

The Prospect, Legal, and Socio-economic Implication of Metaverse Operation in Nigeria

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ABSTRACT

The metaverse, a digital realm blending virtual environments with reality, holds immense potential across sectors. In Nigeria, understanding its implications necessitates exploration from various angles. Firstly, the legal landscape demands scrutiny, with existing regulations evaluated for their applicability and efficacy. Secondly, socio-economic considerations assume paramount importance, given the metaverse's potential to reshape societal norms and economic activities. Concerning this, the study employs a hybrid research methodology that focuses on the potentials of metaverse's emergence, legal framework, and socio-economic effects within Nigeria. 308 questionnaires were distributed to respondents residing in Nigeria. The collected data underwent descriptive and analytical analysis. The findings underscore that permitting the operation of the metaverse in Nigeria holds promise for enhancing the nation's economy and facilitating digital interactions. However, the study also reveals potential pitfalls, notably that the existing legal framework may prove insufficient in addressing the unique challenges posed by the metaverse. Moreover, the metaverse's transformative impact on the Nigerian economy may carry adverse consequences. Consequently, the study concludes by recommending the imperative need for a novel legal framework tailored to address the distinctive intricacies presented by the metaverse for its effective operation in Nigeria.

Keywords: Digital, Legal; Metaverse, Nigeria, Socio-economic, Technology.

1. INTRODUCTION

The COVID-19 pandemic, which swept across the globe, had profound consequences on the way we live and work (Paul Aidonojie et al., 2022). It forced a sudden and widespread shift towards remote work and digital solutions to maintain business continuity (Paul Aidonojie, 2023). This unprecedented situation ignited a surge in research and development efforts, with scientific researchers striving to discover digital innovations that would enable businesses and individuals to operate smoothly from their homes or other remote locations. In this context, the metaverse has emerged as one of the most promising digital technology innovations (Fuady et al., 2023).

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The term "metaverse" refers to a vast, collective virtual shared space that arises from the convergence of two key elements: augmented physical reality and digitally generated environments (Cheong Ben Chester, 2022). To put it simply, the metaverse is a virtual reality realm that encompasses a wide range of interconnected digital platforms, environments, and experiences (Denisov Edward, 2019). Within this expansive digital landscape, users have the remarkable ability to interact, communicate, and engage with each other and digital objects in real-time (Dwivedi Yogesh 2022). The development of the metaverse is a multifaceted process that involves the integration of various cutting-edge technologies and concepts (Fedorchenko Sergey, 2020). These include: Virtual Reality (VR) technology, which plays a pivotal role in creating immersive digital environments within the metaverse. It enables users to step into a digitally rendered world that can mimic real-life experiences. The Augmented Reality (AR), which complements VR by blending digital elements with the physical world, enhancing the sense of immersion and interactivity. This technology enriches the metaverse experience by overlaying digital information onto the real environment (Glushchenko Idar, 2021). Also, the Artificial Intelligence (AI), which contributes intelligence and automation to the metaverse, making it possible for virtual environments to adapt and respond to user actions and preferences (Gurov Oleg, 2022). AI-driven chatbots, for instance, can facilitate natural conversations within the metaverse. The Blockchain technology, it brings security and transparency to transactions and ownership of digital assets within the metaverse. It enables the creation and management of unique digital items, known as Non-Fungible Tokens (NFTs), which can represent ownership of virtual land, artwork, or other digital assets. Furthermore, the Interconnectedness, which is a fundamental aspect of the metaverse is its interconnected nature (Koos Stefan, 2022). Users can seamlessly navigate between different digital platforms, worlds, and experiences, fostering a sense of continuity in their virtual journeys (Zhihan Lyu, 2022).

In this regard, it suffices to state that this multidimensional digital space, which seamlessly integrates virtual and physical environments, holds the promise of reshaping how we interact, communicate, and conduct various aspects of our lives (Minbaleev Avare, 2022). As the metaverse gains momentum globally, its potential applications span diverse sectors, ranging from entertainment and education to commerce and healthcare (Mochalov Artur, 2021). Understanding the metaverse's multifaceted impact requires an examination of not only its vast opportunities but also the complex challenges it presents.

Nigeria, a nation embracing technological advancements, stands at the cusp of this metaverse revolution. In this regard it suffices to state that the operation of the metaverse in



Nigeria will offer a canvas to amplify creativity, bridge divides, and fuel economic growth. However, in navigating this uncharted territory, Nigeria faces the imperative of striking a balance between fostering innovation and addressing potential pitfalls. This is concerning the fact that, the operation of metaverse in Nigeria demands a thoughtful approach to legal and socio-economic regulatory frameworks that can adapt to its distinctive characteristics. In this regard, a critical lens needs to be cast upon the existing legal framework in Nigeria, in evaluating its adequacy to address the unique complexities inherent to the metaverse.

It is concerning the above that this study tends to examine the prospects, legal considerations, and socio-economic consequences of the metaverse's operation within the Nigerian context.

2. RESEARCH METHOD

Regarding the study's methodology, a hybrid research approach combining doctrinal and non-doctrinal methods was employed (Mutawalli et al., 2023). The doctrinal aspect aimed to analyze and theorize the potential legal and socio-economic implications of operating the metaverse in Nigeria. This involved the examination of primary and secondary legal and non-legal sources, including laws, judicial precedents, textbooks, journals, and online articles (Mutawalli & Paidi, 2023).

In addition, the non-doctrinal method involved the distribution of questionnaires to respondents residing in Nigeria. Its purpose was to assess the respondents' awareness of the metaverse trend and to determine their perceptions of the prospects, legal issues, and socio-economic implications associated with the adoption of the metaverse in the Nigerian economy. This approach also sought to propose potential solutions for addressing any challenges that may arise from implementing the metaverse in the Nigerian economy.

3. RESULTS AND DISCUSSION

The Development and Conceptual Nature of the Metaverse

The term "metaverse" first surfaced in Neal Stephenson's 1992 science fiction novel, "Snow Crash." Within the pages of this novel, Stephenson introduced a 3D virtual realm where people could exist in a unique manner (Frederick Mostert, 2022). Hiro, the central character, accessed this metaverse through a personal terminal that projected 3D virtual reality images onto his goggles. In this virtual universe, Hiro's avatar interacted with avatars of other individuals, and "Snow Crash" referred to a data file Hiro's avatar encountered within this digital world (Levan



Nanobashvili, 2022). Although initially a work of fiction, the metaverse concept gained real-world prominence through digital gaming, notably with the release of Pokémon Go in 2016, which incorporated augmented reality into mobile gaming and became a global sensation (Nedzvetskaya Nesar, 2022).

Today, the metaverse concept garners significant attention as technological advancements continue to blur the boundaries between the physical and digital realms. It is pertinent to emphasize that the contemporary interpretation of the metaverse envisions an interconnected network of virtual environments, platforms, and experiences, transcending traditional online interactions (Nemitz Paul, 2018). Its development necessitates the convergence of technologies from various domains, encompassing virtual reality (VR), augmented reality (AR), artificial intelligence (AI), blockchain, and more. Notably, the metaverse's expansion extends beyond gaming into a myriad of other industries (Rezaev Andrey, 2020).

However, it's essential to acknowledge the distinction between the metaverse and the internet. The internet primarily serves as a network of websites initially designed for information dissemination, which has evolved to encompass activities such as shopping, entertainment, and communication. The advent of social networks transformed the internet into a medium for personal connections and sharing experiences (Rozhkova Mograbyan, 2020). In contrast, the metaverse represents a virtual world where users essentially "live" their digital lives. Activities and data within the metaverse may have no tangible connection to the physical world. Within this virtual space, individuals can engage in a multitude of activities mirroring real-life scenarios, including commerce, attending events, visiting virtual museums, constructing or renovating virtual properties, and more (Sparkes Matthew, 2021). A fundamental distinction lies in the fact that the internet extends from the real world, while the metaverse exists as a parallel virtual space.

Considering the economic potential of the metaverse, it has become a focal point for consumer brands. Major multinational corporations, such as JP Morgan, Nike, Adidas, and McDonald's, have expressed a keen interest in capitalizing on the metaverse's marketing opportunities (Pavel Stepanov, 2021). Nike, for instance, has acquired the virtual shoe company RTFKT Studios, with plans to create and sell virtual footwear within the metaverse. Adidas, too, has entered the metaverse by collaborating with a Non-Fungible Tokens (NFTs) project, making significant investments in NFTs, and acquiring substantial virtual land within the metaverse to host virtual events and parties. Additionally, various startups like Flox and Virtway Events are actively exploring opportunities by offering platforms that enable businesses to host immersive virtual conferences and events (Zaslavskii Darl, 2021).



Indeed, the operation of the metaverse holds significant prospects for enhancing the economy and businesses, especially considering the growing interest and participation of multinational companies. It is pertinent to highlight some of the key prospects associated with the metaverse in relation to the Nigerian economy.

Prospect of Metaverse to the Nigeria Economy

The prospect of the metaverse to the Nigerian economy is nothing short of transformative. As Nigeria, like the rest of the world, grapples with the challenges of its economy and seeks to harness the power of digital innovation, the metaverse emerges as a beacon of opportunity (Cheong Ben Chester, 2022). This interconnected virtual reality space, where individuals can engage, create, and transact in a digital realm, holds immense potential for economic growth and innovation. Furthermore, the metaverse has the potential to bridge the gap between the physical and digital worlds, providing a unique avenue for businesses to adapt and thrive in an increasingly digital landscape (Timshin Yu, 2022). In this it is pertinent to identify some of the prospect the metaverse that could advance and enhance Nigerian economy as follows;

1. As the metaverse evolves, virtual economies are emerging where users can buy, sell, and trade digital assets. Furthermore, with the advancement of virtual reality technologies, businesses can offer immersive shopping experiences within the metaverse, allowing customers to browse and purchase products in a virtual storefront. Thus boosting local and international trade.
2. The metaverse offers a platform for content creators and artists to reach a global audience. Musicians, artists, and filmmakers can host virtual concerts, galleries, and screenings, expanding their reach and monetization opportunities. Furthermore, Virtual concerts, theater performances, and interactive storytelling experiences within the metaverse could offer new forms of entertainment and engagement, attracting global audiences and promoting Nigerian culture.
3. The metaverse could revolutionize education by offering immersive and interactive virtual classrooms, training simulations, and skill development programs accessible to a broader population, including remote and underserved areas.
4. Virtual tourism experiences could allow people to explore Nigerian landmarks, historical sites, and cultural heritage, promoting tourism and preserving cultural knowledge.
5. Virtual healthcare solutions within the metaverse could provide access to medical consultations, health information, and mental health support to individuals who lack easy



access to traditional healthcare services. This could be very relevant to the Nigerian citizens that reside in a remote place that may not be able to access good health care.

6. The metaverse offers a compelling platform for hosting virtual conferences, meetings, and collaborative workspaces. Businesses can reduce travel costs, foster global collaboration, and enhance productivity through immersive virtual environments.
7. The metaverse generates vast amounts of data on user behavior and interactions. Businesses can use this data to gain insights into customer preferences, trends, and behaviors, enabling more targeted marketing and product development. In Nigeria where there is large market determine by consumer reaction, this can be a very useful tool consumer preference and behavior towards some certain product.

Concerning the above, it suffices to state that the metaverse represents a transformative space for businesses to explore and capitalize on numerous prospects (Weyl Glen et al., 2022). Its potential to reshape industries, enhance customer engagement, and generate new revenue streams makes it a compelling area for businesses to invest in and adapt to (Oleksandr Zozulia et al., 2021). As multinational companies increasingly recognize these opportunities, the metaverse is poised to become a significant driver of economic growth and innovation in the coming years.

However, in light of the aforementioned, it is pertinent to consider whether the existing legal framework governing technology use in Nigeria is robust enough to effectively regulate the integration and operation of the metaverse by large businesses and industries for their enhancement. This question warrants a compelling response.

Legal Framework concerning the Regulation of Metaverse operation in Nigeria

In Nigeria, there is an existing legal framework for the regulation of digital technology. This framework takes a comprehensive approach aimed at promoting innovation and safeguarding the nation from potential technological threats. However, with the Metaverse emerging as a significant innovation, several pertinent challenges have arisen. These include the need to protect consumer interests, ensure ethical and responsible behavior within the Metaverse ecosystem, address issues related to data privacy, digital asset ownership, and intellectual property rights. Additionally, there is a pressing need to establish mechanisms for licensing Metaverse operators and enforcing compliance with established guidelines to mitigate potential risks and protect the digital experiences of Nigerian citizens. In light of these challenges, it is essential to evaluate the various legal frameworks in Nigeria to determine if they adequately address the regulation of Metaverse operations in the Nigeria.



It's important to note that Nigeria's constitution doesn't contain specific provisions addressing Metaverse operations, mainly because the concept of the Metaverse is still relatively new and evolving. In Nigeria, although the constitution doesn't explicitly address digital technology regulation, Section 4 of the Nigerian constitution grants the legislature the authority to enact laws ensuring peace and good governance. In line with this authority, Nigeria has introduced several laws and regulatory frameworks related to digital technology. It's pertinent to explore some of these laws in the context of Metaverse operations in Nigeria.

One such law is the National Information Technology Development Agency Act CAP. N156 Laws of the Federation of Nigeria, 2004, also known as NITDA. This legislation, enacted by the National Assembly, established the National Information Technology Development Agency, which is responsible for overseeing, evaluating, coordinating, and regulating Information Technology practices in Nigeria. Section 6 of the NITDA Act empowers the agency to develop guidelines for electronic governance and monitor electronic data interchange across various sectors, which did not contemplate and extend to activities on the emerging Metaverse. In 2019, NITDA issued the Nigerian Data Protection Regulations, aiming to protect the data privacy rights of individuals and promote secure data handling. While these laws address aspects of digital technology, a closer examination reveals that neither of them explicitly addresses the specific challenges related to the Metaverse, particularly regarding data privacy within Metaverse operations.

In this context, it's worth noting that while the NITDA and Nigerian Data Protection Regulations do establish mechanisms for licensing Metaverse operators and ensuring compliance with established guidelines, a thorough interpretation of Section 6 of the NITDA Act suggests that data protection within Metaverse operations could fall under the purview of this Act through the agency it created. However, there's still a need for more comprehensive regulations that directly address the unique issues and challenges presented by the Metaverse, especially in terms of data privacy and security.

Regarding the operation and registration of companies operating within the Metaverse, it is pertinent to note that Nigeria follows a system of free enterprise and business organization. In this context, individuals or groups of individuals have the freedom to establish various types of business organizations and conduct their operations on any platform, including the Metaverse. However, it is essential to emphasize that this right to establish and operate a business within any platform is subject to necessary regulations and controls in the interest of national security and as specified by the law. To this end, businesses intending to participate in the Nigerian economy and



operate within the Metaverse must adhere to the provisions of the Company and Allied Matters Act (CAMA) 2020. CAMA 2020 specifically addresses the incorporation and regulation of companies in Nigeria. Section 21 of CAMA delineates various types of business organizations under Part A, including Limited Liability Companies, Companies Limited by Guarantee, and Unlimited Liability Companies. These companies may choose to be private or public, depending on their activities. For instance, a private company, as defined in Section 22 of CAMA, must specify its status as private in its memorandum and restrict the transfer of its shares. Additionally, its total membership should not exceed fifty, excluding individuals genuinely employed by the company. On the other hand, a public company, as per Section 24 of CAMA, is any company that is not classified as private and is designated as such in its memorandum. However, suffices to state that by section 21, 22, 26 and 27 of CAMA stipulate the procedure for incorporating a company in Nigeria.

However, it's worth noting that while CAMA provides detailed guidelines for incorporating and regulating companies, it does not specifically address the unique challenges presented by businesses operating within the Metaverse. Some of these challenges include;

- i. The Metaverse operates globally, and businesses within it can engage in cross-border transactions seamlessly. This raises questions about international tax regulations, trade agreements, and jurisdictional disputes, which CAMA does not delve into in detail.
- ii. The Metaverse often involves the use of cryptocurrencies and digital payment systems, raising issues related to financial regulations and taxation that may not be fully addressed by CAMA.

The above, raises legal challenges concerning the regulation of most businesses in the Metaverse. Hence, there is a pressing need for a comprehensive review of CAMA to incorporate regulations specifically tailored to govern business activities conducted within the evolving Metaverse landscape.

However, the only that is said to relate to regulation of metaverse operation is the Nigeria Cybercrime Act. This is concerning the fact that the Cybercrime Act was introduced in Nigeria to establish a comprehensive legal and regulatory framework aimed at prohibiting, preventing, detecting, prosecuting, and penalizing cybercrimes. This legislation also places emphasis on safeguarding critical national information and bolstering cyber security to protect computer systems and networks from malicious actors (Mutawalli et al., 2023). However, it's important to note that the Cybercrime Act of Nigeria is primarily designed to address cybercrimes and related issues, rather than serving as the primary legislative framework for regulating and preventing



personal data processing and circumvention. Data protection in the virtual environment typically involves three key entities:

1. **Controllers:** These are the owners of web and service providers responsible for processing data. They determine how and why data is processed and are obligated to take measures to safeguard the personal data of individuals.
2. **Processors:** Similar to controllers, processors handle data on behalf of controllers and are also subject to specific obligations to ensure the protection of personal data.
3. **Data Subjects:** These are individuals whose personal data is being processed, and they have certain rights and expectations regarding the handling of their data.

In the context of the Metaverse, entities like Nike and Adidas, which own virtual spaces, may serve as both controllers and processors of the web services used in their business activities. Additionally, Section 37 of the Cybercrime Act mandates that organizations and business institutions engaged in electronic or digital transactions with customers must request specific information, including names, addresses, and other relevant details.

However, a closer examination of the Cybercrime Act reveals that it primarily focuses on addressing cybercrimes and lacks comprehensive provisions for regulating digital transactions or digital business operations in the metaverse. The preamble of the Cybercrime Act makes it clear that its primary purpose is to establish a robust legal framework for preventing, prohibiting, detecting, prosecuting, and punishing cybercrimes within Nigeria. In essence, the issues of data privacy and security, which is a major challenge in operating the metaverse, is left unaddressed by the Cybercrime Act.

Concerning the above, it suffices to state that while Nigeria has legal frameworks in place to regulate digital technology and cyber security, these frameworks do not adequately address the unique challenges posed by the Metaverse. A review of existing legislation is essential to incorporate Metaverse-specific regulations and ensure comprehensive protection for both businesses and consumers operating within the Metaverse in Nigeria.

Legal and Socio-economic Challenges concerning the operation of Metaverse in Nigeria

Navigating the legal and socio-economic challenges surrounding the operation of the metaverse in Nigeria is an endeavor that demands careful consideration and comprehensive analysis. The metaverse, with its complex blend of virtual reality, augmented reality, and digital interactions, represents a novel frontier that is not only rife with transformative potential but also fraught with potential legal and socio-economic hurdles. In this regard, this study further seeks to



shed light and identify the legal and socio-economic challenges that Nigeria faces in embracing and regulating the metaverse as follows;

1. The absence of specific regulations tailored to the metaverse could lead to uncertainty and legal ambiguity regarding issues such as user rights, virtual property ownership, and dispute resolution.
2. Determining which legal jurisdiction governs metaverse interactions, especially in cross-border scenarios, can be complex and may result in conflicts or regulatory gaps.
3. Protecting intellectual property rights within the metaverse, including copyrights, trademarks, and patents, can be intricate due to the digital nature of creations and the potential for unauthorized replication.
4. Ensuring user privacy and data security within the metaverse becomes challenging, with concerns about collecting personal data, potential breaches, and the need for consent mechanisms.
5. Creating and enforcing contracts within the metaverse raises questions about their legal validity, given the unique environment and digital interactions involved.
6. As the metaverse introduces new ways of working, consuming, and interacting, certain industries and traditional employment patterns might be disrupted, requiring adjustments and retraining.
7. Excessive engagement with the metaverse could contribute to issues like digital addiction and mental health challenges, necessitating awareness campaigns and support services.
8. The metaverse's influence on cultural norms, social interactions, and behavior patterns might lead to unforeseen challenges or conflicts as society adapts to new ways of engagement.
9. Ethical considerations around content moderation, misinformation, hate speech, and digital ethics need to be addressed to ensure responsible metaverse engagement.

Addressing these legal and socio-economic challenges will be essential for the metaverse's successful and equitable operation in Nigeria, as it strives to maximize benefits while minimizing risks for all stakeholders.

Presentation and Analysis of Data

In this section, we present and analyze the data collected from the questionnaires distributed to the study's participants. The data extraction from the respondents' questionnaire responses is outlined as follows:



Sample Size and Sampling Techniques

To ensure a comprehensive and representative response from individuals residing in Nigeria, the study focused on a sample size of 308 respondents across various geopolitical zones within the country. The selection of respondents was accomplished through a simple random sampling method. The choice of this method was made due to its preference for reaching a diverse audience (Idahosa Milicent Ekata, 2023; Aidonojie Paul, 2023; Aidonojie Paul and Edetalehn Idemudia, 2023; Aidonojie Paul et al.). Furthermore, simple random sampling offers several advantages (Majekodunmi Afolabi, 2022, Aidonojie Paul, 2022; Aidonojie Paul et al. 2022; Aidonojie Paul, 2022), including:

1. This method is well-suited for selecting respondents from diverse and heterogeneous populations.
2. The outcomes obtained through simple random sampling are often unbiased, fair, and impartial.
3. It is a straightforward and uncomplicated technique to implement.
4. Simple random sampling can be effectively employed in hybrid legal research methodologies (Oladele Olukayode, 2022; Aidonojie Paul et al., 2022; Aidonojie et al. 2021; Aidonojie Paul et al., 2022).

Data Analysis

The results obtained from the distributed questionnaires have been meticulously analyzed and are presented in both graphical and tabular formats for clarity and ease of interpretation.

Research Question One

Figure 1: respondent identifying the geo-political zone they reside in Nigeria

Which of the following Geopolitical Zones in Nigeria do you reside in?

308 responses

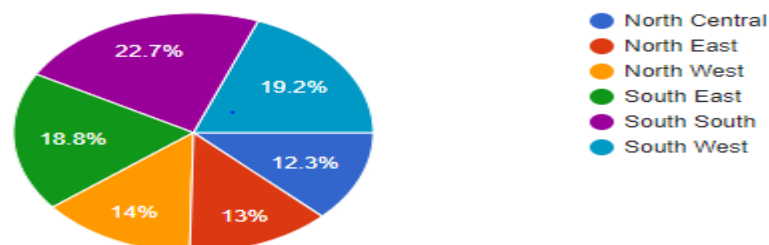


Table 1. Valid respondent identifying the geo-political zone they reside in Nigeria

S/N	Geopolitical Zones in Nigeria	Responses of Respondents	Percent
1	North Central	38	12.3%
2	North East	40	13%
3	North West	43	14%
4	South East	58	18.8%
5	South South	70	22.7%
6	South West	59	19.2%
	TOTAL	308	100%

Figure 1 and Table 1 are respondent valid identification of the geo-political zones in Nigeria they reside.

Research Question Two

Are you familiar with the concept of the metaverse?

307 responses

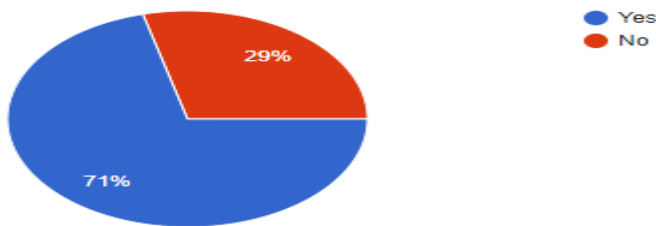


Figure 2: Respondents confirming if they are aware of the concept of metaverse

Table 2. Valid confirmation of if the respondent are aware of the trending metaverse

	Response	Percent
Valid Yes	218	71%
Valid No	89	29%
Total	307	100%

Figure 2 and Table 2 above are respondent valid confirmation of if they are familiar with trending metaverse.



Question Three

Which of the following serves as potential prospects for the operation of the metaverse in Nigeria? (You can select multiple option)

222 responses

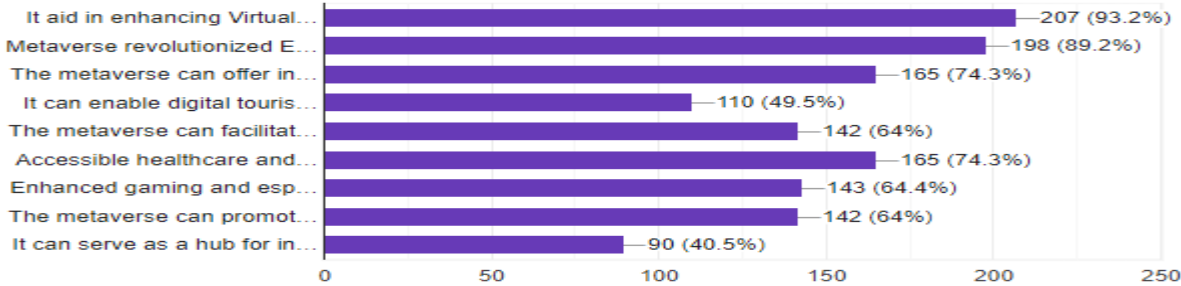


Figure 3: Possible prospect of metaverse to the Nigerian economya

Table 3. Valid Cluster of possible prospect of metaverse to the Nigerian economy

Prospect of metaverse in operating in Nigeria	Cluster of Response	Percentage
It aid in enhancing Virtual Commerce and Trade	207	93.2%
Metaverse revolutionized Education and Training	198	89.2%
The metaverse can offer innovative entertainment and media experiences.	165	74.3%
It can enable digital tourism and preserve cultural heritage.	110	49.5%
The metaverse can facilitate efficient collaboration and remote work.	142	64%
Accessible healthcare and telemedicine services can be provided within the metaverse.	165	74.3%
Enhanced gaming and esports experiences are possible in this digital realm.	143	64.4%
The metaverse can promote skills development and offer entrepreneurship opportunities.	142	64%
It can serve as a hub for innovation and research across various fields.	90	40.5%

Figure 3 and Table 3 are clusters of possible prospect of the metaverse towards the Nigerian economy.



Research Question Four

Do you think the development and operation of the metaverse could have legal and socio-economic implications in Nigeria?

221 responses

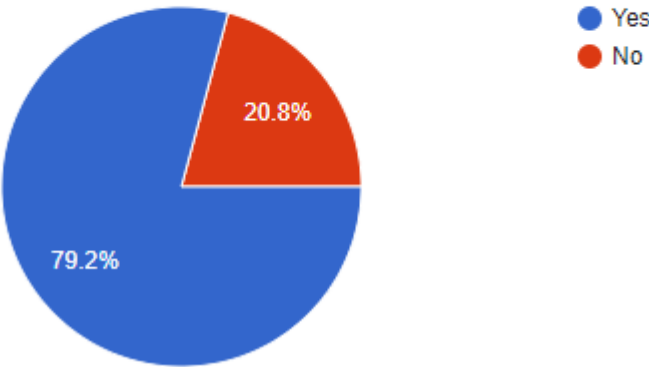


Figure 4. Respondents confirmation of the legal and socio-economy challenges of metaverse
Table 4. Valid respondents confirmation of legal and socio-economy challenges of metaverse operation in Nigeria

	Response	Percent
Valid Yes	175	79.2%
Valid No	46	20.8%
Total	221	100%

Figure 4 and Table 4 are valid confirmations by the respondents of the possible legal and socio-economic challenges the metaverse may pose if adopted in Nigeria.

Research Question Five

If yes, which legal and socio-economic aspects do you believe could be impacted by the metaverse? (You can select multiple options)

176 responses

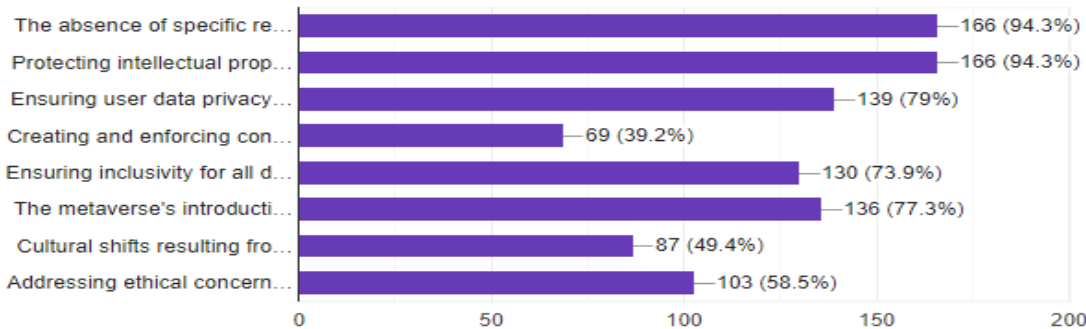


Figure 5: respondents identifying the legal and socio-economic challenges of the metaverse

Table 5. Valid cluster of identifying the legal and socio-economic challenges of the metaverse

Legal and socio-economic challenges of the metaverse	Cluster of Responses	Percentage
The absence of specific regulations tailored to the metaverse may lead to legal uncertainty.	166	94.3%
Protecting intellectual property rights within the digital metaverse environment is intricate.	166	94.3%
Ensuring user data privacy and security poses challenges, including consent mechanisms.	139	79%
Creating and enforcing contracts in the metaverse raises questions about their validity.	69	39.2%
Ensuring inclusivity for all demographics, including marginalized groups, is crucial.	130	73.9%
The metaverse's introduction could disrupt traditional industries and employment patterns.	136	77.3%
Cultural shifts resulting from the metaverse may lead to unforeseen challenges.	87	49.4%
Addressing ethical concerns, such as content moderation and misinformation could be challenging.	103	58.5%

Figure 5 and Table 5 are cluster responses by the respondents in identifying the possible legal and socio-economic challenges of permitting the operation of a metaverse in Nigeria.

Research Question Six

Which of the following legal and socio-economic solutions can address metaverse challenges in Nigeria? You can select more than one option

176 responses

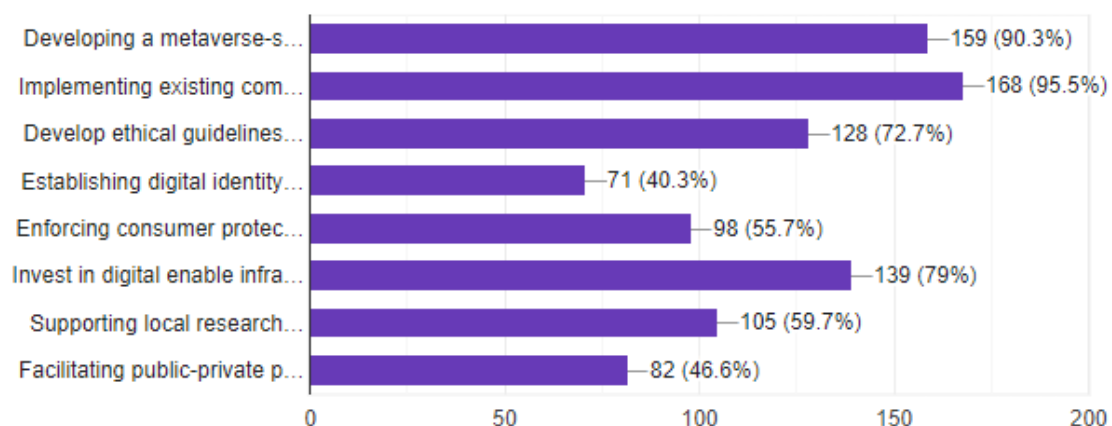


Figure 6. Identification of possible solution concerning the legal and socio-economic challenges of metaverse

Table 6. Valid cluster of solution concerning legal and socio-economic challenges of metaverse operation in Nigeria

Possible Legal and socio-economic solution	Cluster of Responses	Percentage
The absence of specific regulations tailored to the metaverse may lead to legal uncertainty.	159	90.3%
Protecting intellectual property rights within the digital metaverse environment is intricate.	168	95.5%
Ensuring user data privacy and security poses challenges, including consent mechanisms.	128	72.7%
Creating and enforcing contracts in the metaverse raises questions about their validity.	71	40.3%
Ensuring inclusivity for all demographics, including marginalized groups, is crucial.	98	55.7%
The metaverse's introduction could disrupt traditional industries and employment patterns.	139	79%
Cultural shifts resulting from the metaverse may lead to unforeseen challenges.	105	59.7%
Addressing ethical concerns, such as content moderation and misinformation could be challenging.	82	46.6%

Figure 6 and Table 6 are cluster responses by the respondents in identifying the possible solution towards the legal and socio-economic challenges of permitting the operation of metaverse in Nigeria.

This study sought to explore the perspectives and insights of respondents in Nigeria regarding the metaverse. The data analysis and findings are discussed below:

Figure 1 and Table 1 illustrate the geographical distribution of respondents across Nigeria's geopolitical zones. A total of 308 respondents from various regions in Nigeria participated in this study. This diversity ensures a comprehensive representation of perspectives from different regions in Nigeria. Figure 2 and Table 2 demonstrate that a substantial majority of respondents (71%) are familiar with the concept of the metaverse. This indicates a significant level of awareness and understanding of this emerging digital phenomenon among the respondents. In this regard, Figure 3 and Table 3 present respondents' perceptions regarding the potential prospects of metaverse operation in Nigeria as follows;

- i. Respondents identified a range of opportunities, including enhancing virtual commerce and trade (93.2%),
- ii. Revolutionizing education and training (89.2%) and Offering innovative entertainment and media experiences (74.3%)

- iii. Enabling digital tourism and cultural heritage preservation (49.5%) and Facilitating efficient collaboration and remote work (64%)
- iv. Providing accessible healthcare and telemedicine services (74.3%) and Enhancing gaming and esports experiences (64.4%)
- v. Promoting skills development and entrepreneurship (64%), and serving as a hub for innovation and research (40.5%).

However, despite the potential prospect of metaverse, Figure 4 and Table 4 reveal that a significant proportion of respondents (79.2%) acknowledge the possibility of legal and socio-economic challenges arising from the operation of the metaverse in Nigeria. This recognition underscores the complexity and potential hurdles associated with metaverse adoption. In this regard, Figure 5 and Table 5 delve into the specific challenges identified by respondents, which including the absence of specific regulations (94.3%), intellectual property protection (94.3%), data privacy and security concerns (79%), contract enforcement (39.2%), inclusivity for all demographics (73.9%), potential disruption of traditional industries and employment patterns (77.3%), cultural shifts (49.4%), and ethical concerns (58.5%). These findings provide a comprehensive understanding of the multifaceted challenges associated with the metaverse's integration into the Nigerian context. Given the fact that metaverse cannot be totally written off, given its potential relevance, Figure 6 and Table 6 further outline the solutions proposed by respondents to address the challenges and enhance the operation of the metaverse in Nigeria as follows;

- i. Respondents recommend strategies such as developing metaverse-specific local legislation (90.3%)
- ii. Implementing data privacy and intellectual property protection laws (95.5%)
- iii. Establishing ethical guidelines (72.7%)
- iv. Implementing digital identity verification systems (40.3%)
- v. Enforcing consumer protection regulations (55.7%)
- vi. Investing in digital infrastructure (79%)
- vii. Supporting local research and development (59.7%), and
- viii. Fostering public-private partnerships (46.6%)

4. CONCLUSIONS

Concerning this study, it illuminate the perspectives concerning the metaverse operation in Nigeria, showcasing both its potential and challenges. In this regard, the study recognize the



metaverse's capacity to revolutionize commerce, education, entertainment, healthcare, collaboration, and more, aligning with global trends in digital transformation.

However, alongside these prospects, the study further acknowledge significant challenges, including legal uncertainties, data privacy concerns, and cultural shifts. Yet, these challenges are viewed as opportunities for proactive problem-solving. Also, the study offer an array of solutions, emphasizing the need for comprehensive metaverse-specific legislation, data privacy protection, ethical guidelines, digital infrastructure, and public-private partnerships. These recommendation will offer crucial guidance for policymakers, industry stakeholders, and researchers interested in the future of the metaverse in Nigeria.

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