephenson (Joshua, 2017), in which he coined the term Metaverse. The researcher failed to find a definition for this term in the paper or electronic dictionaries that were made available to him but the free encyclopedia Wikipedia on the Internet divided the term into two parts, the first part: Meta meaning beyond or beyond, and the second part: Verse, which is coined from the universe, that is, it can be said that the term is "beyond the universe", that is, the term Metaverse talks about a world beyond nature or the world of metaphysics, and Wikipedia indicated that it is a term It is usually used to describe the concept of future versions of the Internet consisting of a static three-dimensional (3D) space linked to a perceived virtual universe. In the same context, Marr (2021) pointed out that the Metaverse is just the culmination of all the attempts of science fiction embodied in science fiction films, for example, but not limited to: the movie *Ready Player One* released in 2018, which takes place in the year 2045, where most of humanity uses A virtual reality program to escape the gloom of the real world, and the 2009 *Summer Wars* movie; which revolves around a virtual electronic world called *Ozzy*, in which users live in high levels of information security and carry out various daily activities (Marr, 2021).

The Metaverse is best thought of as a convergence of technologies that have been fading for years (and even decades) and emerging technologies, some of which the researcher can display in Figure 1 (Gibbs, 2021).

It is noted from the previous figure that the Metaverse is a comprehensive term for a group of modern and old technologies, on top of which are virtual reality technology and augmented reality technology. This technology forms the basic idea of this world that uses their devices to enter. That is, the user enters the world of the Metaverse by wearing virtual reality (VR) or augmented reality (AR) devices. For this we will limit ourselves to these two technologies only, leaving the door wide for other researchers to deal with other technologies or the same technologies in another way.

### Virtual Reality (VR)

It is a technology-based on projecting real objects into a virtual environment, and therefore it is a technology that creates a complete simulation experience. Through the devices indicated above. Virtual reality technology is



**Figure 1**  
**Techniques covered by the term Metaverse**

Source: The Researcher, Based on (Gibbs, 2021)

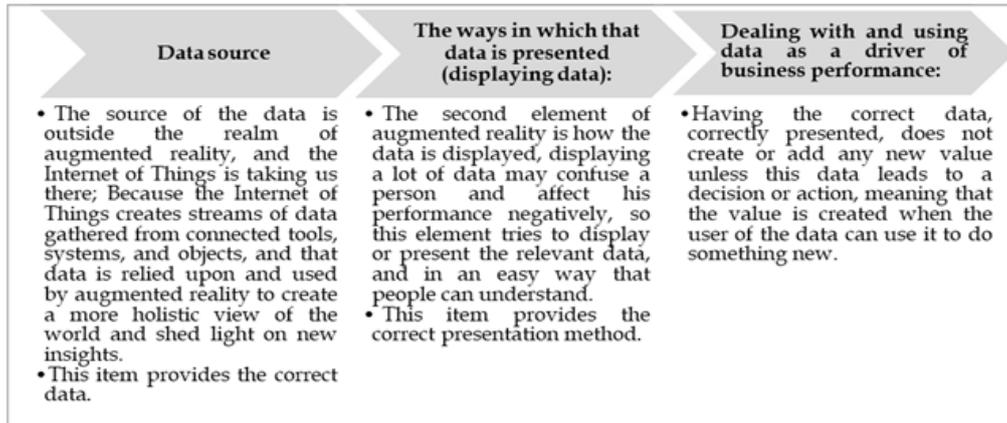
not considered a recent development, as it is an old technology whose development path spanned for several decades, and there is no room here to review the virtual reality journey that began at the beginning of the twentieth century. However, it can be said that the first industry that paid attention to virtual reality until it became what it is today is the video game industry, which has been the driving force in the development of virtual reality devices. Therefore, it is important to note here, that virtual reality devices rely on 360° video technology, as this technology uses a series of cameras to obtain simultaneous feed from multiple angles, and the feed from each camera is combined to create a video clip that allows movement in the 360-degree range, so this technology can reproduce a situation, event or location that exists in the real physical world (Financial Reporting Council, 2021).

**Augmented Reality (AR)**

Augmented Reality (AR) is a technology-based on projecting virtual objects and data into the user’s real physical environment; To augment this environment with additional data and information, a technology, in which real-world data interacts with digital appearances to impart an in-depth perspective. A technology, in his case, enables individuals to better confront

real-world scenarios (Houston, 2021; Orús et al., 2021). Augmented reality technology is not a new technology, and its historical roots go back to the Second World War, but it did not attract the attention of most fields except in recent years. To see and use data in a new way, and thus new insights into how to get things done, and here the reader might ask: How does this technology work?

The answer is: Sensors are placed in things (entities and devices), and these sensors are connected to the Internet for the ability to communicate and interact with each other and accomplish tasks, and this is called the Internet of things (IoT), and the data resulting from these communications is displayed between things by different modes of presentation that in turn enhance physical or virtual reality. In this sense, that augmented reality can be viewed as a tool that allows humans and machines to work together and take advantage of their inherent strengths; To achieve results that cannot be achieved if each of them works alone, and therefore this teamwork is the key to success in the complex and data-rich environment of the twenty-first century. According to Mariani et al, augmented reality consists of 3 basic elements, which can be illustrated by Figure 2 (Mariani et al., 2017).



**Figure 2**  
**Augmented Reality Elements**

Source: The researcher, based on (Mariani et al., 2017)

### 3. RESEARCH METHOD

The research uses the Normative Approach; Because it tries to determine what the future of Internal auditing might be in the world of Metaverse after the introduction and adoption of virtual reality technology and Augmented Reality on a large scale, and not what it exists today. Future research seeks to embody the traditions of utopian thinking as an attempt to draw a picture of a practical and desirable future, which we can reach in a specific period, and it also seeks to draw reliable maps in determining alternative paths for the future. If these maps cannot show the final destination, we need them at least to determine a few acceptable paths that lead to the desired direction. It is often hard to see but worth building (Owaisi, 2018). It should be noted here that the normative approach is considered one of the approaches to building accounting theory, and depends mainly on deduction in deriving accounting and auditing rules and procedures, and elicits standards of behavior, and provides model solutions for accounting and auditing procedures, and in deduction depends on assumed assumptions that may be difficult Subject it to measurement objectively, and it is difficult to reach conclusive results that represent acceptable practical facts. Therefore, normative research remains just a set of ideal rules whose goal is to devise better practices, but it may contradict the current practical reality (Matar & Al-Suwaiti, 2004).

As for the data collection, the documents (ready materials) available to the researcher and the researchers have used that talk about Metaverse to understand and know the technology and its components, and to

determine how it might affect the internal audit. It is due to the novelty of the topic and the lack of previous literature, it relied on the available research and reports and articles on news sites and blogs.

### 4. DATA ANALYSIS AND DISCUSSION Internal Auditing & Metaverse World

Interested professionals and academics specialized in the field of accounting and auditing are looking forward to ensuring a prominent place for the internal audit profession in the future of automation, digitalization, and intelligence. Therefore, why some have recommended that internal auditors rethink the internal audit profession in the Metaverse world, and not stop anticipating the future; to adapt to it (Ben Rabah, 2021). Some added: Why don't we imagine alternative scenarios instead of just waiting for changes to happen or forcing them to happen when we have the gift of imagination compared to other beings? (Sunder, 2011). Therefore, this part of the research will take an overview of the world of the Metaverse from the perspective of virtual reality and the prospects it offers, and augmented reality and its possibilities, and relate all of the above to internal auditing to draw some conclusions.

Initially, it is expected that there will be a demand for the services of the internal audit profession in the Metaverse; Because there may be independent companies in that world or companies that represent or embody their real physical environment in a virtual environment in this world, and these companies, whatever the nature and forms of their activities, will work within the framework of strategies and

policies that are compatible with the dictates of the financial and commercial environment in that world. It is with the translation of these policies into operational procedures, in addition to the fact that companies currently consist of a set of interconnected systems. The most important things are such as the control system that operates at all organizational levels within the company. Whenever there is a possibility of errors, there is a need for internal control, and the world of Metaverse has not strictly prevented errors and fraudulent practices so far, and therefore there is a need for internal control systems there, which means the necessity of having internal audit as the focus of the internal control system. This, and the researcher believes that companies issue financial reports to users in the Metaverse world, and therefore there is a need for an external auditor to express a neutral technical opinion on these reports, and this external auditor needs an internal auditor to coordinate and deal with him in some aspects, so it can be said that there is a need for internal audit in The world of the Metaverse.

In addition to the above, the researcher believes that in some cases the internal audit process will be safer when conducted in the Metaverse, since auditors can conduct internal audits in dangerous places without physically going there, and this is also pointed out by (Anastacio, 2019), who He saw that auditors and risk management professionals could perform tasks that were not previously possible due to health and safety risks. The researcher also believes that the process of internal auditing in the Metaverse world will be less wasteful of economic resources compared to the real physical world; As the world of the Metaverse allows for tours of company sites that are located in remote geographic areas, without actually moving to those areas and incurring travel and accommodation costs, increased congestion and environmental pollution. Internal auditors have a 360-degree view of the Metaverse, and as a result, the internal audit profession can generate cost and time savings, and thus these savings can be used to implement new activities that add value to the company.

Since it is the close relationship between the internal audit department and risk management, especially in risky environments, the researcher believes that it is necessary to link internal audit in the Metaverse world with the risks of this world, and thus it can

be said that while health and safety risks are likely to be low in the Metaverse, The risks of cyber security, data privacy, and identity risks will be high and may reach deeper levels (Ben Rabah, 2021; Vyas, 2021), and this requires internal auditors to carry out additional tasks to ensure that risk management assesses these risks and to verify the controls that will be put in place Pre-manage IT to reduce the risk of the Metaverse.

Some stated that people can interact with virtual reality in a way that appears to be real or physical, using VR devices, as these devices make them immerse themselves in VR (Friday & Japhet, 2020). Here, the researcher envisions that this technology will greatly facilitate the work of internal auditors in the world of the Metaverse, where they can conduct an audit of documents and discuss management through these techniques, so that the auditor and members of the management wear them and move to a virtual reality in which they meet and discuss what they have, regardless of space barriers. Also, in the Metaverse world, additional data and information may be available compared to the real physical environment, due to the integration and harmony between a group of technologies within this world.

It should be noted here, that some of the previous advantages or opportunities are also referred to when talking about remote internal audits. Here, the researcher notes a very important point, which is that the term remote internal audit refers to the traditional internal audit processes implemented by electronic devices and traditional social networks, and not the internal audit process implemented through modern social technology (Metaverse) by virtual reality devices and augmented reality devices. It indicates that the auditor within the term remote internal audit roams in the real physical environment by cameras and electronic programs, and not in a fully virtual environment as in the Metaverse world.

In addition to the above, the researcher imagines that in the virtual environment (whether that is an embodiment of physical reality or designed in a completely new way) provided by Metaverse, augmented reality technology can be used thereby internal auditors to perform internal audit tasks, and this does not mean that augmented reality cannot be used in the real physical environment. Therefore, the following analysis is in general at times, and closer to the horizons

of the Metaverse world at other times, and in this regard, the researcher prefers to start with the proposed levels of augmented reality Evolution contained in (Mariani et al., 2017). It is divided according to two main factors: the extent of change the task and the level of data complexity required to accomplish the task, as shown in Figure 3.

When linking between what was mentioned in the previous figure, the nature of the tasks and procedures was carried out by the internal auditors for periodic evaluation of the financial, accounting, and administrative policies and related executive procedures and expressing an opinion on these aspects. The

researcher can infer what augmented reality might do when internal auditors use it in the Metaverse. In the first section of Evolution (the state of equilibrium), augmented reality can help the internal auditors in the Metaverse to perform some traditional tasks. It can be said that it enables them to perform them with fewer errors and more quickly, such as: the task of checking records and books and the task of collecting data to be a basis. To reach the results of the audit process, this task does not require complex data, as it is based on reliable documents supporting the event or activity to accomplish this task. This task is not characterized by diversity and significant

		Variability of task	
		Low	High
The complexity of data needed	Low	<p><b>Evolution 1: Equilibrium</b> The complexity of the required data and the variety and variability of tasks are all low. Here the employee can use augmented reality to a large extent to do tasks better, compensating for limitations in his senses or abilities; To provide new insights, and performing work more efficiently, productively, and accurately. And in this section of the Evolution, the forms of tasks that employees are asked to perform do not necessarily change, but how they are asked to complete tasks will change. And that in certain cases, augmented reality can automatically record data and information.</p>	<p><b>Evolution 3: New connections</b> When tasks are highly disparate and data is simple and uncomplicated, performing this type of task requires more diverse human interactions than a large volume of data, and these tasks will require employees to access data in different ways, which means the emergence of new forms of communication, and this is what augmented reality achieves. In the sense that the employee may not need to recall data and instructions, but rather needs to consult people more experienced than him, so that he contacts them and shares what he sees through augmented reality technology; To help him diagnose the problem. At this level, augmented reality can also be used to create new communications to spread knowledge in a particular discipline.</p>
	High	<p><b>Evolution 2: Infinite mind</b> In this section of Evolution, large amounts of data are dealt with (a burden on the human mind) to perform tasks of less variety and change, and here augmented reality can be used to provide complex data to employees in real-time as they need it. and in this section of Evolution can allow augmented reality By accomplishing new tasks or tackling old tasks in new ways. And since there are new tasks, new skills are needed to navigate massive amounts of data.</p>	<p><b>Evolution 4: Full symbiosis</b> This ultimate Evolution is the culmination of the use of augmented reality in the workplace, as augmented reality helps employees accomplish highly changing tasks that require a great deal of complex data to complete. In this section, AR can augment and complement human strengths, such as creativity and adaptability, with those in computing, such as the ability to handle, access, and analyze large amounts of data while connected to other resources in real-time. Meaning that this evolution brings the best of humans and machines together.</p>

**Figure 3**  
**Suggested levels of augmented reality Evolution**

Source: The researcher, based on (Mariani et al., 2017)

change, and this means that as a first stage, the augmented reality in the field of internal auditing may be applied in the performance of this kind of mission in the Metaverse universe especially in light of the integration with the Block chain technology on which the Metaverse universe depends.

All are an encrypted and secure documentation tool in itself for the transactions that occur with the company, and a technology that records data automatically with time-stamped documents. In addition, it is a technology that contains records that are not recorded until after checking and auditing the transaction on the spot, and thus The events recorded in the Metaverse world do not need to take long to audit, and this task can be entrusted to the technologies that shape this world. This perception is consistent with that of (Ben Rabah, 2021) who held that the Metaverse can provide internal auditors with more secure access to documents and documents, and can be used for remote evidence collection. It is because of the Metaverse that can provide shared and secure virtual databases. It is especially in light of enabling interoperability between systems and applications. All of the above will lead to liberating internal auditors from traditional tasks and directing their efforts towards new work, which in turn requires different skills such as analysis, thinking outside the box, and problem-solving, and at this level of Evolution augmented reality will help in performing some routine internal audit tasks only, and it will not be Cope with it completely.

If the task requires large amounts of data to accomplish but is not characterized by change and diversity, then the internal auditor only needs a mind or memory that thinks of large data and complex data. The most prominent examples of these tasks are those tasks performed by the internal auditors to audit some of the accounting treatments based on the guidelines and directives contained in the international accounting standards, which require a great knowledge of these standards by the internal auditors; To complete the internal audit process, augmented reality can help the internal auditor retrieve complex data in real-time and have instant and easy access to thousands of pages of data, rather than taking a long time to search for it. That is, augmented reality frees the internal auditors from the need to remember many instructions and directions and carry huge brochures, by superimposing data on the relevant situations in real life

through sensors. In addition, in the Metaverse world, the internal auditor can use augmented reality In the physical environment or virtual environment to remember what the manuals and guidance issued by the bodies related to internal audit also contain. For example, he International Professional Practices Framework (IPPF), or the International Standards for Internal Audit issued by the Institute of Internal Auditors (IIA), this would bring a lot of ease, simplicity, and accuracy to the field of internal audit.

The internal auditor may have all the directions and instructions contained in the standards and manuals, but he does not know how to use them, or he does not know the diagnosis of the problem in front of him according to these standards. In this case, the internal auditor does not need an unlimited mind or memory to retrieve the appropriate data for the situation, but rather someone who surpasses him in experience and wisdom. Therefore, in the third section of Evolution (new connections) augmented reality can be used in the physical environment or a virtual environment provided by the Metaverse world to create new connections within the internal audit community, or between the internal audit community and other communities, where auditors can consult the most experienced people by communicating with them remotely, asking for help in diagnosing and resolving the problem.

Internal auditors can also, once the problem is resolved, create new connections, share the problem and solution, and benefit their colleagues in the profession. They can also share new knowledge more engagingly with Augmented Reality and Virtual Reality devices. In addition to the above, internal auditors can consult their colleagues in the specialty or specialists in other related fields such as information technology (programming, networking, control, ...), and consult with them in developing more effective audit programs, and they may be from one country or from multiple countries. This means developing programs and plans according to different points of view, and this is useful for internal auditors, especially when global crises occur.

The Metaverse world also frees internal auditors from the constraints of physical location and enables them to collaborate and share experiences and knowledge around the world, thus establishing connections across time and space, and this was also pointed

out by (Ben Rabah, 2021) where he saw that the Metaverse world can improve personal interdependence between internal auditors. By making interactions look more realistic than online video meetings. Ben Rabah added that through Metaverse they can meet the communication challenges (online interviews) reported by internal auditors during COVID-19 when many of them found it difficult to avoid or eliminate potential distractions during traditional video meetings, and this is where Metaverse can add value to it.

All previous potential Evolutions can be crowned with the stage of full coexistence with augmented reality, where devices and machines (for example, robots) are part of the team of auditors located in the physical environment or virtual environments in the Metaverse world. In this world, the auditors and robots as an integrated system and here augmented reality can help in predicting situations which are very difficult to predict. It requires huge amounts of complex data, involves a set of risks, and requires highly varied tasks. For example, when crises or global developments occur, internal auditors can through augmented reality and the prospects of the Metaverse world, obtain a large number of required data. This helps them to prepare immediate reports and alert management early, then they sifter this data to reach the most important, and then identify fluctuations or unexpected events that surround the company through this data. It means that the internal auditors ask questions on the sensor-based, such as: What are the unusual things that happen in the company's surroundings during this period? The system, by fetching data from things using Internet of Things (IoT) technology, provides data or calls some indicators that may answer the auditor's question, and by using this data and information, it is possible to The references can respond better and recommend taking appropriate measures to address what may happen to the company.

Here the researcher leaves space for the reader to imagine this situation in light of the mature companies that contain the three lines of defense, along with other supportive departments, and of course, the imagination space will increase if it is assumed that these companies have Virtual branches in the Metaverse or these companies are virtual from the ground up and conduct their business in the Metaverse only.

In addition to the above capabilities, augmented reality devices may include a library of correct procedures and potential solutions to expected problems in the field of internal audit depending on the nature and field of the company, which means simplifying the work of internal auditors and speeding up the internal audit process in the Metaverse significantly.

In the world of the Metaverse, specifically in the stage of full coexistence with augmented reality, the researcher imagines that the internal auditor will immerse himself in the systems, activities, and procedures so that he is not just a tracker and investigator, but be an effective element at the heart of events, interacting with all its components with gestures, that is, directed in The heart of the work. It can also re-enact events that occurred in the physical environment by Metaverse to better visualize and express an opinion on them.

To further clarify how the internal audit will be in the world of Metaverse, using virtual reality technology and augmented reality technology, the process of auditing the inventory of goods can be taken as an example. In the world of Metaverse, virtual records of inventory transactions will be available, and these records will not be changed (immutability). Since all the data that was recorded in it is time-stamped and linked to each other by encryption mechanisms, and this is what the block chain technology provides (as one of the Metaverse technologies), however, the internal auditor will still need to visit the physical location of the store, and here augmented reality technology can play a prominent role. If the internal auditor wears augmented reality glasses and enters the store, all the data of the stored goods will appear, and thus make sure that this data matches the data recorded in the physical records and the records in the block chain. In the event that he is not able to visit the physical location of the warehouse (due to travel restrictions, for example), here virtual reality technology plays the primary role, where the auditor can wear virtual reality devices and go virtually to the warehouse location and view records and merchandise with a 360-degree viewing angle. As for physical evidence, it will not be of good quality compared to virtual evidence, the latter is more reliable, as it cannot be changed or tampered with.

## 5. CONCLUSION, IMPLICATION, SUGGESTION AND LIMITATION

All of the discussion are just possible visualizations or scenarios of what the reality might be like in the future and not scenarios that restrict how augmented reality is used inside or outside the Metaverse. It might also be how virtual reality is used, and all remain just visualizations that help understand how the internal audit profession will change as a result of the adoption of virtual reality and augmented reality. This means that the above is just some kind of insight into the unknown future. It can be concluded that: a) It is expected that there will be a demand for internal audit services at Metaverse. It is due to the condition that there may be stand-alone companies or companies that represent and embody their real physical environment in a virtual environment in that world. b) In some situations, the internal audit process will be safer to conduct in the world of Metaverse, and also less waste of economic resources. c) In the Metaverse universe, augmented reality will be necessary for principle for internal audit tasks that contain large amounts of data or highly variable tasks, and the greater the complexity of the data and the diversity of tasks, the greater the reliance on augmented reality. d) The repercussions of the Metaverse on internal auditing will be in two directions: The first direction: virtual reality and augmented reality devices will be used in performing the internal audit process on virtual economic activities and business in the Metaverse world, which requires updating and developing some auditing methodologies and methods. The second direction: is that the internal audit examines and confirms the Metaverse technology itself. It requires additional audit tasks, and no matter how quickly these two directions are moving, it can be said that both necessitate the expansion of the range of services provided by internal audit.

## REFERENCES

- Anastacio, SB. (2019). *Use of Virtual Reality in Auditing*. Annual National Convention, Association of Government Internal Auditors (AGIA). Philippines.
- Ben Rabah, M (2021). *Shall Internal Auditors be Prepared to "Metaverse"?*. viewed 12 December 2021. <https://www.xpertsleague.com/shall-internal-auditors-be-prepared-to-metaverse/#.YaefzNBBzIU>.
- Financial Reporting Council. (2021). *Virtual and Augmented Reality in corporate reporting*, UK.
- Gibbs, A. (2021). 101: *What on Earth is the Metaverse?*, viewed 10 November 2021. <https://www.pwc.com.au/digitalpulse/101-metaverse.html>.
- Houston, B. (2020). *What Is Augmented Reality (AR)? A Practical Overview*, viewed 21 November 2021, <https://www.threekit.com/blog/what-is-augmented-reality>.
- Friday, I & Japhet, I. (2020). Information Technology and the Accountant Today: What has Really Changed?. *Journal of Accounting and Taxation*, 12, 48-60. <https://doi.org/10.5897/JAT2019.0358>.
- Joshua, J. (2017). Information Bodies: Computational Anxiety in Neal Stephenson's Snow Crash. *Interdisciplinary Literary Studies*, 19(1), 17-47. <https://doi.org/10.5325/intelitestud.19.1.0017>
- López Díez, J. (2021). Metaverse: Year One. Mark Zuckerberg's video keynote on Meta (October 2021) in the Context of Previous and Prospective Studies on Metaverses. *Pensar Public*, 15(2), 299-303. <https://doi.org/10.5209/pepu.79224>
- Mariani, J, Sniderman, B & Harr, C. (2021). *More Real than Reality: Transforming Work Through Augmented Reality*, viewed 15 November 2021. <https://www2.deloitte.com/us/en/insights/deloitte-review/issue-21/augmented-reality-at-workplace.html>.
- Marr, B. (2021). *What Is the Metaverse? An Easy Explanation for Anyone*, viewed 1 December 2021. <https://bernardmarr.com/what-is-the-metaverse-an-easy-explanation-for-anyone/>.

- Matar, M & Al-Suwaiti, M. (2004). *Theoretical Rooting of Professional Accounting Practices in the Field of Measurement, Presentation, and Disclosure*. Dar Wael for Publishing and Distribution, Amman, Jordan.
- Orús, C, Ibáñez-Sánchez, S & Flavián, C. (2021). Enhancing the Customer Experience with Virtual and Augmented Reality: The Impact of Content and Device Type. *International Journal of Hospitality Management*, 98, 1-13. <https://doi.org/10.1016/j.ijhm.2021.103019>.
- Owaisi, A. (2018). *Fundamentals of Foresight Curricula*, Farhat Abbas University, Setif, Algeria.
- Schwab, K. (2016). *Fourth Industrial Revolution*, World Economic Forum, Switzerland.
- Sunder, S. (2011). Imagined Worlds of Accounting. *Accounting, Economics, and Law*, 1(1), 1-12. <https://doi.org/10.2202/2152-2820.1014>.
- Vyas, K. (2021). *What is the Metaverse and How Do Enterprises Stand to Benefit?*. Viewed 30 November 2021, <https://www.itbusinessedge.com/networking/metaverse-enterprises-benefits/>.
- Zuckerberg, M. (2021). *Founder's Letter*. Viewed 3 November 2021, <https://www.facebook.com/zuck/posts/10114026953010521>.