What’s the impact of technological projects? A proposed framework for a metaverse case study

Abstract

This study explores the adoption and impact of the Metaverse in public sector organisations, focusing on the case of the Piedmont Region's (Italy) initiative against cyberbullying. It addresses the challenges and opportunities of integrating the Metaverse into public services and measures its social and economic impact. Employing a qualitative methodology, this research utilises a hybrid topic and content survey, including semi-structured interviews with experts involved in the Metaverse project in the Piedmont Region. The study is grounded in the stakeholder engagement theory and employs the Gioia methodology for data analysis. Our study reveals that while the Metaverse offers significant opportunities for innovation in public services and citizen engagement, its integration into public institutions faces technical, ethical, and governance challenges. These include the need for robust digital infrastructure, data privacy concerns, and the necessity of interdisciplinary approaches for effective technology accountability. The case study demonstrates the potential of the Metaverse in addressing social issues like cyberbullying and highlights the importance of measuring both quantitative and qualitative impacts. This research contributes original insights into applying emerging technologies like the Metaverse in the public sector. It provides a comprehensive analysis of the challenges and potential of the Metaverse in public institutions, particularly in the context of social issues, and proposes a framework for assessing its social and economic impact.

Keywords: Metaverse, Public sector innovation, Technology accountability, Impact assessment, Digital governance

1. Introduction

The Metaverse is a term that conjures up images of interconnected, immersive virtual worlds; it is emerging as a crucial field of interest in both technology and academia (Kraus et al., 2022, 2023). This concept, which lies at the intersection of virtual reality (VR), augmented reality (AR) and digital interaction, represents a new and unexplored frontier for innovation and human interaction. Defined as an immersive digital environment in which users interact via avatars, the Metaverse transcends the boundaries of the physical world, creating virtual spaces where people can connect, collaborate, and participate in shared experiences (Calandra et al., 2023).

Recently, interest in the Metaverse has extended beyond the private sector to public institutions. Studies such as that of Bibri & Allam (2022) illustrate how the Metaverse offers new opportunities for public institutions to manage smart cities, improve citizen engagement, and provide services in innovative ways. For example, using the Metaverse for training and civic education has shown significant potential, as highlighted by Lee & Hwang (2022).

Despite its potential, integrating the Metaverse into public institutions presents unique challenges. Prominent among these are technical challenges, such as the need for robust and secure digital infrastructures, managing large volumes of data, and ensuring interoperability between different Metaverse systems and platforms (Wang et al., 2023). In addition, ethical and governance issues emerge, such as the protection of users' privacy and personal data, ethical management of virtual interactions, and prevention of harmful or discriminatory behaviour within virtual environments (Fernandez & Hui, 2022; Ning et al., 2021; Wang et al., 2023). In addition, since these are institutions often with bureaucratic processes, unique challenges such as acceptance by management and citizens are present (Chae & Poole, 2005), financial and social sustainability (Fiorino, 2010), the necessary training (Lember et al., 2018), the scalability and interoperability of the project (Mu & Wang, 2022). So, these challenges require hybrid and multidisciplinary approaches to ensure the same social accountability as traditionally delivered services.

In this context, the concept of stakeholder engagement becomes crucial. Effective engagement with diverse stakeholders – from policymakers and technologists to end-users and community members – is key to navigating these challenges and harnessing the Metaverse's full potential in public services. This approach aligns with contemporary research emphasising the importance of multi-stakeholder collaboration in technology adoption and governance (Shah & Guild, 2022). However, as suggested by Bonetti et al. (2023), multiple participation creates engagement issues. Therefore, the suggestion is to identify stakeholders by identifying their problem networks. So, stakeholder engagement arises from exploring social problems and involves initiatives and actions by a small group to solve those issues (Frooman, 2010).

Although the Metaverse is a growing interest, there is a significant gap in research regarding its adoption and impact in public institutions. In this sense, there is a lack of in-depth studies on measuring projects' social and economic impact in the Metaverse and managing technical, ethical and governance challenges. This gap limits understanding of the Metaverse's potential as a tool for improving public services and addressing complex social problems. Therefore, this study aims to answer the following research questions: RQ1. How can public organisations manage projects in the Metaverse? RQ2. What is the economic and social impact of projects in the Metaverse?

Our study contributes to the existing literature by providing an in-depth analysis of adopting the Metaverse in a public institutional context, focusing on the case of the Piedmont Region and its use in combating cyberbullying. Through a qualitative approach and an exploratory case study, we will

examine the challenges and opportunities associated with using the Metaverse, offering practical and theoretical insights into such initiatives' social and economic impact. Our study also provides a framework for "technology accountability" and suggests popular ways to communicate the impact of technology projects to the public effectively.

The paper is structured as follows: Section 2 reviews the literature on the role of the Metaverse in public institutions and measures the social and economic impact of technology projects. Section 3 describes the methodology adopted, while Section 4 analyses the results obtained from the Piedmont Region case study. Finally, Section 5 discusses the results' theoretical and practical implications, highlighting the study's limitations and proposing opportunities for future research.

2. Literature review

2.1. *Metaverse role in public bodies*

The Metaverse represents an emerging concept at the intersection of virtual reality, augmented reality, and digital interaction (Vergara et al., 2022). According to Dwivedi et al., 2022), the Metaverse can be defined as an immersive digital environment where users interact via avatars in a space that transcends the boundaries of the physical world. This definition emphasises the hybrid nature of the Metaverse, which combines elements of virtual reality (VR) and augmented reality (AR) with technologies such as blockchain and artificial intelligence (Calandra et al., 2023). The evolution of the Metaverse is rooted in the gradual maturation of digital technologies (Kraus et al., 2023). Initially conceived as a science fiction concept, the Metaverse began to take shape with the development of online virtual worlds, with the creation by users of avatars and the opportunity for the creation of digital twins by connecting reality to digital (Aloqaily et al., 2023). However, as pointed out by (Vergara et al., 2022), it was only with the advent of advanced VR and AR technologies that the Metaverse emerged as a tangible phenomenon.

Recently, interest in the Metaverse has extended beyond the private sector to public institutions. Studies such as that of (Bibri & Allam, 2022) illustrate how the Metaverse offers new opportunities for public institutions to manage smart cities. In addition, as defined by Yfantis & Ntalianis (2023), with the Metaverse, it is possible to improve citizen engagement and deliver services innovatively. For example, using the Metaverse for training and civic education has shown significant potential, as evidenced by Lee & Hwang (2022). Other applications include the management of utilities such as water, gas, and municipal waste (Calandra et al., 2023). Despite its potential, integrating the Metaverse into public institutions may be challenging.

Among the most significant technical challenges are the need for robust and secure digital infrastructures, managing large volumes of data, and ensuring interoperability between different systems and platforms in the Metaverse. In addition, the ongoing maintenance and updating of Metaverse technologies requires specialised technical skills and dedicated resources (Ning et al., 2021). Ethical issues are particularly relevant in the public context. These include the protection of users' privacy and personal data, the ethical management of virtual interactions, and the prevention of harmful or discriminatory behaviour within virtual environments. It is essential to establish clear ethical standards for using the Metaverse in public institutions (Fernandez & Hui, 2022). The governance of the Metaverse requires a new regulatory and policy framework that considers its particularities. Public institutions must address issues such as data sovereignty, regulation of virtual interactions, and protection against abuse. The creation of a secure and regulated Metaverse environment is essential for its effective adoption (Wang et al., 2023). In addition, the skills shortage on the part of the public agency requires hybrid approaches of sharing skills with multiple stakeholders (Secinaro et al., 2021).

At the same time, currently, at the theoretical level, the Metaverse offers unique opportunities to innovate in public services. This includes creating virtual spaces for education, vocational training, civic participation, and government service delivery. Virtual environments can make public services more accessible, efficient, and engaging for citizens and tourists (Buhalis et al., 2023). In addition, there is the potential to make public services more accessible and inclusive. Virtual environments can be designed to be accessible to people with different abilities and backgrounds, overcoming some physical and social barriers in the real world. The contribution of Zallio & Clarkson (2022) first discusses the links between the Metaverse and social impact by affirming the role of technology in creating inclusive environments with amplified experiences, especially in cases of exclusion in the physical world. In addition, access to the Metaverse can develop a foundation of social equity by promoting learning and influencing social dynamics. As indicated by Young et al. (2019) and recalled by (Zallio & Clarkson, 2022), designing virtual spaces with high social impact is crucial, especially regarding digital inclusion and equity. Therefore, invoking the concept of "technology accountability" (Petrakaki, 2018) for public institutions will mean reorganising work and knowledge to maintain adequate levels of social responsibility to citizens.

2.2. *Metaverse and the need for stakeholder engagement*

The successful implementation of the Metaverse in public institutions necessitates a comprehensive stakeholder engagement (SE) strategy to overcome skills shortages. (Adams et al., 2023) emphasise the importance of considering which and how many stakeholders to engage, as engaging too many stakeholders can lead to generalisation and ineffective feedback. Therefore, targeted invitations to relevant stakeholders for their problems and skills are suggested to avoid these pitfalls.

Selecting significant stakeholders involves discretion to ensure the quality of the SE process, moving away from standard categories and selecting them based on their roles, goals, positions, salient attributes, and strategies (Aaltonen et al., 2015). Additionally, as suggested by (Panda & Sangle, 2020), stakeholder selection requires dynamic capability to explore new resources and ensure relationships. This means creating unique institutional conditions where people can enhance communications with active dialogue (Adams et al., 2023). Furthermore, engaging stakeholders for the project requires the treatment of interesting parties transparently and based on the rationale for inclusion (Sharma & Henriques, 2005). Finally, engagement also requires fair communication of results achieved (Panda & Sangle, 2020).

This is also true in the context of the Metaverse; engaging stakeholders is crucial for understanding diverse perspectives, ensuring ethical use, and effectively addressing technical and governance challenges.

2.3. *Social and economic impact measurement in technological projects*

Assessing technology projects' social and economic impact is crucial to understanding their value and impact on society. Numerous frameworks and models have been developed to measure these impacts systematically and rigorously (Biancone & Secinaro, 2022).

Quantitative frameworks focus on tangible, numerical measures of impact. For example, cost-benefit analysis (CBA) is a traditional method that quantifies the benefits and costs of a project in monetary terms, allowing for an evaluation based on economic efficiency criteria (Musgrave, 1969). Another

example is economic impact analysis, which measures the effect of a project on employment, income and output in each area (Mannix, 2018).

Qualitative frameworks, however, focus on non-quantifiable aspects, such as public perception impact on quality of life and social welfare. For example, the theory of change is a rather popular approach that maps expectations of how and why a project should lead to desired social change (Costa & Pesci, 2016; White, 2009). It is based on the construction of a flow that links project activities (input) with expected results (output), with outcomes, and finally with long-term impact (impact).

A holistic approach to impact evaluation combines both quantitative and qualitative elements. This is critical because while quantitative data can provide objective impact measurements, qualitative aspects offer a deeper understanding of the context, individual experiences, social dynamics, and economic values generated. For example, a technology project might show a solid economic return (quantitative) but also significantly affect local culture or social welfare (qualitative). Therefore, complex projects require an assessment of impacts that may be multidimensional and interconnected. For example, the introduction of new technology in an educational setting might not only improve learning outcomes (a quantitative impact) but also influence the way students interact with each other and their teachers (a qualitative impact) (Fenwick & Edwards, 2015).

Despite initial good practices, finding a match between impact evaluation and digitisation is still challenging, especially in one of the nascent technologies, Metaverse. However, Zallio & Clarkson (2022) indicated that a few research studies have addressed the technology's potential and impact. In addition, these challenges remain even more unexplored in the context of public companies (Calandra et al., 2023).

3. Methodology

3.1. Research design

Our study employs a qualitative methodology based on a hybrid topic and content survey. Several scientific publications by numerous authors support this study technique. For example, according to (Gummesson, 2006), qualitative research in managerial domains enables researchers to capture many intangible characteristics that bring value to the literature. Furthermore, the ability to provide practical facts and success stories enables cross-comparisons across distinct realities in retrospect, answering research questions such as "*How*" and "*Why*" of a phenomenon (Massaro et al., 2019; Yin, 2017). In addition, as stated by (Scott et al., 2013), a qualitative methodology may include the analysis of multiple sources and the comprehensive development of leading case studies, i.e. best practices that can advance insufficient practical knowledge in each field. In our case, the practical explanation of the Metaverse as an enabler of accountability in public institutions may lead us to assert that a case study will be able to provide more knowledge in this ongoing field.

As implemented by Quevedo Cascante et al. (2022), our research design follows four phases (Figure 1).

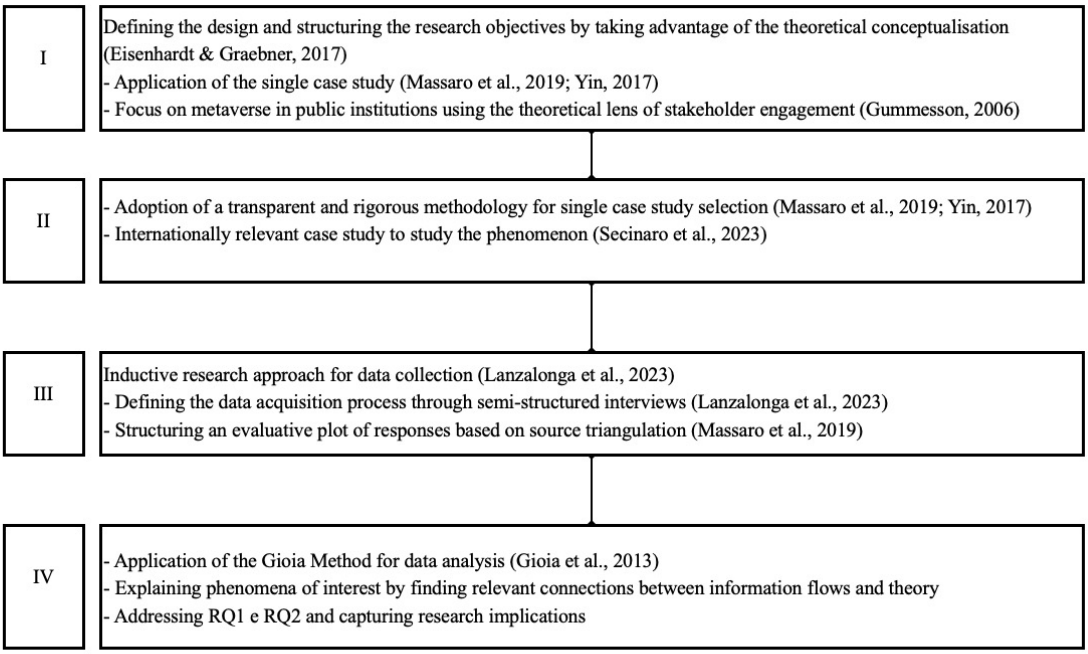
Initially, we established the research design by aligning it with the objectives, using the theoretical framework derived from the literature analysis conducted by Eisenhardt & Graebner, 2007). Using the stakeholders' engagement theory, we employed a qualitative and exploratory approach to investigate the metaverse phenomena and their impact on society (Kujala et al., 2022). This technology is relevant given the virtual world created using digital avatars and twins (Calandra et al., 2023).

We look for unique cases in public bodies as the next step. Participation in the first Metaverse festival allows us to uncover and explore a metaverse experience in a public body, “Piedmont Region”, dedicated to increasing citizens' accountability and social impact (Gomboli, 2023). This case study was selected for its relevance to stakeholder engagement in the context of Metaverse adoption in public institutions.

Then, the data-gathering procedure was prepared using an inductive research approach. This technique facilitated the establishment of a data acquisition process using semi-structured interviews (Lanzalonga et al., 2023). In addition, a group of corporate experts and outside specialists was chosen to gain an unbiased perspective on the phenomenon being studied and to triangulate interview data (i.e., Group B – Table 2) (Massaro et al., 2019). Special attention was given to ensuring that the interviewees represented a diverse range of stakeholders, including public officials, technology experts, citizens, and representatives from civil society, to capture a comprehensive view of the Metaverse's impact and challenges in the public sector.

Finally, we apply the (Gioia et al., 2013) approach for data analysis. Therefore, we use a systematic and iterative approach to examine the socially constructed perception of the Metaverse and its impact within and outside a public institution. In this way, we successfully addressed the research question and determined the implications by establishing primary concepts, secondary themes, and overall dimensions, employing the citizen engagement theoretical framework. This analysis was enriched by the stakeholder engagement perspective, allowing us to identify and understand the different viewpoints, concerns, and expectations of the stakeholders involved in or affected by the Metaverse project.

Figure 1. Research design summary



Source: Authors’ elaboration

3.2. Interviews and data analysis

Our study used source triangulation to examine metaverse application in a public institution context. Tables 1 and 2 below present data from semi-structured interviews with experts actively involved in the unique case study. The interviews were performed partly on-site and online. In this last case, the Cisco Webex software is used. The entire interview lasted a total of 431 minutes. Following that, all the texts were transcribed manually and coded using ATLAS.TI version 9 software to ensure the study process was transparent and reliable (Hwang, 2008).

Table 1. Case study data focus on interviews**.**

Data	Description
Monitoring period	7 months
Number of interviewees	6
Duration of interviews	431 minutes

Source: Authors' elaboration

Table 2. Respondent presentation

Respondent ID	Professional Profile	Interview Length
A-1	Project Manager CTE Next	81 m
A-2	Chief Technology Officer (CTO)	58 m
A-3	Project Manager Metaverse project	74 m
A-4	Psychologist	82 m
B-1	Independent expert in Metaverse	51 m
B-2	Independent expert consultant in technology	85 m

Source: Authors' elaboration

All the data were collected in the Piedmont Region and the City of Turin. After the Winter Olympics Games in 2006, this area has implemented a local development plan to attract investment by regenerating disused areas of the city (Secinaro et al., 2021). The Turin area, part of the Piedmont Region, has transformed by creating the best conditions to attract digital startups. One example is the House of Emerging Technologies (i.e., CTE Next), which aims to accelerate SMEs' technology transition in close collaboration with numerous strategic partners, including universities (Cuomo et al., 2021). Areas of application include, for example, innovative urban services through smart technologies such as the Metaverse, artificial intelligence and blockchain. So, in line with the objective of the research and inspired by the theory of stakeholder engagement, we will focus on a virtual counter-cyberbullying project through the Metaverse by proposing an impact framework (social and economic) for high-tech projects in public enterprise contexts (Gomboli, 2023).

4. Results

This section aims to answer RQ1. How can public organisations manage projects in the Metaverse? RQ2. What is the economic and social impact of projects in the Metaverse? The authors first analyse the exploratory case study "CTE Next" and then focus on the initiative related to cyberbullying.

4.1. Technological transformation of public institutions

Technological transformation in the Turin area occurs thanks to a few key partners. First, the Piedmont Consortium for Information Systems (CIS) was founded in 1977. Second, the University of Turin is an institution founded in 1404. Third, the Polytechnic University of Turin. Fourth, the Piedmont Region. All other public agencies also participated in the first institution to generate a single regional information system through the massive computerisation of public administration. The first project involved the automatic processing of salaries of regional hospital and university public administration employees. Subsequently, the first region-wide public network called Piedmont Telematics Network was created. To date, the CSI is the digital partner of many national and international public companies, and in July 2021, it inaugurated a new facility: the House of Emerging Technologies in Turin (CTE Next), a hi-tech center symbolising a revolution in the dialogue between citizens and Public Administration. As featured on the website (CTE Next, 2024) and reiterated by the project manager of the project (A-1):

"*The project, which will start on March 1, 2021 and run for four years, will promote startup acceleration and technology transfer to SMEs. The goal of CTE NEXT is to create in Turin, in close collaboration with the Turin Universities and other strategic partners-selected among the relevant and competent partners of Torino City Lab-a widespread technology transfer center on emerging technologies enabled by 5G (IoT, Big Data, Artificial Intelligence, Blockchain, Metaverse). The City has identified four strategic vertical sectors for development and innovation on which CTE's lines of action and business support services will focus: smart road, Urban Air Mobility, Industry 4.0, and innovative urban services*".

So, CTE Next offers various services to support technological innovation by supporting companies and private investors with 5G connectivity, computing resources, cloud-edge services, statistical data, and virtual workspaces. This initiative demonstrates the importance of engaging multiple stakeholders, including public institutions, educational entities, and private sector partners, to drive technological transformation and innovation in the public sector.

4.2. The use of the Metaverse in overcoming cyberbullying

The Piedmont Region, in collaboration with CSI Piedmont, has undertaken a pioneering initiative to explore the potential of the Metaverse in the public context to overcome cyberbullying. As the CTO (A-2) defined, "*Thanks to the collaboration with the Order of Psychologists, we can bring together technology and social support. In particular, the virtual environment allows the creation of public and private rooms. In the case of public rooms, citizens will be able to check all the information about the service offered (e.g., schedules, registration instructions, reservations) thanks to a virtual answering machine that is available at all times. Through private rooms, on the other hand, citizens will be able to benefit from content and counselling to overcome cyberbullying".* This will be done through 3D links sent to registered participants." In addition, as explained by the project manager (A-3): *"individuals targeted by cyberbullies will be able to use avatars created by them to expose their difficulties."* Finally, as explained by the psychologist (A-4): *"We believe that the technology and virtual spaces of the Metaverse will positively impact the children who will use the services. They are often minors and have difficulty telling what is happening online. Delivering a public service through*

avatars will only bring people closer together by trying to solve the problem first. In any case, use must be verified to avoid disregarded behaviour by users.".

The project requires multiple resources to administer. First, financial resources, in this case, the public. Second, the development of the Metaverse with privacy treatment and high levels of security. However, as indicated by an independent expert dealing with projects in the Metaverse (B-1): "*The impact of projects of this type is difficult to calculate in the short term. At least three years should be considered to verify through established methodologies such as cost-benefit analysis (CBA) whether or not the investments made have made a change*". The second technology expert (B-2) specifies (Table 3): "*In this case, we carry out an ex-ante and ex-post impact evaluation of the project following thanks to the Theory of Change development. This means, at the initial time, preparing a set of outcome indicators that start from the implemented activities (inputs) will allow us to verify the expected results obtained (outputs) and outcomes and the actual change in impact. The key point of the analyses is how they are explained to public decision-makers. Simplicity in communicating and popularising the coveted and obtained results is central to advancing or terminating a technology project such as this*". So, as the project manager (A-3) concluded, "*these projects make it possible to expand citizen services. New digital governance is needed to include different stakeholders on the Piedmont Region side. This will make it possible to convey social responsibilities through technology*".

Therefore, the stakeholder engagement approach played a pivotal role in the project's success, ensuring that the perspectives and needs of all relevant parties were considered in the project's design and implementation. This collaborative approach facilitated the effective use of the Metaverse technology and ensured that the project's outcomes aligned with the broader goals of social welfare and public interest.

Table 3. The social and economic impact of the Metaverse project

Category	Criteria	Indicators
Input	• Resources invested in the project (e.g., VR technologies, personnel, training)	• Total project budget • Number of VR devices purchased • Hours of staff training
Output	• Activities carried out (e.g., support sessions, interactions in the Metaverse)	• Number of support sessions conducted • Number of users who used the virtual helpdesk • Hours of interaction in the Metaverse
Outcome	• Short-term changes (e.g., increased awareness, reduction in cyberbullying incidents)	• Percentage reduction in cyberbullying incidents • Level of awareness about cyberbullying among students • User satisfaction with the virtual helpdesk
Impact	• Long-term effects (e.g., improved student well-being, changes in school culture)	• Improvement in students' psychological well-being • Changes in school culture regarding cyberbullying • Rate of reuse of the virtual helpdesk over time

Source: Authors' elaboration

5. Discussion and conclusion

Our study explored the adoption of the Metaverse in public institutions, with a particular focus on the case of the Piedmont Region and its use in combating cyberbullying. We analysed how the Metaverse sits at the intersection of virtual reality, augmented reality and digital interaction, offering new opportunities for innovation in public services and citizen engagement. The technical, ethical and governance challenges associated with adopting the Metaverse were examined, as well as the potential of this technology in creating inclusive and accessible environments. In addition, we discussed the importance of measuring the social and economic impact of technology projects through a holistic approach that integrates both quantitative and qualitative elements.

5.1. Beyond the concept of "Technology accountability"

The concept of "technology accountability" (Petrakaki, 2018) also emerges as a crucial issue in the context of the Metaverse in public institutions. This implies accountability in using emerging technologies, ensuring they are employed ethically and transparently and bring tangible benefits to society. Our results demonstrate, through the exploratory case study of the Piedmont Region, the adoption of the Metaverse to counter cyberbullying. However, our analysis suggests that "technology accountability" goes beyond simply the ethical implementation of technology; it also requires innovative governance, collaboration among diverse stakeholders, and an ongoing commitment to social and economic impact assessment. This aligns with the stakeholder engagement theory (Panda & Sangle, 2020), emphasising the importance of involving various stakeholders in decision-making processes and ensuring their needs and perspectives are considered in developing and implementing Metaverse projects.

5.2. *Telling the impact in a popular way*

Communication of the impact of technology projects, particularly in the Metaverse, must be accessible and understandable to a broad audience (Wang et al., 2023). The challenge lies in translating complex data and technical results into informative and engaging language for citizens and public decision-makers. In the case of the Piedmont Region's anti-cyberbullying project, the ability to tell the impact popularly is critical to ensure public support and understanding. This involves presenting statistics and results and sharing stories and testimonies that illustrate the Metaverse's real impact on people's lives (Biancone et al., 2019). Effective impact storytelling can increase transparency, strengthen public trust, and stimulate further support for future initiatives. It also highlights the role of stakeholder engagement in shaping the narrative and ensuring that the diverse voices and experiences of all involved parties are represented in the communication of the project's impact (Adams et al., 2023; Bonetti et al., 2023; Shah & Guild, 2022).

5.3. *Limitations and future research opportunities*

Despite the significant results obtained, this study has some limitations that need to be acknowledged. First, the research focuses on a single case study in the Piedmont Region, which may limit the generalizability of the findings to other contexts or public institutions. Additionally, while our stakeholder engagement approach provided valuable insights, it may not have captured the full spectrum of stakeholder perspectives, particularly for marginalised groups. Also, the qualitative approach taken, although effective in exploring the phenomenon in depth, may not capture the full range of quantitative impacts of the Metaverse.

Finally, given the emerging nature of the Metaverse and the rapid evolution of related technologies, some aspects of our study may require ongoing updates to remain relevant. The current limitations

offer several opportunities for future research. First, future studies could explore the adoption of the Metaverse in a variety of institutional and geographic contexts to provide a broader understanding of its impact and applications. Second, future research could incorporate quantitative approaches to measure the economic and social impact of the Metaverse more comprehensively. This could include statistical analysis, large-scale surveys, or controlled experiments. Such approaches would complement our qualitative findings and provide a more robust assessment of the Metaverse's impact.

In addition, there is a significant opportunity to explore further the ethical, privacy, and security challenges associated with the Metaverse, especially concerning protecting personal data and user interaction in virtual environments. Research in this area could inform the development of guidelines and best practices for ethical Metaverse implementation in public institutions. Finally, future research could investigate the evolving skills and organisational structures needed to manage projects in the Metaverse effectively, thereby contributing to a better understanding of "technology accountability" and digital governance in public institutions. This could include studies on training and development programs for public sector employees and the role of inter-organizational collaborations in Metaverse projects.

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