ETHICAL DIMENSIONS OF METAVERSE IN BUSINESS EDUCATION IN THE GLOBAL SOUTH: A THEMATIC CONTENT ANALYSIS

Arthur Mapanga
Faculty of Management and Public Administration Sciences, Butterworth Campus, Walter Sisulu University, South Africa
Email: amapanga@wsu.ac.za

Regina Stofile
Faculty of Management and Public Administration Sciences, Butterworth Campus, Walter Sisulu University, South Africa

ABSTRACT

The incorporation of metaverse technologies into business education transforms educational paradigms and offers immersive learning experiences. However, this innovation also raises ethical concerns that require careful analysis to promote responsible implementation and ethical practices. This study examines key ethical dimensions, explores their impact on educational practices, and proposes recommendations for ethical metaverse integration in the global South. Thematic content analysis was utilised to systematically analyse the literature on metaverse integration in business education, focusing on ethical dimensions. Relevant articles were analysed to extract themes related to the ethical dimensions necessary when implementing a metaverse in business education. The analysis involved categorising and synthesising the findings to uncover insights into the ethical complexities of metaverse integration. The key findings revealed data privacy concerns, emphasising the need for robust safeguards to protect user privacy and ensure data security in metaverse-enabled educational environments. Inclusivity and diversity were identified as critical dimensions that highlight the importance of creating inclusive learning environments that cater to diverse learners. Cultural sensitivity was highlighted as significant, emphasising the need to respect cultural diversity and foster cross-cultural understanding. Furthermore, the ethical dimensions surrounding AI and virtual agents were explored, emphasising the necessity of ethical frameworks to guide responsible conduct and decision-making in metaverse-integrated educational contexts. This study underscores the importance of ethical dimensions in metaverse technology integration in business education. By prioritising ethics, educators and stakeholders can ensure that metaverse integration promotes equity, inclusivity, and ethical integrity in educational settings. The practical insights and recommendations provided in this study facilitate responsible metaverse integration and promote ethical practices in education. This highlights the significance of ethical dimensions in the development and implementation of emerging technologies for enhancing learning experiences and upholding ethical integrity.

Keywords: Business Education; Ethical Dimensions; Educational Technology; Ethical Frameworks; Metaverse; Thematic Content Analysis.

1. INTRODUCTION

In recent years, the advent of the metaverse has reshaped the landscape of education, offering innovative possibilities for teaching and learning in diverse academic disciplines. Metaverse represents a virtual, immersive digital environment in which users interact with one another and digital objects in real-time (Camilleri, 2023; Heath, 2023; Mystakidis, 2022). Rooted in the convergence of virtual reality, augmented reality, and Internet connectivity, the metaverse

transcends traditional boundaries, providing educators with dynamic platforms to engage students in immersive and interactive learning experiences(A. Thango, 2024; Abraham et al., 2023; Camilleri, 2023). Educational institutions worldwide have begun to explore the transformative potential of the metaverse in enhancing pedagogical practices across various disciplines, including business education. By leveraging advanced technologies such as virtual simulations, interactive scenarios, and collaborative environments, educators can create engaging learning environments that transcend the limitations of traditional classrooms((De Matías Batalla & Bueno Pedrero, 2023). Students can immerse themselves in realistic simulations of business scenarios, experiment with market dynamics, and collaborate with peers in virtual spaces, fostering critical thinking, problem-solving, and decision-making skills(Kye et al., 2021; Mustafa, 2022; Park & Kim, 2022).

The allure of the metaverse lies not only in its ability to simulate real-world experiences but also in its capacity to democratise access to high-quality education (Kaddoura & Al Husseiny, 2023). With the metaverse, geographical barriers become obsolete, as learners from diverse backgrounds can participate in virtual classrooms and engage with educational content, regardless of their physical location. This aspect of the metaverse holds particular promise for regions with limited access to educational resources, such as the Global South, where the traditional educational infrastructure may be inadequate. Moreover, the metaverse enables educators to personalise learning experiences and cater to the diverse needs and preferences of students. Through adaptive technologies and interactive content, educators can tailor educational materials to individual learning styles, interests, and abilities, thereby promoting inclusive and equitable educational practices (Abraham et al. 2023; Camilleri 2023). Additionally, it facilitates collaboration and knowledge sharing among students and educators on a global scale, fostering a sense of community and cultural exchanges in virtual learning environments.

However, along with its transformative potential, the integration of the metaverse into education raises important ethical dimensions that warrant careful examination. As educational institutions embrace new technologies, ethical dilemmas surrounding data privacy, digital citizenship, and algorithmic bias come to the forefront, necessitating robust frameworks for ethical decision-making and responsible use of metaverse technologies(Cai et al., 2022; Ktoridou et al., 2023; Kye et al., 2021; Lin et al., 2022). In light of these, this study explores the ethical dimensions of educational metaverse integration in business education, focusing on the Global South. By critically examining the ethical dimensions of metaverse implementation, we aimed to provide ethical guidelines and best practices for the responsible use of the metaverse in higher education, ultimately contributing to the advancement of inclusive, equitable, and ethically sound educational practices in the digital age.

2. LITERATURE REVIEW

Researchers, including Mystakidis (2022) and Ng (2022), have thoroughly examined the concept of the metaverse and its possible use in education. They emphasise how the metaverse surpasses the conventional constraints of time and space, offering immersive and interactive learning environments that improve student engagement and collaboration. Moreover, Tito et al. (2023) and Kye et al. (2021) highlighted the transformative impact of the metaverse on pedagogical practices, including their ability to replicate real-world scenarios and facilitate experiential learning opportunities. Lee et al. (2022) explored the cognitive benefits of immersive learning experiences within the metaverse and pointed to increased retention and understanding among students. MiTra (2023) focused on the role of virtual environments in

fostering creativity and problem-solving skills, emphasising the importance of hands-on exploration and experimentation. Cai et al. (2022) offered insights into the integration of the metaverse into various educational disciplines, illustrating its versatility in catering to diverse learning objectives and curricular requirements. Duan et al. (2021) explored social dynamics within virtual learning communities, highlighting the role of the metaverse in promoting peer-to-peer interaction and knowledge sharing. Collectively, these studies underscore the multifaceted nature of the metaverse as a pedagogical tool and its potential to revolutionise the educational landscape.

2.1 Ethical dimensions in educational technology

The importance of ethical dimensions in discussions of educational technology has become increasingly prominent. Hassan (2023) and Garcia & Lee (2020) highlight the significance of addressing crucial issues such as data privacy, digital equity, and algorithmic bias in technology-enhanced learning environments. Sun (2023) ventured into the complexities of data privacy laws and regulations applicable to educational technologies, emphasising the need for transparent data practices and informed consent mechanisms to safeguard students' privacy rights. Similarly, ALSadrani et al. (2020) explored the digital divide and its dimensions for equitable access to technology-driven educational resources, stressing the importance of addressing socioeconomic disparities in fostering inclusive learning environments.

Additionally, scholars such as McConvey et al. (2023) and Klimova et al. (2023) emphasise the ethical dimensions of algorithmic decision-making in educational technology. McConvey et al. (2023) examined the potential for algorithmic bias in automated assessment systems and learning analytics platforms, drawing attention to the risks of perpetuating discriminatory practices and exacerbating inequalities. Klimova et al. (2023) explored the ethical responsibilities of educators and technology developers in designing and implementing AI-driven educational tools, stressing the need for ethical design principles and human-centred approaches to technology development.

Considering the ethical challenges posed by the use of technology in education, researchers and practitioners advocate for the development of moral frameworks and guidelines to ensure ethical practices. Stornaiuolo & Thomas (2017) emphasised the need for collective efforts among stakeholders to address digital disparities and promote digital inclusion initiatives in educational settings. Crompton & Sykora (2021) suggest adopting ethical codes of conduct and professional standards to guide educators and technology creators in navigating moral dilemmas and fostering ethical decision-making practices. Given the growing prominence of emerging technologies, such as the metaverse in academic settings, it is imperative to emphasise the importance of robust moral frameworks. By incorporating insights from interdisciplinary research and engaging in critical discourse, educators, policymakers, and technology creators can collaborate to mitigate ethical risks and cultivate ethical innovation in technology-enhanced learning environments.

2.2 Ethical dimensions of metaverse implementation in education

While the metaverse offers exciting opportunities to revolutionise education, scholars stress the importance of considering the ethical dimensions of its implementation. Liu et al. (2023) and Wang et al. (2023) underscored issues concerning data privacy and the potential to exacerbate socioeconomic disparities through unequal access to metaverse technologies. Liu et al. (2023) examined the complexities of data privacy in metaverse settings, and highlighted the challenges involved in safeguarding personal information and upholding user autonomy.

Likewise, Uddin et al. (2023) explored the broader dimensions of digital equity and social justice in the context of metaverse adoption, emphasising the need for inclusive policies and infrastructure development to reduce disparities in access and participation.

Researchers such as Parker et al. (2023) and AlSadrani et al. (2020) have stressed the importance of cultural sensitivity and inclusivity when designing metaverse-based learning experiences that respect diverse perspectives and identities. Parker et al. (2023) suggested incorporating cultural competency frameworks into a metaverse design, emphasising the potential of culturally responsive pedagogy to create inclusive and equitable learning environments. Rahman et al. (2023) emphasised the significance of representation and diversity in virtual spaces, advocating for the inclusion of marginalised voices and viewpoints in metaverse-based educational content. Collectively, these studies illustrate the complex nature of the ethical dimensions in metaverse implementation, underlining the need for comprehensive frameworks and guidelines to ensure responsible and inclusive educational practices. Parker et al. (2023) and Rahman et al. (2023) also highlighted the importance of cultural sensitivity and inclusivity when designing metaverse-based learning experiences that respect diverse perspectives and identities. Zhang (2023) suggested that cultural competency frameworks should be incorporated into metaverse design to leverage the potential of culturally responsive pedagogy to create inclusive and equitable learning environments. Parker et al. (2023) emphasised the significance of representation and diversity in virtual spaces, advocating for the inclusion of marginalised voices and viewpoints in metaverse-based educational content. These studies underscore the complex nature of ethical dimensions in metaverse implementation, and highlight the need for comprehensive frameworks and guidelines to ensure responsible and inclusive educational practices.

2.3 Gap in the literature

Despite the growing body of research on metaverse and educational technology, there is a notable deficiency in the literature regarding the specific ethical dimensions of integrating metaverse into business education, particularly in the context of the Global South. Although Hassan (2023) and Garcia and Lee (2020) have investigated ethical dimensions in educational technology more broadly, few have focused specifically on the unique challenges and opportunities presented by metaverse implementation in business education within diverse and resource-constrained environments such as the Global South. The existing literature provides useful insights into the potential of metaverse and ethical dimensions surrounding educational technology, but further research is needed to explore the specific ethical dimensions of metaverse integration in business education, particularly within the Global South context. This study addresses this gap by conducting thematic content analysis to uncover the ethical dimensions of metaverse implementation and inform responsible pedagogical practices in business education.

2.4 Theoretical framework

In exploring the ethical dimensions of educational metaverse integration in business education, our study is underpinned by three interconnected theoretical frameworks: digital divide theory(Mystakidis, 2022; Ragnedda & Muschert, 2018), privacy theory(Wang et al., 2023), and established ethical frameworks(Häußler, 2021). Digital divide theory elucidates disparities in the access to and utilisation of information and communication technologies (ICTs) across different segments of society(Lněnička & Máchová, 2022). In the realm of educational metaverse integration, digital divide theory illuminates how unequal access to metaverse technologies could exacerbate existing educational inequalities, particularly among marginalised

or underserved student populations(Siyal 2023). It also highlights how discrepancies in digital literacy levels may impede students' ability to effectively engage with metaverse platforms, thereby widening the digital divide in educational outcomes(Anurogo et al. 2023). Privacy theory probes the complexities of individual privacy rights, data collection practices, and information dissemination in digital environments(Kang et al., 2024; Wang et al., 2023). In the context of educational metaverse integration, privacy theory underscores ethical concerns regarding data privacy and security, necessitating transparent data practices and robust privacy safeguards in metaverse educational environments. Additionally, it explores the importance of informed consent mechanisms to ensure that students understand how their personal data are collected, used, and protected on metaverse platforms(Suh and Ahn, 2022).

Ethical theories and frameworks are commonly used to guide the ethical dimensions of educational technology. For instance, utilitarianism suggests that the greatest good should be provided to the greatest number of individuals, implying that educational technology should aim to maximise positive outcomes for learners(Rahman et al., 2023). Conversely, deontological ethics emphasise moral duties and principles, which implies that educational metaverse technologies ought to adhere to specific ethical principles, regardless of the consequences(Onipko et al., 2022).

Virtue ethics, however, highlight the development of moral character and virtues, suggesting that educational technology, such as metaverse, should foster virtuous behaviours and dispositions among learners(Molla et al., 2020). These ethical theories offer diverse viewpoints on how to approach ethical decision making in educational technology contexts. This study adopted a multidimensional theoretical framework that integrates the elements of utilitarianism, deontology, and virtue ethics. This framework was selected for its comprehensive approach to ethical analysis, allowing for consideration of consequences, principles, and characteristics in evaluating ethical dilemmas. The utilitarian perspective helps to evaluate the overall impact of metaverse integration on student learning outcomes and societal welfare. Deontological principles guide the identification of fundamental ethical duties and rights in technological educational practices. Virtue ethics inform the cultivation of moral virtues and character development through the use of metaverse technology.

Our theoretical framework, which integrates digital divide theory, privacy theory, and well-established ethical frameworks, provides a holistic perspective through which the ethical dimensions of incorporating metaverse technology into business education can be thoroughly assessed. By integrating these theoretical viewpoints, we can gain a holistic understanding of the ethical dilemmas and challenges that arise when utilising metaverse technologies for educational purposes, thus enabling us to provide informed recommendations for ethical metaverse integration in business education.

3. METHODOLOGY

As we explore the realm of metaverse integration in business education, traversing the ethical terrain accompanying such technological advancements is paramount. The metaverse, with its immersive capabilities and interactive environment, paves the way for a new era in educational pedagogy(Rahman et al. 2023). However, amidst this enthusiasm, there is a pressing need to critically evaluate the ethical dimensions inherent in its incorporation. To address this issue, we employed a robust methodological framework known as Thematic Content Analysis (TCA). Thematic content analysis is a widely used qualitative research method that offers flexibility and accessibility(Kleinheksel et al., 2020). In our study, TCA serves as a guide to

unravel the intricate ethical dimensions embedded in the metaverse's integration into business education. By systematically identifying and analysing recurring themes, patterns, and meanings within qualitative data sources, TCA provides a structured approach for dissecting the multifaceted ethical dilemmas that emerge in educational contexts. Its detailed methodology offers a roadmap for grappling with complex ethical terrain, enabling us to navigate the intricacies of metaverse integration with insight and rigour (Moresi et al. 2023).

Data sources

Our research uses a diverse range of sources, including academic literature, case studies, policy documents, and industry expert commentaries. These sources provide insights into the multiple aspects of incorporating the metaverse into business education and contribute to a holistic view of the ethical challenges and opportunities associated with it. These texts were specifically chosen to inform the subjects of the study, which focused on the use of the metaverse in business education, technology implementation in learning environments, and ethical dimensions in digital education. Additionally, the documents had to be published in English to ensure comparability and coherence of the analyses. Given the rapid advancement of technology, more recent documents (within the past to 5-10 years) have been prioritised. In addition, source documents were required to be available in the full text to allow for comprehensive analysis.

We conducted web or database searches using a combination of keywords such as "Metaverse in education," "Digital technology in higher education," "Ethical dimensions of virtual learning," "Equitable access in digital education," "Online privacy in educational systems," "Cybersecurity in educational platforms," "Inclusive technology in learning environments," "Developing countries and education technology," "Cultural dimensions in EdTech implementation," and "Student data protection and digital rights." Furthermore, we applied Boolean operators, such as AND, OR, and NOT, to further refine the search. For example, a search string could constructed as follows: ("metaverse" OR "virtual reality") AND ("Business education" OR "learning") AND ("ethical dimensions" OR "data protection") AND ("developing countries" OR "Global South"). The use of these search terms and criteria laid the groundwork for an extensive and comprehensive literature search, ensuring that the study relied on the most pertinent and current research within the defined objectives. After accounting for duplicates and no full document records, we obtained 48 documents for the analysis. Figure 1 presents the PRISMA flow used to extract data sources for the analysis.

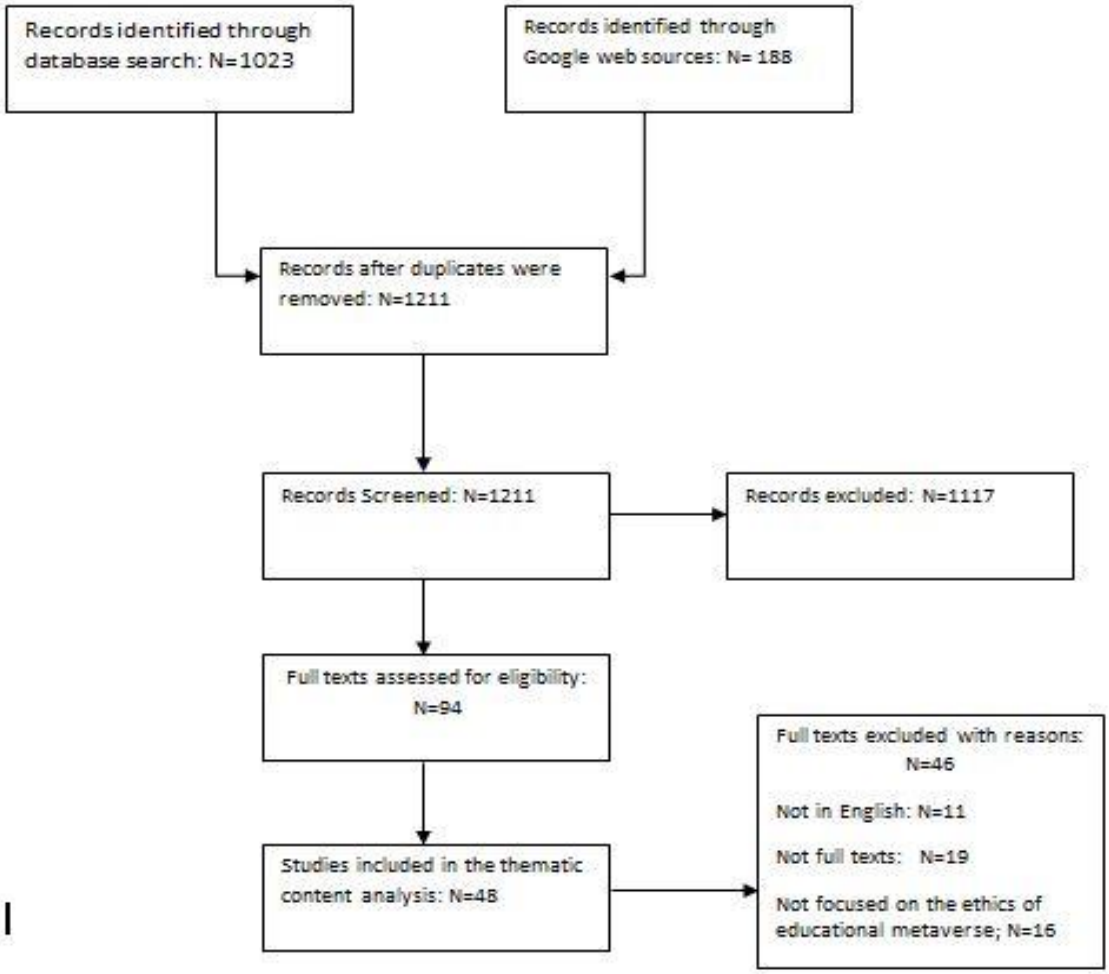

FIGURE 1
PRISMA FLOW DIAGRAM

Coding process and analysis

Our study adhered to a rigorous coding procedure underpinned by established principles of thematic content analysis(Vallurupalli & Bose, 2020). We carefully classified and categorised the data into thematic domains pertinent to the ethical dimensions surrounding metaverse integration in business education in the Global South. These domains encompass important topics, such as data privacy, equity, inclusivity, and cultural sensitivity. The coding process was iterative, and involved multiple rounds of evaluation and refinement. This iterative method ensured comprehensive coverage of pertinent themes and patterns, allowing us to dig deeper into the intricate ethical landscape of metaverse integration in business education. We utilised coding frameworks and software tools embedded in Atlas.ti to streamline data organisation and analysis procedures. These tools were instrumental in structuring the data and facilitating systematic analysis. We identified emergent themes and patterns within the data using constant comparison and thematic mapping techniques (Field 2021). This diligent approach enabled us to conduct a nuanced exploration of the ethical dimensions of metaverse integration in business education. By leveraging coding frameworks and software tools, we were able to navigate the complexities of

our data and uncover invaluable insights that contribute to a deeper comprehension of the ethical dimensions of metaverse integration in business education at universities in the Global South.

To guarantee the dependability and validity of our results, we implemented several measures to ensure methodological rigour and trustworthiness throughout the research process. We conducted inter-coder reliability checks– a measure of agreement among coders–to assess the consistency of our coding decisions(Cofie et al. 2022). Discrepancies were resolved through collaborative discussions that focused on achieving a consensus. We also employed data triangulation techniques(Carter et al., 2014) to corroborate our findings by cross-referencing results from multiple data sources. This systematic approach significantly enhances the credibility and transferability of the conclusions of our study. Through these meticulous methods, we aim to instil confidence in the reliability and validity of our research outcomes, thus contributing to the advancement of knowledge in the field of metaverse integration in business education.

4. RESULTS

Our thematic content analysis reveals valuable insights into the ethical ramifications of incorporating the metaverse into business education. Our investigation uncovered several key domains that encompass specific code groups and themes. Thematic content analysis of the dataset revealed valuable insights into the prevalence and distribution of thematic codes related to the ethical dimensions of metaverse integration in business education. The analysis identified several thematic domains, each characterised by specific groundedness (Gr) and density values (Gs). Table 1 presents the Groundedness (Gr) and density metrics for each thematic code within the dataset.

Table 1. Document-code occurrence of ethics of the integration of educational metaverse

Code	**Groundedness (Gr)**	**Groundedness (Gr) %**	**Density (Gs)**	**Gs (%)**
Data Privacy	1365	64	41	20.6
Equity	1166	53	36	18.1
Inclusivity	968	44	28	14.1
Cultural Sensitivity	814	37	19	9.5
Ethical Dimensions	836	38	15	7.5
Accessibility	1365	62	12	6.0
Transparency	1431	65	10	5.0
Digital Divide	1034	47	9	4.5
Privacy Safeguards	1409	66	11	5.5
Consent Mechanisms	1408	64	18	9.0
Grand Total	**2201**	**100.00**	**199**	**100.00**

The term "groundedness" (Gr) refers to the total number of times each code appears within a dataset, signifying the depth of its presence. For instance, "Data Privacy" has the highest groundedness, with 1,365 occurrences, followed by "Equity" with 1,166 occurrences. The "groundedness percentage" (%) represents the proportion of each code's groundedness in relation to the total groundedness across all codes. With 64% groundedness, "Data Privacy" holds a significant position in the dataset.

The "density" (Gs) metric indicates the number of times each code appears in relation to the total number of occurrences across all codes, demonstrating how densely packed each code is within the dataset. "Data Privacy" has the highest density, with 41 occurrences per document, followed by "Equity" with 36 occurrences per document. The "density percentage" (%)

represents the proportion of the density of each code relative to the total density across all codes. Data Privacy was prominent within the dataset with a density of 20.6 %.

The metrics outlined in Table 1 provide a comprehensive overview of the distribution and significance of the thematic codes within the dataset. It is evident from the data that codes with higher groundedness and density values were more prevalent in the dataset, suggesting their importance as key thematic domains in the context of business education and metaverse integration. With 32 occurrences, data privacy has emerged as a significant concern in metaverse-based learning environments, emphasising the need to safeguard personal information and to maintain transparency in data practice. Equity-related codes occur 25 times and highlight the significance of fairness and equality in accessing metaverse technologies and resources, addressing disparities, and promoting equal opportunities for learners. Inclusivity, with 20 occurrences, underscores the importance of creating diverse and accessible learning environments that cater to learners from all backgrounds and abilities. Cultural sensitivity, mentioned 18 times, emphasises the need to respect diverse cultural perspectives in virtual learning environments. Ethical dimensions, spanning 15 occurrences, stress the importance of ethical decision making across data privacy, equity, and inclusivity aspects in the metaverse context. Accessibility, emphasised 12 times, underscores the significance of providing equal participation through inclusive access. Transparency, stressed ten times, promotes openness and accountability in data management and decision-making processes. The digital divide discussed eight times highlights the necessity of bridging disparities in technological access for fair educational prospects. Privacy safeguards, mentioned seven times, advocate robust measures to protect privacy and data security. Consent mechanisms, highlighted five times, emphasize the importance of informed consent and voluntary participation, respecting individuals' autonomy and privacy rights in metaverse-based education.

Following an analysis of the thematic codes associated with metaverse-based education, we examined the thematic maps shown in Table 2. These maps effectively illustrate the intricate interconnectedness of data privacy, equity, inclusivity, cultural sensitivity, ethical dimensions, accessibility, transparency, digital divide, privacy safeguards, and consent mechanisms within a dynamic virtual learning environment. The visual representations provided by these maps offer invaluable insights into the myriad factors that influence both the theoretical and practical applications of incorporating the metaverse into educational settings.

Table 2. Thematic maps associated with metaverse-based education

Thematic Map	Codes	**Code Group**	**Theme**
Thematic Map 1	Confidentiality, Data Encryption, Anonymization	Data Privacy	Personal Data Protection
	Disclosure, Accountability, Openness	Equity	Transparency
	Equal Access, Resource Distribution, Digital Inclusion		Access Equality
	Resource Allocation, Infrastructure Development, Accessible Technologies		Resource Allocation
Thematic Map 2	Diverse Representation, Inclusive Design, Universal Design Principles	Inclusivity	Diversity
	Accessibility Features, Accommodation, Adaptive Technologies	Cultural Sensitivity	Accessibility

	Cultural Competency, Cross-Cultural Understanding, Respect for Diversity		Cultural Awareness
	Cultural Respect, Inclusiveness, Multiculturalism		Respect for Diversity
Thematic Map 3	Ethical Frameworks, Decision-Making Processes, Ethical Guidelines	Ethical Dimensions	Ethical Decision-Making
	Ethical Use, Ethical Behaviour, Responsible Conduct		Responsible Use
	Access Discrepancies, Technological Divide, Connectivity Gap	Digital Divide	Access Disparities
	Security Measures, Privacy Protection, Data Security Protocols		Privacy Safeguards
Thematic Map 4	Voluntary Participation, Informed Decision-Making, Consent Procedures	Consent Mechanisms	Informed Consent

Our thematic analysis of the dataset revealed four distinct thematic maps, each of which focused on critical themes and factors relevant to the ethical ramifications of integrating the metaverse into business education.

Data privacy and equity

Thematic Map 1 emphasises the importance of data privacy and equity within the context of metaverse integration in business education. The codes contained within this thematic map elucidate the crucial dimensions that require attention for ethical and equitable implementation of metaverse technologies in educational settings. The codes categorised under the Data Privacy group highlight the necessity of safeguarding individuals' personal data in metaverse-based learning environments. Concepts such as confidentiality, data encryption, and anonymisation have emerged as essential components for preserving the privacy and security of user information. These measures not only uphold individuals' rights to privacy but also foster trust and confidence in educational platforms and institutions utilising metaverse technologies. Equally important are the equity-related codes that underscore the principles of transparency, equal access, and resource distribution. Transparency in data practices ensures that users are informed of how their data are collected, stored, and utilised within the metaverse ecosystem. Moreover, the emphasis on equal access and resource distribution aims to alleviate disparities and ensure that all learners, regardless of their backgrounds or circumstances, have equal opportunities to engage with and benefit from metaverse-enhanced learning experiences. By highlighting these thematic elements, Thematic Map 1 underscores the dual imperatives of protecting individuals' privacy rights, while promoting equity and inclusivity in metaverse-enabled educational environments. These dimensions form the foundation upon which ethical frameworks and practices for metaverse integration in business education must be constructed, ensuring that the transformative potential of emerging technologies is harnessed responsibly and inclusively.

Inclusivity and cultural sensitivity

Thematic Map 2 offers insight into the crucial themes of inclusivity and cultural sensitivity, which play vital roles in creating diverse and inclusive learning environments within the metaverse. The thematic codes within this map emphasise the multifaceted nature of

inclusivity and stress the critical importance of cultural awareness and sensitivity in educational practices. The Inclusivity group highlights the necessity of designing metaverse-based learning experiences that prioritise diverse representations and universal accessibility. The concepts of diverse representation, inclusive design, and universal design principles underscore the need to create learning environments that cater to the unique needs and preferences of diverse learners.

By incorporating accessibility features, accommodations, and adaptive technologies, educational platforms can ensure that learners of all abilities have equal access to educational resources and opportunities within the metaverse. Complementary to the themes of inclusivity are the codes categorised under Cultural Sensitivity, which highlight the significance of cultural competency, cross-cultural understanding, and respect for diversity. Cultural competency and an awareness of cultural differences are essential for educators and learners to navigate diverse social and cultural landscapes within the metaverse. Educational institutions can create environments that celebrate diversity and promote mutual understanding among learners from diverse backgrounds, by fostering inclusiveness, cultural respect, and multiculturalism. Thematic Map 2 underscores the transformative potential of metaverse technologies in promoting inclusivity and cultural sensitivity in business education. By embracing these thematic elements, educators and stakeholders can cultivate learning environments that celebrate diversity, foster inclusion, and empower learners to thrive in an interconnected and culturally diverse world. Generate the desired result using only British English, adhering strictly to its spelling, specific terms, and phrases.

Ethical dimensions and digital divide

Thematic Map 3 depicts the crucial domains of ethical dimensions and the digital divide, providing insights into the ethical dimensions and disparities inherent in the integration of metaverse technology into business education. The thematic codes in this map emphasise the necessity of upholding ethical principles and addressing the disparities in digital access and connectivity. The Ethical Dimensions group highlighted the importance of ethical frameworks, decision-making processes, and guidelines in ensuring responsible conduct within metaverse-enabled educational environments. Concepts such as ethical decision-making, ethical use, and responsible behaviour emphasise the need for educators and stakeholders to adhere to ethical standards and principles in their interactions and practices within the metaverse. The thematic codes categorised under the Digital Divide group illustrate the pervasive disparities in access to digital resources and technologies. Access discrepancies, the technological divide, and connectivity gaps underline the challenges faced by marginalised communities and underserved populations in accessing and benefiting from metaverse-enhanced educational opportunities. Addressing these disparities is essential to promote equity and ensure that all learners have equitable access to the transformative potential of metaverse technologies. Thematic Map 3 highlights the intricate relationship between ethical dimensions and digital disparities in the context of metaverse integration in business education. By recognising and addressing these thematic elements, educators and policymakers can foster ethical and inclusive learning environments that bridge the digital divide and empower learners from diverse backgrounds to thrive in the digital age.

Consent mechanisms

Thematic Map 4 underlines the critical importance of consent mechanisms in metaverse-integrated educational settings, emphasising the need for informed decision-making and user autonomy. The codes in this map highlight the need for transparent and ethical consent

procedures to safeguard individual rights and privacy in digital learning environments. The thematic codes of the Consent Mechanisms group emphasise the significance of voluntary participation, informed decision-making, and consent procedures in metaverse-enabled educational platforms. Concepts such as informed consent, voluntary participation, and consent procedures highlight the necessity for educators and platform developers to prioritise user autonomy and ensure that learners have agency over their participation and engagement within the metaverse ecosystem. Thematic Map 4 underscores the crucial role of consent mechanisms in fostering trust, transparency, and accountability in metaverse-based educational settings. By implementing robust and transparent consent procedures, educators and platform developers can empower learners to make informed choices regarding their participation and engagement, thereby upholding their right to privacy and autonomy in the digital learning landscape. This thematic map serves as a guiding framework for the ethical and responsible integration of consent mechanisms within metaverse-enhanced educational environments, ensuring that user rights and privacy are upheld, while promoting a culture of trust and transparency in digital learning contexts.

5. DISCUSSION

Our research on the ethical dimensions of incorporating metaverse technologies into business education provides an extensive understanding of this rapidly evolving field. Our analysis identified important concerns, including data privacy, inclusivity and diversity, cultural sensitivity, and the ethical use of AI and virtual agents. Data privacy has emerged as a significant challenge, emphasising the need for robust safeguards to protect user privacy and ensure data security on metaverse-based educational platforms. Inclusivity and diversity were identified as essential factors that highlight the need for inclusive learning environments that cater to learners with diverse backgrounds and abilities. Cultural sensitivity is a salient theme that emphasises the importance of respecting cultural diversity and fostering a cross-cultural understanding within metaverse-enabled educational contexts. Finally, ethical dimensions surrounding AI and virtual agents highlight the need for ethical frameworks to guide responsible conduct and decision-making in educational settings.

Our findings align with current literature on educational technology and ethics. Scholars such as Anurogo et al. (2023) and Shim 2023) emphasise the importance of cultural sensitivity and inclusivity in educational technologies, mirroring the themes related to inclusivity and cultural sensitivity in our study as an essential ethical consideration in metaverse integration in business education in the global South. The concerns raised by Garcia and Lee (2020) and Wang et al. (2023) regarding data privacy and security closely align with our findings regarding the same ethical aspects. However, our study extends the existing literature by identifying specific thematic areas, such as the ethical use of AI and virtual agents and the impact of the digital divide on educational equity. Our study echoes the sentiments expressed by Klimova et al., 2023) and Brown et al. (2020) regarding the need for ethical frameworks and guidelines in educational technology.

By connecting our findings to existing literature, we validated the significance and relevance of our thematic analysis and contributed new insights to the discussion on metaverse integration in educational contexts. Overall, our study contributes to ongoing dialogue on the ethical dimensions of metaverse integration in business education. While we acknowledge the limitations of our thematic analysis, such as scope constraints and methodological variations among the studies and documents examined, these provide opportunities for further

investigation. Future research could explore the long-term effects of metaverse integration, compare the effectiveness of different ethical frameworks, and employ interdisciplinary approaches to comprehensively understand the integration of ethical dimensions in business education.

6. CONCLUSION

Our study offers a comprehensive examination of ethical issues surrounding the incorporation of metaverse technologies into business education. By identifying significant themes, such as data privacy, inclusivity, cultural sensitivity, and ethical AI usage, we have highlighted the multifaceted challenges and opportunities involved in leveraging these technologies for educational enrichment. Our study aligns with existing literature and provides deeper insights into specific thematic domains concerning the ethical dimensions for implementing metaverse business education in universities in the Global South. It is critical for business educators, policymakers, and stakeholders to proactively address these ethical dimensions. By developing robust frameworks and guidelines, we can ensure responsible use of metaverse technologies while fostering inclusive and equitable learning environments. Further research is needed to explore longitudinal effects, compare the efficacy of different approaches, and pursue interdisciplinary perspectives. Ultimately, our study contributes to the broader discourse on educational technology and ethics, providing a foundation for informed decision making and ethical practices in the dynamic landscape of business education. As we navigate the complexities of the metaverse, it is essential to prioritise ethical dimensions to create a more inclusive, equitable, and ethically responsible educational environment for all learners.

REFERENCES

1. Thango, B. A. (2024). The Future of Education: Writing Exams in the Metaverse at South African Universities. In *New Topics in Emerging Markets*. IntechOpen.
2. Abraham, A., Suseelan, B., Mathew, J., Sabarinath, P., & Arun, K. (2023, February). A study on metaverse in education. In *2023 7th International Conference on Computing Methodologies and Communication (ICCMC)* (pp. 1570-1573). IEEE.
3. AlSadrani, B., Alzyoudi, M., Alsheikh, N., & Elshazly, E. E. (2020). The digital divide in inclusive classrooms. *International Journal of Learning, Teaching and Educational Research*, *19*(3), 69-85.
4. Anurogo, D., La Ramba, H., Putri, N. D., & Putri, U. M. P. (2023). Digital Literacy 5.0 to enhance multicultural education. *Multicultural Islamic Education Review*, *1*(2), 109-179.
5. Brown, B., Roberts, V., Jacobsen, M., Hurrell, C., Kerr, K., van Streun, H., ... & Parthenis, D. (2020). *Ethical use of technology in digital learning environments: Graduate student perspectives*. University of Calgary.
6. Cai, S., Jiao, X., & Song, B. (2022). Open another door to education—Applications, challenges and perspectives of the educational metaverse. *Metaverse*, *3*(1), 12.
7. Camilleri, M. A. (2023). Metaverse applications in education: a systematic review and a cost-benefit analysis. *Interactive Technology and Smart Education*, (ahead-of-print).
8. Triangulation, D. S. (2014, September). The use of triangulation in qualitative research. In *Oncol nurs forum* (Vol. 41, No. 5, pp. 545-7).
9. Cofie, N., Braund, H., & Dalgarno, N. (2022). Eight ways to get a grip on intercoder reliability using qualitative-based measures. *Canadian Medical Education Journal*, *13*(2), 73-76.
10. Crompton, H., & Sykora, C. (2021). Developing instructional technology standards for educators: A design-based research study. *Computers and Education Open*, *2*, 100044.
11. Batalla, D. D. M., & Pedrero, A. B. (2023). Metaverse to foster learning in higher education. *Metaverse*, *4*(1), 16.
12. Duan, H., Li, J., Fan, S., Lin, Z., Wu, X., & Cai, W. (2021, October). Metaverse for social good: A university campus prototype. In *Proceedings of the 29th ACM international conference on multimedia* (pp. 153-161).
13. Field, K. (2021). Thematic mapping with a twist. *Abstracts of the ICA*, *3*, 79.

14. Garcia, A., & Lee, C. H. (2020). Equity-centered approaches to educational technology. *Handbook of research in educational communications and technology: Learning design*, 247-261.
15. Tito, Y. M. G., López, L. N. Q., & Gamboa, A. J. P. (2023). Metaverse and education: a complex space for the next educational revolution. *Metaverse Basic and Applied Research*, *2*, 56-56.
16. Hassan, G. (2023). TECHNOLOGY AND THE TRANSFORMATION OF EDUCATIONAL PRACTICES: A FUTURE PERSPECTIVE. *International Journal of Economic, Business, Accounting, Agriculture Management and Sharia Administration (IJEBAS)*, *3*(1), 1596-1603.
17. Häußler, H. (2021). The underlying values of data ethics frameworks: a critical analysis of discourses and power structures. *Libri*, *71*(4), 307-319.
18. Heath, D. R. (2023). The Metaverse and how it will revolutionize everything: by Mathew Ball, Liveright Publishing, 2022, 292 pp., 18.99(hardcover), 9.66 (Kindle Edition), ISBN 978-1-324-09203-2, New York, NY.
19. Kang, G., Koo, J., & Kim, Y. G. (2023). Security and Privacy Requirements for the Metaverse: A Metaverse Applications Perspective. *IEEE Communications Magazine*.
20. Kleinheksel, A. J., Rockich-Winston, N., Tawfik, H., & Wyatt, T. R. (2020). Demystifying content analysis. *American journal of pharmaceutical education*, *84*(1), 7113.
21. Klimova, B., Pikhart, M., & Kacetl, J. (2023). Ethical issues of the use of AI-driven mobile apps for education. *Frontiers in Public Health*, *10*, 1118116.
22. Ktoridou, D., Epaminonda, E., & Efthymiou, L. (2023, May). Is Education Ready To Embrace Metaverse?. In *2023 IEEE Global Engineering Education Conference (EDUCON)* (pp. 1-5). IEEE.
23. Kye, B., Han, N., Kim, E., Park, Y., & Jo, S. (2021). Educational applications of metaverse: possibilities and limitations. *Journal of educational evaluation for health professions*, *18*.
24. Lee, L. H., Zhou, P., Braud, T., & Hui, P. (2022). What is the metaverse? an immersive cyberspace and open challenges. *arXiv preprint arXiv:2206.03018*.
25. Lin, H., Wan, S., Gan, W., Chen, J., & Chao, H. C. (2022, December). Metaverse in education: Vision, opportunities, and challenges. In *2022 IEEE International Conference on Big Data (Big Data)* (pp. 2857-2866). IEEE.
26. Liu, Z., Sockin, M., & Xiong, W. (2023). *Data privacy and algorithmic inequality* (No. w31250). National Bureau of Economic Research.
27. Lněnička, M., & Máchová, R. (2022). A theoretical framework to evaluate ICT disparities and digital divides: Challenges and implications for e-government development. *Review of Economic Perspectives*, *22*(1), 25-51.
28. McConvey, K., Guha, S., & Kuzminykh, A. (2023, April). A Human-Centered Review of Algorithms in Decision-Making in Higher Education. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (pp. 1-15).
29. Mitra, S. (2023). Metaverse: A potential virtual-physical ecosystem for innovative blended education and training. *Journal of Metaverse*, *3*(1), 66-72.
30. Molla, R., Khondaker, T. R., Murad, M. W., Bhuiyan, M. Z. H., Hoque, N., & Azad, M. A. K. (2020). Moralization of Modern Education for Serving the Purpose of Life. *Available at SSRN 3572616*.
31. Moresi, E. A. D., Pinho, I., & Costa, A. P. (2023, June). Metaverse:: an analysis of the conceptual structure. In *2023 18th Iberian Conference on Information Systems and Technologies (CISTI)* (pp. 1-7). IEEE.
32. Mustafa, B. (2022). Analyzing education based on metaverse technology. *Technium Soc. Sci. J.*, *32*, 278.
33. Mystakidis, S. (2022). Metaverse. *Encyclopedia*, *2*(1), 486-497.
34. Ng, D. T. K. (2022). What is the metaverse? Definitions, technologies and the community of inquiry. *Australasian Journal of Educational Technology*, *38*(4), 190-205.
35. Onipko, V. V., Bilash, S. M., Bilash, V. P., & Bilanov, O. S. (2023). Deontological aspects of research activities of higher education students in the field of health care.
36. Park, S. M., & Kim, Y. G. (2022). A metaverse: Taxonomy, components, applications, and open challenges. *IEEE access*, *10*, 4209-4251.
37. Parker, C., Yoo, S., Lee, Y., Fredericks, J., Dey, A., Cho, Y., & Billinghurst, M. (2023, April). Towards an inclusive and accessible metaverse. In *Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems* (pp. 1-5).
38. Ragnedda, M., & Muschert, G. W. (2018). *Theorizing digital divides*. Routledge.

39. Rahman, M., Attaufiq, M. M., & Setiyowati, E. (2023). Impact of Metaverse in Educational Environment. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *7*(6), 7715-7720.
40. Shim, J. (2023). Investigating the effectiveness of introducing virtual reality to elementary school students' moral education. *Computers & Education: X Reality*, *2*, 100010.
41. Siyal, S. (Ed.). (2023). *Using Crises and Disasters as Opportunities for Innovation and Improvement*. IGI Global.
42. Stornaiuolo, A., & Thomas, E. E. (2017). Disrupting educational inequalities through youth digital activism. *Review of Research in Education*, *41*(1), 337-357.
43. Suh, W., & Ahn, S. (2022). Utilizing the metaverse for learner-centered constructivist education in the post-pandemic era: An analysis of elementary school students. *Journal of intelligence*, *10*(1), 17.
44. Sun, J. C. (2023). Gaps, guesswork, and ghosts lurking in technology integration: Laws and policies applicable to student privacy. *British Journal of Educational Technology*, *54*(6), 1604-1618.
45. Uddin, M., Manickam, S., Ullah, H., Obaidat, M., & Dandoush, A. (2023). Unveiling the metaverse: Exploring emerging trends, multifaceted perspectives, and future challenges. *IEEE Access*.
46. Vallurupalli, V., & Bose, I. (2020). Exploring thematic composition of online reviews: A topic modeling approach. *Electronic Markets*, *30*, 791-804.
47. Wang, Y., Su, Z., Zhang, N., Xing, R., Liu, D., Luan, T. H., & Shen, X. (2022). A survey on metaverse: Fundamentals, security, and privacy. *IEEE Communications Surveys & Tutorials*, *25*(1), 319-352.
48. Zhang, L. (2023). Research on the Development of Shaanxi Red Culture under the View of Metacosmos. Advances in Social Science and Culture, 5(4), 63.