# *Metaverse Technique: Accounting Practice in a Virtual World*

| Mansour Nesrine* | Abuyousef Mohammed |
| --- | --- |
| Managerial & Financial Sciences Faculty, Israa University, Gaza (Palestine) | Managerial & Financial Sciences Faculty, Israa University, Gaza (Palestine) |
| *amal2m@hotmail.com* | *msy2005@hotmail.com* |

***Received: 01/03/2023*** ***Accepted: 13/06/2023*** ***Published: 30/06/2023***

**Abstract :**

The research aims to describe and discuss Metaverse techniques and how our future digital environment should look, and the accounting practices in a virtual world. A normative approach is considered an appropriate approach for future research. This research contributes to the development of literature related to the Metaverse, specially accounting in terms of virtual word.

The results shows that some new skills will be in demand in the near future by using Metaverse in accounting such as technical, digital and creative skills and there is a positive effect on reporting accuracy, anomalous detection and data analysis in respect to accounting profession. Using Metaverse in accounting profession lead to some limitations like the loss of privacy.

**Keywords:** Metaverse, Accounting, Virtual World, VR, AR.

**JEL classification codes:** O33 ; M41; Q55

* ***Corresponding author: Mansour Nesrine,amal2m@hotmail.com, .***

## Introduction:

The metaverse has drawn al lot of attention and queries, and the concept has actually existed for decades; it is an immersive digital environment that allows users to interact with their surrounding and one another in a shared space, and as a result of the innovations in information technology, nowadays business and financial world is developing an industrial revolution in the internet world, especially in social media and made it a small, close community, eliminating distances and becoming an essential part of our lives.

Metaverse, combination of the prefix "meta" (implying transcending) with the word "universe", describes a hypothetical synthetic environment linked to the physical world (Lee, et al., 2021). Early it were primarily based on the convergence of technologies that enable multisensory interactions with virtual environments, digital objects and people such as virtual reality (VR) and augmented reality (AR). Hence Metaverse is an interconnected web of social, networked immersive environments in persistent multiuser platforms. Nowadays, the contemporary iteration of the Metaverse features social, and it provides an immersive experience based on augmented reality technology, creates a mirror image of the real world based on digital twin technology, builds an economic system based on block-chain and tightly integrates the virtual world and the real world.

From a commercial perspective and accounting view, Metaverse has shown far-reaching as a new capital export, and many big companies will devoted themselves to building the Metaverse from the user's point of view.

❖ ***The study problem:*** Based on the above, the following main problem came to our mind:

***What is the reality of using Metaverse technology and the accounting practice in the Virtual world?***

In order to answer this problem, we decided to divide it into a group of sub-questions as follows:

- What's the history of Metaverse, its Characteristics, components, elements and devices?
- What are the new skills for accountants in a Virtual World?
- What are the usage of VR and AR for Annual Reports?
- What are the limitations of using Metaverse in Accounting?

❖ ***The importance of the study***: It is such a phenomenal prospect that for the first time in recent history, all tech giants are tussling over one business territory, metaverse building. The importance of this study stems from the importance of the accounting practice in virtual world under the concept of Metaverse technique. Then we attempt to describe the application or AR and VR in the accounting field.

❖ ***Study Objectives:*** Metaverse in the next evolution of digital technologies in accounting field, and through the problem and the sub-questions presented, the answer to the problem question may achieve the goals we want, which are:

- Attempting to describe the history of Metaverse and its characteristics.
- Knowing the Metaverse components, elements and devices.
- New skills for accountants in a Virtual Word and the application of VR and AR in accounting field.
- Attempting to know about the use of VR and AR for Annual Reports.
- Presenting the limitations of using Metaverse in Accounting.

❖ ***Study Methodology:***

This study has followed the appropriate analytical descriptive approach for the purpose of this topic, relying on the description and status of the phenomenon as it actually is, and is concerned with its theoretical nature and portrayal by relying on the analysis of information and the collection, organization and classification of data on the study's problem.

❖ ***Previous Studies:***

- (Minanurohman and Fitriani, 2023): "**Metaverse in Accounting Viewed from the Perspective of Plato's Reality Philosophy**: This study aimed to review the metaverse in accounting from the perspective of Plato's philosophy of reality. The results shows that accounting in five ways: Metaverse will allow direct engagement with clients, training and development of new team members, increase employee interaction, the existence of Metaverse will form a more intense relationship with consumers and It does have many benefits and conveniences for its users.
- (Egiyi, 2022): "**The Benefits of Augmented and Virtual Reality in the Accounting Field**": The study aimed to show new technologies employed to improve operations in accounting .It concluded that the potential of VR and AR technologies in supporting the dynamics of global accounting systems

and tackling the big problems provided by unforeseen events and crises in the accounting profession.

- (Chukwuani, 2022): " **Virtual Reality and Augmented Reality: Its Impact in the Field of Accounting**": This study looked into the uses, applications, and benefits of virtual reality and augmented reality in accounting, as well as the potential constraints. It aims to provide a better understanding of how new technologies affect accounting. It explains the applications, benefits, and limitations of virtual reality and augmented reality in accounting, as well as how it has made accounting easier.
- (Al-Gnbri, 2022): " **Accounting and Auditing in the Metaverse World from a Virtual Reality Perspective: A Future Research**": The study aimed to illuminate and raise questions about the future of accounting and auditing from the perspective of virtual reality technology, the Metaverse. It concluded that Metaverse creates new digital assets that require accounting measurements to provide tools and disclosure methods that are accurate, and also Metaverse has potential effects on planning the audit process.

❖ **Research Gap:**

Implementing accounting procedures in the meta-environment will take place remotely and without direct contact with the outsourcer through specific devices, and this is what most researchers agree on. Since this field has not been fully applied in the various professions because it is still under experiment and there are some defects such as the high costs and security breaches that may occur, it is interesting to study and search for.

By reviewing the previous studies, we agree with these studies in their main topics such as (Egigy, 2022; Minanurohman and Fitriani, 2023; Chukwuani, 2022), which is about Metaverse technique, whose aim was to clarify the nature, importance and the new skills for accountants in a Virtual World and the usage of VR and AR for Reports such as the study of (Al-Gnbri, 2022), but our current study differs from these studies in several aspects, as it included linking the problem of the study related to the reality of using Metaverse technology and the accounting practice in the Virtual world.

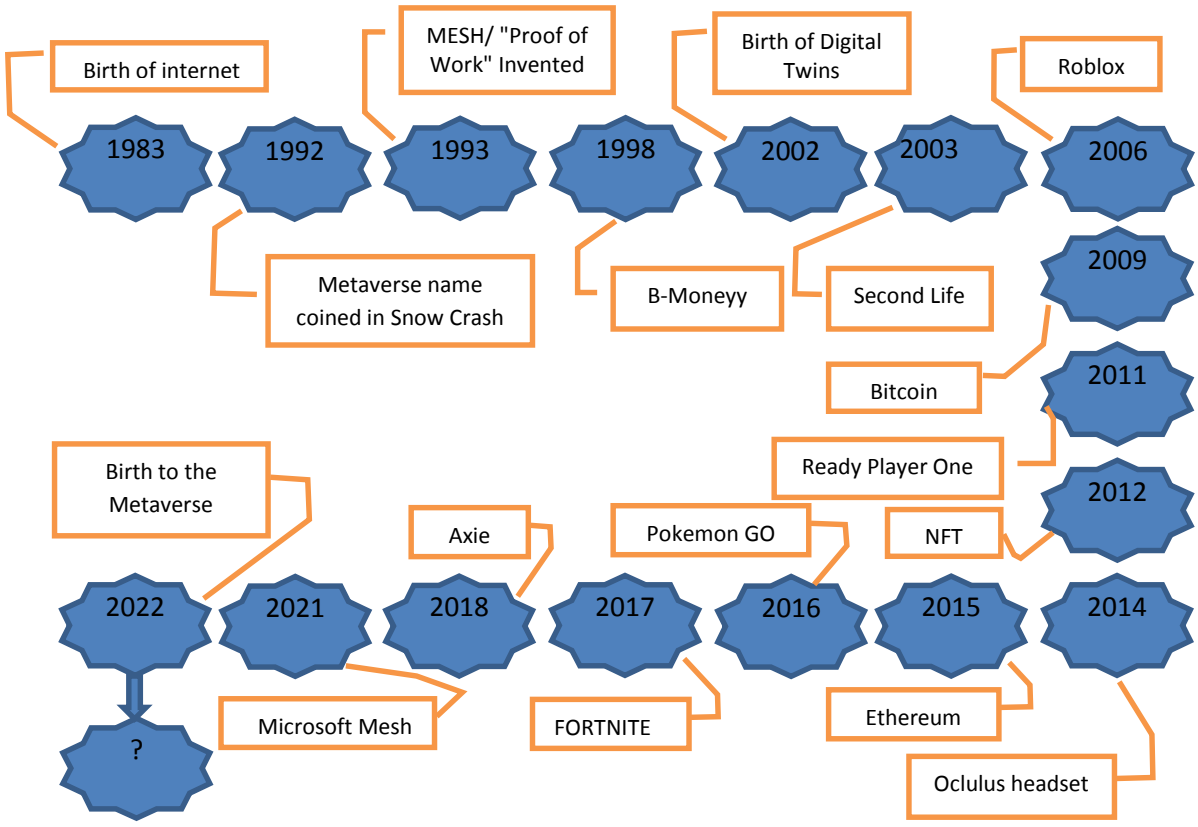
This study considers a modern trend that simulates the contemporary requirements of the digital environment, as it considered relatively recent, especially if it is applied in different professions, such as accounting profession, so this study tries to follow the descriptive analytical approach in order to be compatible with the requirements of the current study.

# I. History of the Metaverse:

The term Metaverse was invented and first appeared in Neal Stevenson's science fiction novel Snow Crash published in 1995 (Stephenson, 2003). It represented a parallel virtual reality universe created from computer graphics, which users from around the world can access and connect through goggles and earphones (Dionisio, Burns and Gillbert, 2013). Although Stevenson's Metaverse is digital and synthetic, experiences in it can have a real impact on the physical self.

A Modern literary reincarnation of the Metaverse is the OASIS, illustrated in the 2011 science fiction novel Ready Player One authored by Ernest Cline (Mystakidis, Fragkaki and Filippousis, 2021). OASIS is a massively multiuser online VR game that evolved into the predominant online destination for work, education and entertainment, it is an open game world, a constellation of virtual planets, and users connect to OASIS with headsets, haptic gloves and suit (Mystakidis, 2022).

**Figure (1): Timeline of the development of communication methods**




**Source**: https://www.datasciencecentral.com/wp-content/uploads/2022/03/Metaverse-Timeline

As it shown in the timeline above, the internet and the artificial intelligence began in 1980's. artificial intelligence is systems that are programmed to think and work as human intelligence does things better than humans through the experimental aspect of computer science involved in programming an intelligent machine that can operate on various tasks by using its intelligence (Dongre, Pandey and Gupta, 2021). In the same light, (Ezeribe, 2019) viewed Artificial intelligence as a method of making a computer, a computer-controlled robot, or software think intelligently like the human mind. Metaverse technologies are not necessarily new. Their origins trace back centuries to rudimentary sensory illusions and, more recently, to advancements in computing in the late 20th century. For decades, XR and 3D technologies have contributed to advancements in medicine, chemistry, and engineering, among other fields. Back then, these technologies were incredibly expensive, bulky, and served an industry-specific purpose. Today, with the availability of high resolution mobile screens, accurate motion sensing devices, and highly efficient mobile processors, Metaverse is poised to make the jump from industry laboratories to our living rooms, offices, and classrooms (Pimentel, et al., 2022).

During 2022, it was hard to move without bumping the term "metaverse", while Meta focuses on creating virtual reality environments, companies like Microsoft are developing the environment of metaverse for working on digital projects, and 2023 will bring a host of new developments in the field. Beyond headsets, we can expect to see new developments in full-body haptic suits, which are already used by organizations like NASA and SpaceX for simulating extreme environments.

| | | |
|---|---|---|
| **Physical World** | **A. Technologies:**<br>Artificial Intelligence<br>Block-chain<br>Computer Vision<br>Network<br>Edge Computing<br>User Interactivity<br>Extended Reality<br>loT & Robotics | - Automatic Digital Twin, Computer Agent, Autonomy of Avatar.<br>- Data Storage, Data interoperability, Data Sharing.<br>- Localization & mapping, Body & gaze tracking, Image processing<br>- 5G/6G, QoS/Congestion control, Network-aware applications<br>- Edge Cloud, Federated learning, Privacy-preserved user presence<br>- Mobile input techniques & headsets, feedback cues, Haptic devices<br>- Projection and Hologram, Augmented reality, Mixed reality, VR<br>- loT, Connected vehicles, human-robot interaction |
| **Digital Twin** | **B. Ecosystems:**<br>Avatar<br>Content Creation<br>Virtual Economy<br>Social Acceptability<br>Security & Privacy<br>Trust & Accountability | - Appearance and Design, User perceptions, Human-Avatar<br>- Authoring Multi-user collaboration<br>- Metaverse commerce, Virtual Objects Trading, Devices..<br>- Privacy threats, user diversity, Fairness, Devices..<br>- Deep-fakes, Alternate representations, Ethical design, ..<br>- Fairness and bias, Power and control, Opacity and transparence, Auditing, Governance. |
| **Metaverse** | | |

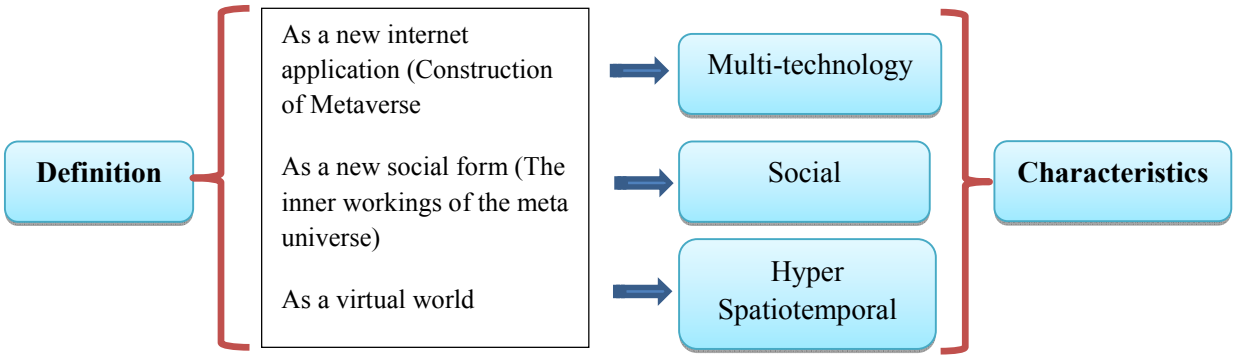
**Source**: (Lee, et al., 2021)

We think that Metaverse in the next few years, will be improved digital environment where it is possible to move seamlessly between work, play, shopping, socializing and creativity in one digital landscape. It could change not only how human interacts with technology, but also how they interact with each other.

## II. Characteristics of Metaverse:

As a new internet application, Metaverse integrates a variety of new technologies and has the characteristics of multi-technology as a new social form.

**Figure (2): Characteristics of Metaverse**




**Source**: (Huansheng, et al., 2021)

There are six characteristics summarized in the following (Deloitte, 2022):

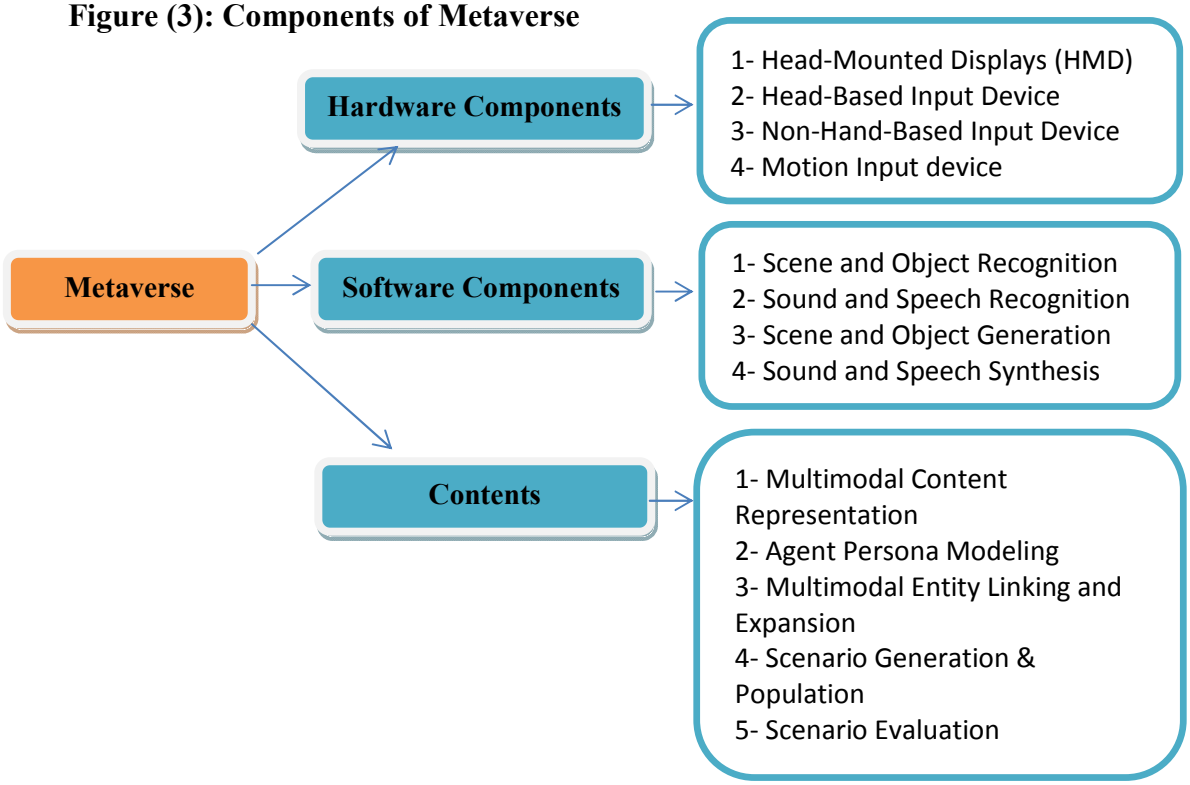
- **Characteristics 1: Realistic immersive experience:** Realistic immersive experiences provide verisimilitude of the senses, objects, and environment, and have driven Metaverse excitement.
- **Characteristics 2: A complete world structure:** The Metaverse, meanwhile, will be a complete replica of the real world, simulating all of its 10 elements.
- **Characteristics 3: UGC:** UGC is a new creative arena in which Metaverse residents create content and applications in their own virtual worlds.
- **Characteristics 4: Huge potential economic value:** The creators of Metaverse platforms will endow the Metaverse with scarcity through technologies and manage digital asset rights through these technologies so data becomes tamper-proof. The Metaverse has less scarcity than the real world, making it possible for it to surpass the real world's economic value.
- **Characteristics 5: New regulations:** The concept of the Metaverse as a parallel world means weakening "central privilege" in the real world.

- **Characteristics 6: Big uncertainty.** Governance structure is the core issue in the Metaverse, that is, who will be on top of its future governance structure. When designing the Metaverse, all creators will need to decide who has the final say in the virtual world and who owns its economic benefits.

## III. Metaverse Components, elements and devices:

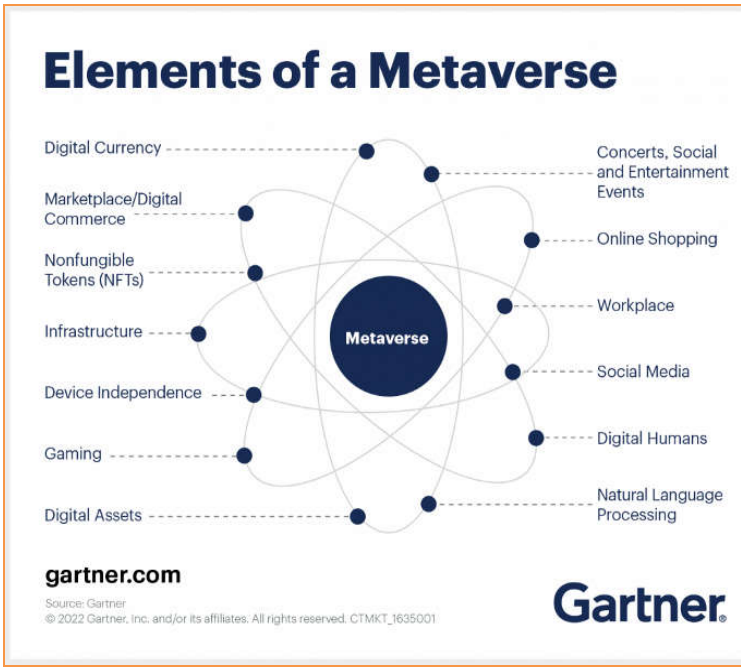
Metaverse is not the real world but can provide a tangible feeling, so services based on immersive user-interactive stories can provide. In order to service the Metaverse like the real world, it is necessary to be able to interact seamlessly and concurrency in an environment with presence. In order to maintain a sustainable Metaverse, economic activity between users based on these interactions must continue. We describe Metaverse into hardware, software, and contents from the component's point of view below .

**Figure (3): Components of Metaverse**




**Source**: (Prepared by the researchers, 2023) depending on: (Park and Kim, 2022)

Elements of Metaverse are considered very important related to industry 4.0. Metaverse will have numerous technologies comprising the Digital Currency, Online shopping, Workplace automation, Social Media, Digital Humans, Natural Language Processing, Infrastructure and Device Independence.

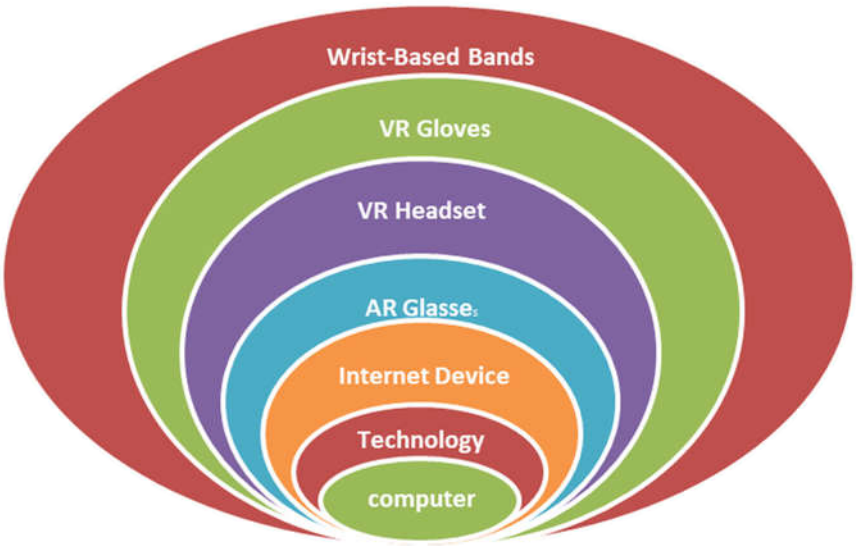



Gartner is a technology research and consulting company. It described the elements of a Metaverse in this diagram. It is likely that a Metaverse will make available determined, decentralized, joint, and interoperable opportunities. It will create the business models, which will allow organizations to extend digital business.

**Source**: (Mansoor, 2022)

However, the metaverse will be persistent, live, and synchronous. It will be a living, consistent experience for all its users in real-time. Any person from any corner of the globe will join the open metaverse and participate in its activity either individually or socially. However, the metaverse will be persistent, live, and synchronous. It will be a living, consistent experience for all its users in real-time. Any person from any corner of the globe will join the open metaverse and participate in its activity either individually or socially (Cryptocurrency, 2022).

**Figure (4): Devices needed to fully experience the Metaverse**




**Source**: (Prepared by the researchers, 2023)

**Figure (5): Devices pictures used in Metaverse**


Knowing about field of view, glass optics, resolution and digital head tracking will help you pick the right drone goggles. DJI, Parrot, Walkera And Yuneec now manufacture their own FPV drone goggles. This makes choosing an FPV headset very easy.


**FPV Optics – Glass or Plastic Optics**

For viewing clarity and image quality glass optics are by far the best option. You will see many options regarding resolution on FPV goggles such as QVGA, VGA and SVGA.

- QVGA: 320 x 240 pixels
- VGA: 640 x 480 pixels
- SVGA: 800 x 600 pixels
- FWVGA: 854 x 480 pixels

**Source**: (Corrigan, 2020)

Using VR gloves, alternatively meta-haptic gloves, one can feel Virtual Reality (VR) objects as if they were real. Sounds insane but companies like HaptX have already offered their line-ups of such hyper-real interfaces. These gloves are designed to be lighter and more affordable than the gloves currently on the market. Production will begin in the next few years.

**Source**: (Mattison, 2023)


Metaverse - Inscription on Keyboard Key: In the near future, new technologies will be introduced to the keyboard buttons for working in the virtual world.

**Source**: (Dreamstime, 2023)

## IV. New Skills for Accountants in a Virtual Word:

In today's development, Metaverse and augmented reality can also be used as educational medium to explain the information received and to provide interaction in the learning process (Tuah, et al., 2022). Augmented reality has been implemented in various fields such as accounting.

The recent technological breakthroughs in Metaverse are now opening a new page in accounting profession refocusing to some new perspectives towards accounting practitioners, specially know what skills in demand in the near future by using Metaverse technique?. The table bellow will show the main skills will accounting profession needs.

| Skills in Demand | Meaning |
|---|---|
| **Technical Skill** | The ability to perform a task consistently to a defined standard while maintaining the highest level of integrity, independence and skepticism |
| **Emotional Intelligence** | The ability to identify your own emotions and those of others, regulate, manage and apply them to tasks reasonably |
| **Digital Skill** | The awareness and application of existing and emerging digital technologies, capabilities, strategies and practices |
| **Creative Skill** | The ability to anticipate future trends accurately and fill the gaps in an innovative way |
| **Vision** | The ability to anticipate future trends accurately and fill the gaps in an innovative way |
| **Experience** | The ability to understand customer expectation and meet the desired outcome |

**Source**: (Ezeribe, 2019)

Technology advance have historically eliminated some jobs and created others and there's no reason to think that this trend won's continue regarding Accountancy. Jobs will continue to be created, enhanced much as they have in the last 20 years.

Some recent results show that there is a positive effect on reporting accuracy, anomalous detection and data analytics in respect to accounting profession and Metaverse has a significant to an improved system (Kwarbai and Omojoye, 2021).

## V. The Use of VR & AR for Annual Reports:

Virtual reality (VR) is a simulated 3D environment that enables users to explore and interact with a virtual surrounding in a way that approximates reality, as it is perceived through the users' senses, the environment is created with computer hardware and software, although users might also need to wear devices such as helmets or goggles to interact with the environment (Sheldon, 2022). In the other hand Augmented Reality (AR) is a type of virtual reality in which digital devices are used to overlay additional sensory information (sounds, objects, avatars, graphics, labels, and so on) over the real world. This gives contextual information that improves the aesthetic, usability, and pleasure of the site, as well as provides a more interactive experience. The difference between VR & AR is that VR generates a reality experience entirely based on virtual data, whereas AR enhances the perception of the real work with additional computer-generated data (Carmigniani, 2011).

So, we conclude that Augmented reality (AR) is a technology that combines real-world objects with virtual or virtual objects in real-time conditions. The merging of real and virtual objects occurs with the support of appropriate technology while interactions conducted using specific devices can occur. Augmented reality is a different kind of virtual environments, or better known as virtual reality (VR). VR technology makes users join a file. the virtual environment as a whole. While augmented reality technology is developing very quickly, in Indonesia itself there are many applications that use augmented reality technology.

In many branches of accounting, specially Financial, Managerial and Cost accounting need to prepare Several Reports and Statements which have a lot of focus and large audience and therefore seems a natural place for innovation. However, there are few examples of VR & AR in Annual Reports, and these are often quickly discontinued for these reasons (Financial Reporting Council, 2021):

- ***Timetable***: Annual Reports often work to a very short timetable based on regulatory or other deadlines. Often, the Annual Report is changing up to the day of publication. Similarly, the value to users of the data contained within a report is primarily within a short window around its release. VR, whilst becoming simper, is not quick process to create and test, even the experimental VR Annual Reports have often been released publicly weeks or months after the official Annual Report, limiting their use and value.

- ***Innovation disincentive***: Whilst many companies think about wider stakeholders as a key audience, Annual Reports' main user group are investors and analysts. Their focus is detailed analysis across a large number of companies. As such, a company whose Annual Report works differently is at risk of getting ignored.
- ***Nature of content***: An Annual Report by its nature includes different information types from detailed financials to more narrative sections on business model and strategy. This mix of content is difficult to translate into an effective VR & AR experience.

With the introduction of the next generation of augmented reality (AR) accounting software, the accounting profession is about to take a big step forward. Accounting and accounting software, on the other hand, will have access to more than just data. They'll have vital insights and the capacity to integrate data fast to grasp the organization's implications. The main field of accounting which are likely to use (AR) and (VR) are mentioned below.

## 5.1 AR & VR in Accounting Profession :

Many developing technologies have already begun to handle jobs that accountants used to do, and technological advancements are expected to continue to reduce firms' reliance on accounting professionals (Appelbaum and Nehmer, 2017). The expanding relevance of digital media technologies has brought about a growing demand for innovative solutions that leverage this technology while addressing accounting industry needs. Thus, the accounting sector is undergoing a major revolution as data analytics and artificial intelligence improve (Agnew, 2016).

**Figure (6): Application of AR &VR in Accounting Field**


**Source**: (Chukwuani, 2022)

- **Inventory**: Checking inventory for all orders or updating inventory in real time is a time consuming process. In real time, Metaverse technology will

inform accountants of the status and value of inventories, so the cost of physical inventory and shipping will be reduced. With a flick of finger, the buyer can see new goods and there specifications (the cost). So that the consumer experience will be improved and the company will save its inventory costs.

- **Invoicing**: With Metaverse you need to know about processing pro forma invoices which differs from processing normal invoices in the following ways (SCRIBD, 2022):

  * *Goods issue is not required before you create a delivery-related pro forma invoice.*

  * *You can create as many pro form invoices as you like for a sales order or a delivery because the billing status in the sales order or delivery is not updated.*

  * *Data from the pro forma invoice is not passed on to financial accounting.*

- **Customer management**: Virtual reality is making and upgrading the transactional parts of the Accounting, and if a company wants to keep its clients, payment convenience is critical. Customers are more likely to return to businesses that accept a variety of payment options such as credit cards, debit cards, and other forms of payment. The VR will enter the transaction straight into the accounting system once the payment has been transferred.
- **Performing audits**: VR will permit accountants and auditors to work from anywhere. It provides users with experiences to increase operational efficiency. On the other hand Metaverse will help firms to build solid foundation for compliance. Briefly, audit resilience which means being able to provide evidence that your company follows compliant practices. Challenges include regulations that vary year to year or across geographies. When suppliers are key to your product development and release, you need them to comply as well. Building disciplined processes with audit awareness from the beginning will ensure you have the practices, data, and people to ensure success in audit (Arena, 2022).
- **Financial statements preparation**: Financial statements can be time-consuming and stressful to deal with. There is a good chance one could make a mistake. Augmented reality accounting can improve overall productivity while also securing the entire process. The procedure entails managing a large amount of data, evaluating it, and entering it into a

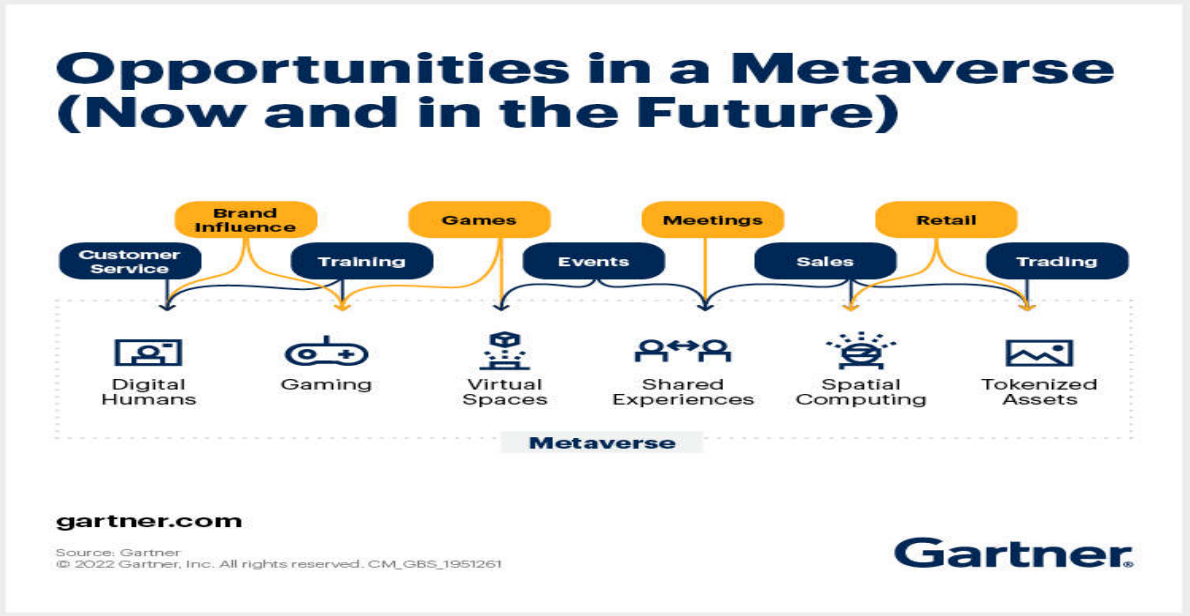
computer to generate statements. but, However, 3D formats, Augmented Reality can successfully solve data visualization by instructing the machine to project information on the screen (Chukwuani, 2022). Financial statements that are Free of errors and other reports can take a long time and be tedious to compile. Accounting using augmented reality can increase total productivity while also guaranteeing the procedure (Egiyi, 2022).

- **Metaverse opportunities**: Eventually, metaverse will provide persistent, decentralized, collaborative and interoperable opportunities and business models that will enable organizations to extend digital business, but metaverse opportunities are already emerging- for enterprises as well as individuals for examples (Gartner, 2022):

  * *J.P. Morgan has become the first bank to establish a presence in the metaverse, predicting a market opportunity of $1 trillion and eyeing virtual real estate* (Birch, 2022).

  * *Automobile dealerships could keep limited stock on hand of particular vehicles and use spatial computing, specifically the AR cloud, to seemingly change interior and exterior attributes digitally in real time to showcase more options* (Adimatyam, 2022).

**Figure (7): Opportunities in Metaverse**

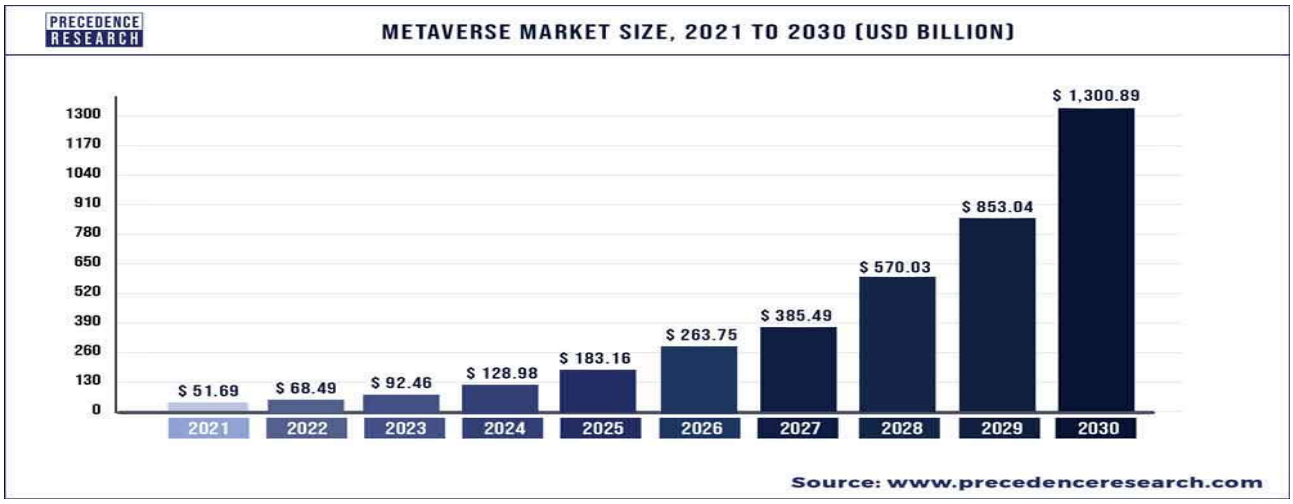



**Source**: (Gartner, 2022)

## 5.2 Implementation of Metaverse in Accounting:

The Global Metaverse Market Size Was Valued at USD 30009.34 Million in 2021 and is Expected to Expand at a CAGR of 46.25% during the Forecast Period, Reaching USD 293711.38 Million By 2027. The Metaverse Market Size is Segmented By Applications (Retail, Manufacturing, Media and Entertainment, Education, Aerospace and Defense, Other), By Types (Hardware, Software), and Regions. The market research includes historical and forecast market data, demand, price trends, and company shares of the leading Metaverse by geography Product Overview and Scope, Market Sales, Industrial Chain Analysis and Demand Analysis (Market Watch, 2023).

**Figure (8): Metaverse market size**




**Source**: (Precedence Research, 2021)

Accounting practices can be implemented within the integration with VR and AR platforms is notably driving the metaverse market in finance growth. Banks are considering strategies to expand their presence in the metaverse and offer better services to consumers who will be spending more time there, in addition to offering payment platforms. For example, using VR glasses, customers will be able to handle all their banking and financial activities from anywhere and in a far more immersive way than that possible on a phone app.

Implementing accounting procedures in the meta-environment takes place remotely and without direct contact with the outsourcer. Initially, signing a smart contract with a virtual outsourcer is necessary to provide accounting services, after the electronic contractual relationship is established, the IT company provides access to the information system of economic activity, and the outsourcer ensures reliable and timely accounting with the necessary confidentiality. Every facet of the electronic transaction is automatically recorded by specialized accounting software. All credential processing

operations could be delegated to a virtual outsourcer. In due time, the generalized arrays of reporting electronic information are sent to the controlling institutions and management of the IT enterprise (Zadorozhnyi, et al., 2022).

Scientific research on identifying specific resources that arise in Metaverse, which are the objects of accounting and auditing, has become widespread since 2022. In particular (Hughes, 2022), predicts business development prospects in the Metaverse, which involves the implementation of VR and related intangible objects in the social and economic processes. (Taylor and Soneji, 2022) defined that the Metaverse development marks the actualization of the new science – bioinformatics, an important element of which is the formation of virtual information business environments. In the other side, The metaverse also creates unique conditions for monitoring marketing expectations and preferences compared to traditional social networks. Promising opportunities for product promotion (works, services) as metaverse members together with information behavior tracked by conservative Internet technologies, are carriers of visual and anthropogenic characteristics, gastronomic and cultural preferences, clothing aesthetics, and architectural or interior design (Hollensen, Kotler and Opresnik, 2022).

As a result, a conclusion was formed on the expediency of transforming the reporting structure of meta-environment enterprises in terms of increasing the share of intangible assets and the potential absence of any tangible assets in terms of the full transfer of financial and economic activities in a virtual environment (Zadorozhnyi, et al., 2022). The order of structuring the reporting of the enterprises of the metaverse needs further research.

## 5.3 Limitation of Using Metaverse in Accounting:

One of the most feared consequences of augmented reality is the loss of privacy. Because AR technologies can observe what a user is doing, the user's privacy is jeopardized. AR collects a lot of data about who the user is and what they're doing - much more than social media networks or other forms of technology, for example. The potential loss of privacy if hackers get access to a device is enormous. Hackers can use advertising to inject malicious content into AR applications. Unsuspecting users may click on advertising that directs them to hostage websites or malware-infected AR servers with shaky images, putting AR security at risk (Chukwuani, 2022).

Hacking could be a cyber concern for merchants who utilize Metaverse practices within augmented reality and virtual reality shopping apps. Many

clients' card information and mobile payment options are already stored in their user profiles, because mobile payment is such a flawless process, hackers may be able to acquire access to them and deplete accounts invisibly.

Top accountants in large organizations universally concur that the demand for accountants will not go away rapidly (Agnew, 2016), and the essential abilities on the other hand, are likely to be altered, and there may be a future demand for fewer entry level accountants (Kokina and Davenport, 2017). To guarantee that graduates have workplace-relevant knowledge and can stay up with worldwide certification requirements and professional qualifications, such developments in accounting education must be addressed through content and delivery (Al-Htaybat, Von Alberti- Alhtaybat and Alhatabat, 2018). Other problems may be examined further soon as a result of customer activity in such virtual reality and augmented reality settings. They include (Egiyi, 2022):

- ***Cost***: The technology is relatively inexpensive. Users may purchase low-cost virtual reality systems and headsets. However, in terms of the content problem, it will still need a significant amount of resources to develop material for corporate use.
- ***User Experience***: When utilizing virtual reality technologies, some users people experience dizziness, nausea, and even seizures. Digital Motion Sickness is a condition in which you can see movement but cannot feel it. It will take some time for the technology to truly take off. The developers must streamline the involved processes while also imparting userfriendliness and improving user experience.
- ***Cybersecurity:*** Virtual reality, like any other computer-based system, is vulnerable to cyber-attacks. The data on which virtual reality's visualization is built can be modified and destroyed.

Probably the greatest issue with the metaverse is that its development is being entirely led by commercial interests. There is very little public debate about how our future digital environment should look, who should design it, what its purpose should be and what standards should govern its operation. In addition to the human rights risks flagged earlier, there will be other potential risks to society arising from a metaverse. The metaverse threatens to increase digital exclusion, if people around the world have unequal access to the technologies essential to metaverse participation (Moynihan, Buchser and Wallace, 2022).

# VI. Conclusion:

The potential of Metaverse describing by virtual reality and augmented reality technologies in supporting the dynamics of global accounting practices and tackling the limitations and problems provided by unforeseen events and crises in accounting profession were explored in this study. Technically, Metaverse is a collective virtual shared space, created by the convergence of virtually enhanced physical and digital reality. Metaverse is not a new concept, and in the other side practicing accounting profession with virtual world is still in its infancy. We hope educators, content creators, developers, and researchers will continue to work together to create high-quality Metaverse experiences and relations with accounting field. The study concluded for the following results:

- Research and practice suggest that automation of a manual process should be undertaken incrementally.
- Integration of manually directed automation tools to assist the work task.
- Human monitoring and analysis of the resulting big data by using Metaverse technique are important tools to the work tasks.
- Some new skills will be in demand in the near future by using Metaverse technique in accounting such as technical, digital and creative skills.
- There is a positive effect on reporting accuracy, anomalous detection and data analysis in respect to accounting profession.
- Using Metaverse in accounting profession lead to many limitations like the loss of privacy, user experience and cybersecurity.
- We recommend researchers in this field to conduct more theoretical and practical research on the practice of accounting in the virtual world.

**Based on the results, the study reached the following recommendations:**

- Developing the automation tools used in companies to match the development in the world of metaverse and digitization.
- Create the professional accounting environment using computer hardware and software, as users will also need to wear devices such as helmets or goggles to interact with the environment.
- Enhancing new skills in the virtual world, such as emotional intelligence and digital skills, for accountants.
- We advise professional accounting organizations to issue new standards related to digitization, artificial intelligence, and the corresponding modern technologies, such as Metaverse.

- Avoid using Metaverse within commercial interests only and always include the importance of the third party to keep the future digital environment away from potential risks.
- We recommend researchers in this field to conduct more theoretical and practical research on the practice of accounting in the virtual world.

# VII. Bibliography List


- Adimatyam, K. (2022). *The Blockchain Forum: Opportunity in Metaverse via Gartner.* Linked in.
- Agnew, H. (2016). Auditing: Pitch battle. *Retrieved from: www.ft.com/content/268637f6.15c8-11e6-9d98-00386a18e39d*.
- Al-Gnbri, M. K. (2022). Accounting and Auditing in the Metaverse Worldfrom a Virtual Reality Perspective: A FutureResearch. *Journal of Metaverse,* 02(01), pp. 29-41.
- Al-Htaybat, K., Von Alberti- Alhtaybat, L., & Alhatabat, Z. (2018). Educating digital natives for the future: Accounting educators' evaluation of the accounting curriculum. *Accounting Education*, pp. 1-25.
- Appelbaum, D., & Nehmer, R. (2017). The coming disruption of drones, robots, and bots: how will it affect CPAs and accounting practivce? *CPA Journal,* 06(01), pp. 40-45.
- Arena. (2022). *Audit Resilience in a Virtual World: A Practical Guide.* PTC, Arena.
- Birch, K. (2022). *J P Morgan is first leading bank to launch in the metaverse.* FinTech.
- Carmigniani, J. F. (2011). Augmented reality technologies, systems and application.s . *Multimedia Tools and Applications*, pp. 341-377.
- Chukwuani, V. (2022). Virtual Reality and Augmented Reality: Its Impact in the Field of Accounting. *Contemporary Journal of Management*, 04(02) pp. 35-42.
- Corrigan, F. (2020). *10 Best FPV Drone Googles for a Terrefic Flying Experience*. Retrieved March, 2023, from DRONEZON: www.dronezon.com
- Cryptocurrency. (2022). *https://crowdfunding-platforms.com/*. Retrieved January 20, 2023, from https://crowdfunding-platforms.com/metaverse-components-what-are-the-elements-of-the-metaverse
- Deloitte. (2022). *The metaverse Overview: Vision, Technology and Tactics.* Deloitte.
- Dionisio, J., Burns, W., & Gillbert, R. (2013). 3D Virtual worlds and the metaverse. *ACM Comput. Surv.*, pp. 1-38.
- Dongre, N., Pandey, A., & Gupta, O. P. (2021). Artificial Interllegence in Accounting: Opportunities & Challenges. *Journal of Xi'an University of Architecture & Technology,* 05(01), pp. 1-12.
- *Dreamstime*. (2023). Retrieved 1 23, 2023, from https://www.dreamstime.com/photos-images/metaverse-devices.html
- Egiyi, M. A. (2022). The Benefits of Augmented and Virtual Reality in the Accounting Field. *Contemporary Journal of Management,* 01(01), pp. 15-21.
- Ezeribe, C. (2019). Artificfial Intelligence and the Accountancy Profession: the threats of Obsolescence. *The institute of Chartered Accountants of Gigeria (ICAN)*, pp. 1-54.
- Financial Reporting Council. (2021, February). Virtual and Augmented Reality in Corporate Reporting. *Digital Future of Corporate Reporting*, pp. 1-28.
- Gartner. (2022, 1 10). *Gartner.com*. Retrieved 2022

- Gartner. (2022, January 10). *Gartner.com*. Retrieved 2022, from https://www.gartner.com/en/articles/what-is-a-metaverse
- Hollensen, S., Kotler, P., & Opresnik, M. (2022). Metaverse-the new marketing universe. *Journal of Business Strategy*.
- Huansheng, N., Hang, W., Yujia, L., Wenxi, W., Sahraoui, D., Fadi, F., . . . Daneshmand, M. (2021). A Survey on Metaverse: the state of the art, technologies, applications and challenges. *Cornell University: Computers and Society*, pp. 1-34.
- Hughes, I. (2022). The Metaverse: Is it the future? *ITNOW,* 64(01), pp. 22-23.
- Kokina, J., & Davenport, T. H. (2017). The emergence of artificial intelligence: how automation is changing auditing. *Journal of Emerging Technologies in Accounting, 1*, pp. 115-122.
- Kwarbai, J. D., & Omojoye, E. O. (2021). Artificial Intelligence and Accounting Profession. *Babcock Journal of Accounting and Finance,* 01(01), pp. 1-12.
- Lee, L., Braud, T., Zhou, P., Wang, L., Xu, D., Lin, Z., . . . Hui, P. (2021). All One Needs to Know about Metaverse: A Complete Survey on Technological Singularity, Virtual Ecosystem, and Research Agenda. *Journal of LATEX Class Files,* 08(01), pp. 1-66.
- Mansoor, A. (2022). *Technologies in Industry 4.0.* Cryptostars.
- Market Watch. (2023). *Metaverse Market Size 2023| Share, Global Growth, Analysis by Product Types, Application, Trends and Forecast to 2027.* www.businessgrowthreports.com.
- Mattison, O. (2023). *7 Must-Have Metaverse Devices you need to prepare in 2023.* Filmora.
- Minanurohman, A., & Fitriani, N. (2023, January). Metaverse in Accounting Viewed from the Perspective of Plato's Reality Philosophy. *Jurnal Akuntansi,* 14(01), pp. 25-37.
- Moynihan, H., Buchser, M., & Wallace, J. (2022). *What is the metaverse?* chathamhouse.org/2022.
- Mystakidis, S. (2022). Entry Metaverse. *Encyclopedia, MDPI*, pp. 486-497.
- Mystakidis, S., Fragkaki, M., & Filippousis, G. (2021). Ready Teacher One: Virtual and Augmented Reality Online Professional Development for K-12 School Teachers. *Computers,* 10(1), p. 134.
- Park, S.-M., & Kim, Y.-G. (2022). A Metaverse: Taxonomy, Components, Applications, and Open Challenges. *IEEE Access*, pp. 4209-4251.
- Pimentel, D., Fauville, G., Frazier, K., Mcgivney, E., Rosas, S., & Woolsey, E. (2022). *An introduction to learning in the Metaverse.* Meridian treehouse.
- Precedence Research. (2021). *ICT- Metaverse Market.* www.precedenceresearch.com.
- SCRIBD. (2022). *Control Multiple Invoices.* SCRIBD.
- Sheldon, R. (2022). *Virtual Reality.* Tech Accelerator, Whats. com.
- Stephenson, N. (2003). Snow Crash: A Novel. *Random House Publishing Group: New York, USA*.
- Taylor, S., & Soneji, S. (2022). Bioinformatics and the Metaverse: Are we ready? *Frontiers in Bioinformatics*.
- Tuah, B., Nopita, G., Chintia, R., Chintia, M., & Wilson, Y. V. (2022, Universitas Palangka Raya). DPPL Object recognition application for early childhood using augmented reality technology. *DESAIN PERANCANGAN PERANGKAT LUNAK*, pp. 1-13.
- Zadorozhnyi, Z. M., Muravskyi, V., Humenna-Derij, M., & Zarudan, N. (2022). Innovative accounting and audit of the Metaverse resources. *Marketing and Management of Innovations*, pp. 10-19.