

METHODOLOGICAL INNOVATIONS IN DIGITAL ETHNOGRAPHY AND THE EVOLUTION OF CULTURAL RESEARCH

Simeon Gift Onyinyechi, Binta Kasim Mohammed & Ayodele B. Joseph

Department of Mass Communication, Kaduna State University.
giftsimeon19@gmail.com; dr.bkmohammed@gmail.com; josephs.ayodele@kasu.edu.ng

Abstract

Digital ethnography has revolutionized cultural studies by broadening ethnographic research to investigate technologically mediated spaces where communication, identity formation and social interaction are increasingly taking place. The methodological innovations in digital ethnography are analyzed and their implications on the evolution of cultural research in the present-day digital society are discussed. The theoretical framework for the study was based on Schwarz's Sociological Theory for Digital Society, which aims to describe, analyze, and interpret how algorithms, digital infrastructures and coded systems influence the behavior, participation and cultural production within digital spaces. It was found that the methodological innovations like appnography, social network analysis, big data analytics, visual and multimedia analysis, netnography, and AI-assisted ethnographic methods have given cultural research a new range of possibilities, flexibility, and analytical depth. These innovations allow researchers to explore online communities, identities, interactions with platforms and changing culture and practices in social media and virtual spaces. The research also highlighted ethical and methodological concerns regarding privacy, informed consent, data security, algorithmic manipulation, and the ethical application of AI in qualitative research. The study concludes that digital ethnography has become an important methodological framework for understanding culture, identity, and social interaction within contemporary digital societies. Hence, the study recommends continuous methodological innovation, stronger ethical guidelines, interdisciplinary collaboration, and improved digital research training to strengthen the effectiveness and credibility of digital ethnographic research in rapidly evolving digital environments.

Keywords: Digital Ethnography, Cultural Research, Methodological Innovations and Evolution.

Introduction

Ethnography has been one of the most important qualitative research methods for understanding human activities, culture, and patterns of social interaction in natural social settings. The present state of ethnographic investigation has grown more transnational than physical space, as it has increasingly moved into digitally mediated environments where identities, interactions and communities are continually negotiated and remediated on the internet, wrote Cocq and Liliequist (2024). Immersion and participant observation, interviews, and contextual interpretation are hallmarks of ethnographic research that aim for detailed understandings of social realities and lived experiences. The increasing importance of digital communication technologies has changed the typical assumptions of ethnographic research as much, as many forms of social interaction are now taking place in technologically networked environments (Grigoryan, 2024). Similarly, Delli Paoli and D'Auria (2025) suggested that the digitalisation of everyday life has not only changed social behaviour and cultural participation but has also affected the methods used to study culture and society. New digital communication technologies, social media and online communities, and mobile applications have revolutionized ways of making meaning, socializing, and engaging in culture. Through digital interaction, online communities have become important social environments where identities, beliefs, values, and cultural expressions are constantly produced and negotiated, as explained by Kozinets (2020). In the Nigerian context, studies by Yékú (2022) have demonstrated how social media platforms serve as important spaces for cultural expression, identity construction, and community formation among digital users. Likewise, Adeoba and Yékú (2025) observed that the platformization of popular culture in Nigeria has transformed how cultural practices are produced, circulated, and studied within digital environments. For this reason, digital

ethnography is becoming a widely used method for the study of the complexities of digitally mediated social life. Cocq and Liliequist (2024) stated that digital ethnography has been an expansion of traditional ethnography to the online world, offering researchers a way to study digital cultures, social practice, and interactions in technologically mediated environments. Likewise, Grigoryan (2024) argued that digital ethnography has become a powerful methodological solution to the increasing importance of online communication and digital involvement in modern societies.

Over the last few years, there has been significant methodological innovation that has broadened the area and potential analysis of digital ethnography. De Seta, Pohjonen and Knuutila (2024) coined the term synthetic ethnography to refer to an emerging methodology for studying generative artificial intelligence systems and digitally simulated environments by means of qualitative inquiry. Their involvement is in response to a need to engage with algorithmically created social realities, which is a growing need for ethnography that can meet these challenges. Cheah (2025) also commented that the application of artificial intelligence in qualitative research has opened new possibilities for AI-driven data collection, interpretation, and digital analysis, along with ethical and methodological challenges. In another article, Downing (2025) argued that appnography is an important addition to digital ethnography, enabling the study of interactions and vernacular digital practices on platforms like Snapchat and other mobile communication environments. Similarly, Faniyi (2025) demonstrated how digital platforms can be studied as spaces of activism, community building, and identity negotiation, particularly within the context of the #EndSARS movement in Nigeria. Abah (2025) further noted that emerging digital technologies and algorithmic systems have created new social realities that require innovative ethnographic approaches to

understand digital agency and online experiences. In addition, Ikyer (2017) showed how digital environments can facilitate the preservation, transformation, and reinterpretation of indigenous cultural expressions, thereby expanding the scope of cultural research in the digital age. Japheth, Gbule, and Opara (2025) also observed that digital culture plays a significant role in shaping identities, values, and social interactions among Nigerian youth, highlighting the need for ethnographic methods that can adequately capture these evolving cultural processes. The methodological advances are an indicator of the ongoing evolution of ethnography in the face of technological change and shifting forms of digital sociality.

Digital ethnography has also brought about a change in the larger discipline of cultural studies. According to Karhapää, Hämäläinen and Pöysä-Tarhonen (2025), digital technologies have influenced the way people interact in the workplace, learn, engage in community and communicate in everyday life, and digital ethnography is a necessary method to capture the nature of the culture in the present day. Witteborn (2026) posed the question of how ethnography and AI are connected, and asked about the context, interpretation, and the need to maintain human-centred understanding in digital research spaces. In addition, Prus (2025) argued that online field sites are not like any others, but that the ethnographic principles of reflexivity, immersion, contextualization, and sustained observation, which are essential to meaningful cultural interpretation, are the same for online field sites. This means that digital ethnography opens up key methodological opportunities for researchers to explore the processes of identity formation, participation online, algorithmic visibility, digital performances, and changing cultural practices within virtual space. Although digital ethnography has become increasingly important, it still has some methodological and ethical issues related to digital research environments. In response to the growing

prominence of AI in qualitative research, Cheah (2025) noted that there are ethical concerns about accountability, transparency of the researcher, informed consent, and the trustworthiness of AI-generated interpretations. The same methodological dilemmas with regard to authenticity, data reliability, researcher involvement and platform management have been identified by Delli Paoli and D'Auria (2025) as a result of the quick digitalization of ethnographic techniques. De Seta et al. (2024) also pointed out that the assumption of social presence, human presence and cultural interpretation are made more complex by algorithmic systems and AI created environments. The difficulties outlined here suggest that the methodological process requires constant reflection as ethnographers try to make sense of the social in technologically mediated contexts.

In this light, the methodological innovations that are currently defining digital ethnography are explored and the impact of the changes on the development of cultural research in the present-day digital societies is assessed. The paper discusses new ethnographic methodologies, the use of digital tools in qualitative research, the impact of AI on ethnographic research and the implications of these trends for the study of culture, identity and social interaction in digitally mediated spaces. The following sections explore the theoretical basis of digital ethnography, current methodological innovations, relevant theory, ethical issues, and implications of these changes for the future of cultural research.

Theoretical Framework: Sociological Theory for Digital Society (Schwarz, 2021)

The study builds on a sociological theory of the Digital Society, developed by Schwarz (2021), which offers an in-depth window to understand the current social organization of people via codes, algorithms and platforms. The theory states that there is no longer any need to rely only on established social structures like face-

to-face interaction, institutions and norms, but that coded systems exist in the digital platforms too. These codes encompass algorithms, data infrastructures, interface designs, and platform governance systems that govern individuals' communication, interaction, and meaning construction in digital platforms without their awareness.

Schwarz (2021) suggested that digital platforms are "coded social systems" that create, filter, and influence human behaviours at all times through algorithmic processes. Culture is no longer only created by people in relation to each other, but also co-created by technological systems which shape visibility, participation and engagement. This theoretical perspective is very relevant to digital ethnography because it allows us to move beyond a descriptive approach to observing online communities to an analysis of how digital infrastructures create the communities. In this study, then, it is not only the study of the online cultures that can be considered digital ethnography; the study of the influence of platform architectures on cultural production and social meaning is also digital ethnography.

It also suggests that the theory of digital environments is about power, in the sense that they are social spaces that are structured and managed by platforms and algorithms, which influence who can be seen, how they can be interacted with, and how certain forms of identity expression will prevail. The importance of this is particularly relevant in relation to cultural studies when dealing with digital ethnography and online activities - posting, commenting, sharing, liking, stream sharing - are not neutral actions, they are governed by visualization systems in algorithms. In the context of this study, this signifies that the expressions of culture that are encountered in digital ethnography are not spontaneous per se, but are mediated to a large extent by the underlying logics of platforms that frame users' behavior.

Schwarz (2021) further argued that data is a key organizing principle of digital society, because all online interactions generate data, which is processed, stored, and analyzed and used for commercial, social, and political purposes. The view is important to this research as it is crucial to digital ethnography that the traces of digital activities are taken into account via posts, comments, videos and interactions. These traces are not only observational data but are also part of a complex network of surveillance, datafication, and algorithmic governance. So, the study of cultural research in the context of digital ethnography should be given a dimension that takes into account the process of data production and circulation in the digital environment.

The theory offers insights into methodological innovation, in the sense that it accounts for how digital ethnography has shifted from the "observation" based method to the technology-mediated and computational-based method. With the growing automation and the presence of AI systems, such as machine learning systems, recommendation engines, and predictive algorithms, that influence online behavior, ethnographic research should take the impact of these systems into consideration. Schwarz's framework thus offers a solid theoretical basis for studying AI, algorithms and digital infrastructures as active agents in cultural production instead of having a neutral role.

This theoretical approach also directly connects to the methodological innovations in digital ethnography, and the development of cultural research, that are the topic of this study. It illuminates the process of cultural meanings being continually re-created in the interaction between user and digital system, and the need to rethink ethnographic approaches to account for the hybrid human-machine environment. Digital ethnography is thus situated in this research as a dynamic method in which not only is human interaction examined, but also the technological structures which influence

human interaction.

The Evolution of Digital Ethnography

Digital ethnography is an example of the development of technological innovations and methodological change in qualitative research. Kozinets (2020) noted that the advent of digital communication technologies had changed the social landscape, such as the environments for social interaction, identity construction and cultural engagement, making ethnography's role as a method to go beyond the physical space and the traditional environment for social engagement crucial. The emphasis of ethnographic research was mainly on geographically localized communities and on the interaction of the face-to-face, but as the nature of communication shifted increasingly from face-to-face to online, new cultural spaces emerged that required new approaches to qualitative research. Digital ethnography was introduced as a consequence of the growing trend of social life moving into digitally mediated space where social interactions, relationships, and cultural expressions are continually negotiated through social technologies (Grigoryan, 2024). Likewise, Costa (2024) argued that as the digital worlds have evolved, the function of ethnography has changed and it has made researchers consider the ways in which they need to think of immersion, participation, and observation in networked digital societies.

Much of the early discussion of Digital ethnography focused on the study of internet communities, virtual interactions and internet-based cultural practice. Kozinets (2020) pointed out that netnography emerged as a basic method of studying online communities qualitatively, by engaging in online activities. As internet use gradually proliferated across the globe, researchers gradually came to understand that the web was emerging as an important site of cultural production, social engagement and identity performance. For Costa (2023) the development of digital tools

brought many more possibilities to the methodological repertoire of qualitative researchers, since they could gather, structure and analyse digital data more dynamically. Similarly, Bryda (2019) argued that methodological shifts from a traditional qualitative analysis to digital text mining and computational methods were indicative of a larger methodological shift in modern ethnographic research. All these developments led to the creation of more technologically-integrated approaches to culture and society studies. In the Nigerian context, Yékú (2022) observed that social media and digital platforms have become important spaces for cultural performance, identity construction, and public participation, demonstrating the growing relevance of digital methods in cultural research. Faniyi (2024) similarly showed how online networks and digital interactions shape collective action and political engagement, highlighting the importance of studying digitally mediated communities through ethnographic approaches. Digital ethnography also developed to reflect the increasing sophistication of the underlying digital technologies, and to include new analytical techniques and computational technologies. Pope and Costa (2023) argued that "modern qualitative researchers are increasingly having to develop computational skills and digital literacy in an effort to effectively maneuver through technologically mediated research environments." Likewise, Bryda (2020) argued that new ethnographic approaches are now made up of the fusion of "traditional ethnographic interpretation" and analytical tools for digital processing of interactions and cultural content. At the same time, Flensburg and Lomborg (2023) suggested that the rising trend of being "datafied" (2023: 38) has transformed the nature of social research by changing what is experienced and done with a human being into something which can be recorded digitally. In this way the nature of digital ethnography has shifted from mere observation of Internet environments to more technologically advanced practices of

qualitative research, which are now able to address large and complex digital environments and algorithmically-driven interactions.

New methodological developments have also seen digital ethnography applied to new technological areas like artificial intelligence, machine learning and "augmented reality" and computational social analysis. Li and Abramson (2024) posited that machine learning can be applied to ethnographic research to uncover patterns of interaction, to better understand online behavior, and to research digital cultures on a larger scale. Similarly, Abramson, Li, Prendergast, and Dohan (2025) stated that qualitative research in the artificial intelligence age is becoming more and more computational yet interpretive, ethnographic, and interpretive in an effort to meet the increasing complexity of digital data environments. De Seta, Pohjonen and Knuutila (2024) also developed a methodological innovation called synthetic ethnography, which has been created to study generative artificial intelligence systems and digitally simulated social environments, based on ethnographic methods. These new methods are indicative of ethnographic research's ongoing evolution in response to new technologies and digital shifts. Adeoba and Yékú (2025) further argued that the platformization of popular culture has transformed how cultural content is produced, circulated, and studied, requiring researchers to adopt innovative digital methodologies capable of capturing complex online interactions. Likewise, Japheth, Gbule, and Opara (2025) noted that digital culture continues to shape identities, values, and social relationships among young people, reinforcing the need for methodological approaches that can effectively examine emerging forms of digital sociality and technologically mediated cultural experiences.

Digital ethnography has also been applied to various disciplines and research situations. Thach, Mayworm, Delmonaco and Haimson

(2024) showed how the application of digital ethnography can help to understand marginalised audiences and content moderation on platforms like Twitch and Reddit, while also offering insights into social and political nuances within online communities. In the same way, Manriquez (2025) explained that digital ethnography can bring some valuable methodological possibilities to grasp the realities of labor relations, platform economies and digitally mediated work practices in the current society. Additionally, Tran, Brown, Weidlich, Yoo and Parker (2025) used digital ethnographic approaches to research material and experiences shared through YouTube videos to explore the use of wearable augmented reality technologies. The contributions in this volume suggest that digital ethnography has become a very flexible methodological tool suitable to the study of various social, cultural, economic and technological phenomena, in digital environments.

Methodological Innovations in Digital Ethnography

Digital ethnography has been subject of significant methodological change because of the complexity and technological mediation of human interaction and relations in digital societies. Because of the swift integration of digital technologies into the daily lives of people, Costa (2023) argued that the qualitative research methods that were previously based on traditional ethnographic methods now need to adopt more ways of doing cultural research that are technologically oriented. Contemporary digital ethnography differs from traditional ethnography, which tended to focus on communities with a 'real world' location, in that it looks at social practices that take place within social media platforms, online communities, virtual worlds, algorithmic systems, and digitally networked spaces. According to Flensburg and Lomborg (2023), the increasing datafication has changed social life into socially traceable ways of dealing with each

other, thus providing new interpretive and cultural opportunities for ethnography. Similarly, Pope and Costa (2023) argued that digital environments of conducting research demand methodological flexibility, computational skills and interdisciplinary analytical capacities, which can make sense of new and more complex forms of online communication and cultural engagement.

i. Appnography

Appnography is a new methodological innovation in digital ethnography which aims to study the analysis of mobile applications and the cultures of the platforms they run. Lindgren (2022) affirmed that the mobile applications of TikTok, Instagram, Snapchat, Facebook and X are now becoming significant arenas for social interaction, performance of identity, entertainment, and cultural production in the modern digital society. Appnographic inquiry focuses attention on how people engage with digital platforms, develop online identities, communicate symbolically and engage in socially meaningful relationships in technologically mediated interactions. Along with this, Schwarz (2021) maintained that digital societies are becoming organised around communications systems that are organised algorithmically, and that the algorithms and applications they use have an increasing influence on social functions, as well as levels of visibility, participation and cultural relevance.

Appnography offers a more nuanced understanding of the impact of platform architectures on the current cultural experiences and online socialities. For instance, the consumption of music, the political communication, fashion trends, and formation of youth identity is often affected by digital performances that circulate on TikTok globally. Barany and Foster (2019) showed that participatory digital cultures in online games can have a significant impact on identity development, community and symbolic

interaction among participants. Likewise, Akkaya (2023) argued that the digital ethnographic toolkits are vital to the comprehension of transnational cultural exchanges that take place within technologically linked communities. appnography focuses on digital culture as a social process in which values, behaviors and identities are constantly created and negotiated in the spaces created by platform-specific, online communication. In this development mobile apps go beyond being technical tools to becoming effective cultural actors with a strong impact on society in digitally connected societies.

ii. Social Network Analysis

Because of its mapping capabilities of relationships, communication patterns and social influence in online environments, Social Network Analysis (SNA) has grown to be an important methodological tool in digital ethnography. The current digital social sciences are increasingly network-based in order to comprehend online communities, how digital relationships are established and how information flows in virtual environments, according to Jemielniak (2020). In SNA, interactional structures in social media platforms, online forums, discussion groups and virtual communities can be analysed systematically and influence among influential actors, communication hubs and patterns of collective participation can be identified. The digitally networked societies create large amounts of "relational data" that can indicate the dynamics of culture, ideology and social influence in technologically mediated systems, as noted by Flensburg and Lomborg (2023). SNA is not only a mapping of the online interactions but also something important in the digital ethnography. As suggested by Lindgren (2022), social, political, cultural, and identity dynamics can be influenced by the network structure in digital media environments. Therefore, SNA can be used to engage in a more in-depth analysis of online activism, fan

communities, gaming cultures, transnational online movements and digital subculture. For example, the online interactions of cosplay communities on platforms like Reddit or Discord could provide insights into how online participation influences cultural innovation, symbolization, and collective identity in geographically dispersed communities. Furthermore, Schwarz (2021) suggested that network analysis is becoming more and more relevant to the study of hierarchies and digitally mediated cultural influence in modern society, because digital networks play an increasingly important role in the social visibility and symbolic power of their users. In this aspect, SNA extends ethnographic research by adding a relational approach alongside with qualitative analysis of online social interaction.

iii. Big Data and Analytics.

The use of big data and computational analysis with digital ethnography has greatly broadened the methodological possibilities of qualitative cultural research. As described by Jemielniak (2020), digital social sciences are now taking place in contexts where vast amounts of online information are generated in the process of social interaction, searching, digital transactions, and via participation in platforms. Big data analytics can help to analyze large, online populations of people and their culture and social interactions, in ways that are not possible by small-scale ethnographic methods. According to Bryda (2019), this shift from old-fashioned qualitative coding to computational text mining and digital analysis is a significant methodological change in today's ethnographic research.

Digital ethnography enables the recognition of cultural patterns that might not have been readily noticed during conventional ethnographic observation with the support of machine learning, sentiment analysis, natural language processing, and data visualization tools. Bryda (2020) claims that qualitative analysis, which is now technologically

supported, allows for more detailed interpretation of the stories, symbols and communication patterns in digital spaces. For instance, when millions of social media posts are analysed over political campaigns, social movements, or entertainment happenings, collective emotions, ideological conflict and changing cultural attitudes within online communities can be identified. In addition, Flensburg and Lomborg (2023) argued that the datafication of social behaviour has made social behaviour into a measurable digital trace, thereby granting ethnography unprecedented possibilities to analyse social participation. However, with such methodological developments should come an awareness of their limitations and careful handling so as not to simplify complex cultural experiences into just numbers. The integration of big data analytics with the contextual qualitative understanding and critical cultural interpretation thus augments the digital ethnographic approach.

iv. Visual and Multimedia Analysis

In the field of digital ethnography, visual and multimedia analysis is gaining more significance as digital culture is increasingly shaped by images, videos, livestreams, emojis, memes, and other forms of communication in the form of images and videos. Thach et al. (2024) showed that digital ethnography of visual platforms like Twitch and Reddit can be used to gain a better understanding of identity construction, marginalized experiences, and how these platforms are moderated in digital communities. Digital ethnography is a field that builds on the work of earlier ethnographic studies, which tended to emphasize textual forms of interaction, but acknowledges that visual communication is a key element of online sociality. Schwarz (2021) has, therefore, claimed that in technologically mediated societies, meaning, identity and cultural belonging is now communicated through visual symbols, digital aesthetics and multimedia performances.

Visual and media analysis provides a means to describe and interpret the processes of creating symbolic meanings and negotiating cultural values in online communities within a visual context. Instagram photos, YouTube videos, TikTok dance trends, livestream interactions and digital memes often convey wider cultural commentaries about beauty ideals, gender expression, social issues, jokes, and style, among other things. Akkaya (2023) also claimed that a visual ethnographic perspective is well suited for the study of transnational cultural communication as visual symbols are often transcultural and transnational. In a lot of digital communities, participation is visually oriented and serves as a means for social inclusion, identity affirmation, and cultural expression. Visual and multimedia analysis thus extends ethnographic research beyond the text and adds to the study of digital culture.

v. Netnography

Netnography is still one of the most significant and often-used methodological innovations in digital ethnography. According to Kozinets (2020), Netnography is a methodological approach that is unique to the study of online communities, Internet-based interactions, and digitally-mediated cultural practices through immersive online engagement. Netnography was later adopted from the consumer and marketing studies fields and has branched out to other areas like sociology, communications studies, political research, media studies, education, and digital culture analysis. According to Costa (2023), online interaction has become more relevant in everyday social life and netnography is an indispensable methodological tool for understanding contemporary culture.

Netnographic inquiry is oriented towards platforms of social interaction and collective meaning-making, such as an online forum, social networking sites, communities of influencers, blogs, gaming spaces, or discussion platforms for users. With the

COVID-19 pandemic, the significance of digital qualitative research has become more pronounced as society has increasingly moved into virtual environments for social interaction, learning, trade and public communication as noted by Wa-Mbaleka and Costa (2020). Moreover, because of the interpretive complexity of online communication and digitally mediated identities, methodological rigor, reliability and reflexivity are still required in the netnographic analysis (O'Connor and Joffe, 2020). Netnography is thus an extension of ethnographic work into digital spaces, analyzing social relationships, identity negotiations, norms, and the collective participation found in online communities in technologically mediated contexts. Netnography has continued to offer valuable methodological lessons, particularly on the changing nature of culture, communication and social interaction in the new digital society, through sustained digital observation and contextual interpretation.

Digital Platforms and Cultural Research

Along with the increasing digitalization of social interaction, cultural research has greatly shifted in its direction, with online spaces becoming constant spaces where identities, meanings and social relationships are continually created and negotiated (Delli Paoli & D'Auria, 2025). In the present times, ethnographic studies have become so entrenched in technologically mediated settings that the technologies have become a part of everyday social life, communication, and workplace interaction (Karhapää, Hämäläinen, and Pöysä-Tarhonen 2025). Digital platforms like TikTok, Instagram, Reddit, Snapchat, YouTube, X have thus emerged as significant cultural spaces that help users create their identities, assert their relationships, secure belonging and engage in communal social activities. Internet communication technologies are now so pervasive, however, that the field of cultural studies has grown to include cyberculture as an

additional realm in which cultural studies are conducted, and in which cultural studies become possible. This growing dependence on the use of such communication technologies has thus introduced cyberculture as an additional domain within which cultural studies can be carried out and, indeed, be carried out.

This is because the digital platforms have evolved, thus impacting the methodological underpinning of ethnographic inquiry (Costa, 2024). As AI has increasingly become a part of communicative contexts, Witteborn (2026) noted that the field of ethnography has been complicated, leaving critical questions about context, interpretation and human-centred meaning in technologically mediated communication. This shift has helped to promote flexible and digitally informed methodologies that allow for an investigation of digital behavior in more intricate online environments. Cheah (2025) also noted the need for ethical and methodological approaches to AI-augmented netnography, considering the privacy and informed consent concerns, digital identity, and responsible online research practices. Recent developments in the digital world have turned these considerations into more significant issues, as new digital platforms are not only human-centric but also algorithm- and automation-driven, and rely on data-driven technology infrastructures.

As social media has become a key part of everyday life, there have also been developments in new ways of doing ethnography, able to look at specific types of online communication and digital participation (Downing, 2025). Appnography and mobile ethnographic inquiry allows for digital interaction on mobile applications (like Snapchat) to begin to be understood as part of wider cultural and social processes that contribute to identity performance and online behaviours. Tran, Brown, Weidlich, Yoo and Parker (2025) illustrated this shift in a digital ethnographic study of augmented reality

wearing experiences found on video sharing platform YouTube, revealing that video-sharing platforms are a place where technological culture, symbolic interaction and social interpretation are enacted. This is because the development demonstrates that digital platforms are not simply communication spaces but are spaces where social meanings and cultural practices are continually being reproduced. With the proliferation and evolution of technologically mediated interaction, the use of computer systems in the process of qualitative and ethnographic research has been promoted even more (Li & Abramson, 2024). Abramson, Li, Prendergast and Dohan (2025) argued that current qualitative research is characterized by ethnographic analysis that is integrated with computational workflows and tools for analysis that are supported by technology, for the purpose of comprehending large-scale interactions in digital environments. Online communities and communicative patterns can be now studied on a higher analytical level, keeping their qualitative sensitivity to context and meaning, by means of machine learning, automated analysis and digital data processing. The changes suggest that digital cultural studies research is moving from the traditional approach of observing towards a technologically mediated approach of ethnographic analysis that can address these complex digital environments.

More recently, digital ethnography has also seen the arrival of new methodological innovations especially for the AI-based and technologically advanced social contexts (De Seta, Pohjonen, & Knuuttila, 2024). Synthetic ethnography, for example, is a project that is an attempt to consider generative models and artificial intelligence systems within ethnographic frameworks that can be used to interpret interactions and algorithmic cultures that are simulated in the digital realm. Along similar lines, Grigoryan (2024) wondered if all ethnographic practice now had a digital component as technology becomes more and

more ubiquitous in the social sphere. The discussions demonstrate the importance of digital platforms as focal points to comprehend social changes, technological engagement and the evolution of today's culture. Thus, digital platforms continue to play a key role in today's cultures, influencing communication, identity, institutional action, entertainment, political engagement, and social relations in technologically networked society (Cocq & Liliequist, 2024). Therefore, it is necessary to involve people in these environments in the long term to grasp the ways in which culture changes as technology changes and people interact virtually. Digital ethnography is a valuable methodological tool for analyzing the evolution of culture, communication and social life in the digital era, which is increasingly having an impact on daily human life.

AI, Algorithms, and Emerging Ethnographic Methods

Artificial Intelligence (AI) and algorithmic systems have now become an integral part of everyday digital life, changing the practices and methodological perspectives of ethnographic research (De Seta, Pohjonen, & Knuutila, 2024). Recommendation systems, automated content moderation, machine learning algorithms, predictive analytics, and algorithmic forms of communication are a growing part of the contemporary digital environment, impacting how people interact, how information is consumed, and how social realities are created online. This shift has taken ethnographic study from the study of human interaction to the study of the ways in which technology systems are actively involved in the construction of culture, communication, and the ways of online interaction. Witteborn (2026) raised methodological questions about ethnography and AI, particularly regarding the preservation of understanding of people in digitally mediated environments and issues of context and interpretation.

AI has also fostered the growth of newer

ethnographic methods that are able to analyze technologically mediated interactions and algorithmic cultures (Cheah, 2025). For example, the use of AI-augmented "netnography" blends ethnographic analysis with computer support for an analysis of digital communities and online communication. This methodological evolution is gaining increasing importance in a context in which interaction is increasingly taking place in an online context shaped by the algorithm for visibility, participation, and interaction. In view of the relevance of new interaction modes in an online context, where algorithms intervene in the process of visibility, participation, and information circulation, such methodological developments become increasingly topical. Issues of privacy, informed consent, transparency and data ownership have thus emerged as ethical issues in the current practice of digital ethnography. In addition, Cheah (2025) claimed that methodological reflexivity is needed for responsible digital research to ensure that digital research environments are balanced between technological innovation and ethical responsibility. Algorithms have also impacted the ways in which digital communities are created, moderated and lived on the internet (Thach, Mayworm, Delmonaco & Haimson 2024). Research on marginal users of Twitch and Reddit indicates that the field of content moderation and the algorithmic visibilities of content can have a significant impact on participation, identity performance and digital belonging in online communities. Algorithmic systems are thus not just technical infrastructures but also social forces that can influence communication and visibility and regulate interaction within digital spaces. These are examples of how modern ethnographic research needs to increasingly consider the "invisible technology machine" that frames social online experiences and cultural engagement.

More innovation in methodological approaches to ethnography has also emerged with the use of digital tools, computational analysis and

technologically enhanced qualitative methods (Sreekanthaswamy et al., 2025). With the use of digital tools, it is now possible to analyze vast amounts of online interactions that are created by social media platforms, websites, forums and AI-powered apps. Reading and Understanding Qualitative Data Analysis Computer-Assisted Qualitative Data Analysis Software (CAQDAS) to Text Mining is an important trend of qualitative research as computational systems have taken over the organisation, interpretation and representation of complex qualitative data (Bryda, 2019). These developments have enhanced the ethnographic inquiry, not only through the analytical depth, but also by providing the possibility to investigate large scale digital interaction that would be hard to study with traditional methods. The application of machine learning and algorithmic analysis has also shaped the way online narratives are understood, how people communicate online and how social practices are changing (Bryda, 2020). Ethnographic activities can now be conducted in digital spaces using computational analysis to uncover regularities in behaviors, discourses, symbolic interaction and new cultural patterns. The development of this method is a methodology that is seen as emerging as a result of the growing interaction of research methods between qualitative interpretation and computational technologies in today's research. Grigoryan (2024) noted that the technologically mediated social life has made it difficult to distinguish between traditional ethnography and digital ethnography since many facets of social life have become intangible from digital infrastructures and algorithmic systems.

AI also has opened the door to studying human interaction in new ethnographic ways (Hu, Mahmood, David & Huang, 2025). With the analysis of network traffic, the use of AI tools and digitally traceable interaction patterns, it can now be studied how technologies are used in the education and institutional context. The types of approaches cited are examples of

ethnographic research moving beyond observation to technologically-scalable modes of cultural analysis that are able to interpret complex digital behaviour. Likewise, research on the digital aspects of labor in platform economies has revealed the nature of social interaction, labor relations, and everyday cultural encounters in the modern world by using technology. In a similar way, scholars have investigated the digital forms of work and their effects on social interaction, labour relations and everyday cultural experiences in the modern world, and how they shape them (Manriquez, 2025).

Ethical Challenges in Digital Ethnography

As the field of digital ethnography has grown in size, there has been a lot of discussion about issues of privacy, consent, data ownership, anonymity and the responsible interpretation of online behaviours (Jemielniak, 2020). As opposed to traditional ethnographic contexts which tend to occur in well-defined physical places, digital spaces raise different ethical issues because they are spaces where one's personal information, digital traces and social productions are constantly created across platforms. Because it is so easy to access these conversations, comments, videos, photographs and digital interactions, there have been concerns about whether all the content found online is automatically considered a "legitimate" source of ethical research data. As digital media environments become more and more permeable to ideas of public and private communication, ethical issues become complex in the present digital research context (Lindgren, 2022).

Ethical issues have become even stronger in digital ethnography as a growing process of datafication intensifies these issues (Flensburg & Lomborg, 2023). Algorithms and technological infrastructures constantly gather, process and spread user data on digital platforms, with little user control over the flow of these data. Because of these, ethnographic

research in online settings often has to deal with a massive amount of digital data that is subject to ethically fraught issues of ownership, visibility and access. In the digital society, people are increasingly subjected to the influence of coded systems and algorithmic mechanisms in their communication, identity construction, and social participation, according to Schwarz (2021). These techno-structures raise ethical issues as researchers have to maneuver in a space where personal data can be scrambled, processed and re-circulated without the user always being aware of its flow and usage in digital systems.

There are issues debated within digital ethnography that have always been considered ethical, although they are not fully resolved, such as those of informed consent (Prus, 2025). Ethnography is done traditionally in face-to-face encounters between researcher and participants, which usually involve a complete negotiation of consent and participation. In an online setting, though, the process is complicated as interactions can be anonymous, asynchronous, and happen on a variety of online platforms. In many online communities, users will not even know that their actions, such as discussions, posts or digital activities are being observed as research. It is thus important to consider the classical principles of reflexivity, immersion, ethical sensitivity, and contextual awareness in order to continue to engage in responsible research with ethnographic methods in online fieldsites, argues Prus (2025).

AI and computational tools are also emerging as new ethical issues with qualitative inquiry (Abramson, Li, Prendergast, & Dohan, 2025). As ethnographic analysis becomes more technologized, through the use of machine learning, automated coding systems and computational workflows, a growing number of questions are being raised about the degree of influence that technology will have on qualitative interpretation. However, machine learning can also be used to improve the

analysis of large-scale digital interactions, but overreliance on automated systems could diminish contextual interpretation and sensitivity to the nuances of human interactions (Li & Abramson, 2024). Ethical issues thus arise about efforts to preserve the depth, reflexivity and cultural knowledge that have long been central to ethnographic inquiry that may be provided by technologically mediated interpretation.

Ethical issues of representation, interpretation, and safeguarding of the vulnerable communities in the online environment are also a concern for digital ethnography (Akkaya, 2023). Online communities often involve minority communities/individuals, transnational communities, minors, and others who are talking about sensitive issues that can have social consequences if research is improperly conducted online. Therefore, the ethical aspect of an accurate representation of an online community gains in importance in digital cultural studies. Research on the concept of identity and identity exploration in video game participatory cultures, for example, has identified how online space is a space where people can try on their identity, belonging and self-expression, that may not be possible in the offline world (Barany & Foster, 2019). The misuse of such information can lead to participants being subject to harassment, stigmatisation or digital vulnerability.

Digital technologies and computational systems have also been increasingly incorporated into qualitative inquiry, and have also sparked concerns about the competence of researchers and their ethical responsibilities (Pope & Costa, 2023). As digital ethnography becomes more contemporary, it demands technological literacy, computational skills and methodological flexibility is increasingly necessary, as digital algorithm, platforms and online infrastructures have an impact on data production and social interaction. In the absence of proper awareness of such systems, risks for ethical issues regarding

misinterpretation, surveillance, misuse of data and technological manipulation can rise considerably. Wa-Mbaleka and Costa (2020) also found that there is a need to continually adapt the methodology used in digital research environments, particularly in time of crisis and social disruption when online communication is a key part of social life and qualitative research.

Within digital ethnography, the reliability and interpretive consistency is also an important moral question (O' Connor & Joffe 2020). With the advent of digital environments, which produce enormous and continually evolving forms of communication, it becomes more challenging to maintain consistency in coding, interpretation and analytic judgment. Transparency, reflexivity and careful methodological rigor are then essential in the case of ethical qualitative inquiry, to minimize interpretive bias and achieve its analytical credibility. This worry is even more acute in technologically advanced ethnography projects that incorporate the use of AI-generated data, network analysis, wearables, and massive interactions in the digital space.

Conclusion

The study of Digital Ethnography as applied to Cultural Research illustrates that the digital technology has significantly transformed the ways of studying, interpreting and understanding culture in today's society. The use of digital ethnography with social media platforms, online forums and other digital spaces has extended the scope of ethnography beyond simply observing cultural practices, giving ethnographers the opportunity to observe cultural practices as they happen in real time across connected digital spaces. This change has lifted much of the spatial and temporal restraints imposed by traditional ethnographic methods and opened the door to examine cultural processes in the ever-changing online realm.

The study has also demonstrated that digital

ethnography is part of algorithmic and platform-based configurations that are in part driving cultural expression and social interaction. Therefore, it is important to not only be aware of humans' behaviour but also the technology infrastructures that shape how people see, participate and form their identities in digital environments. Digital ethnography is a powerful methodological approach to inform studies of the cultural production, movement and transformation in digitally mediated societies.

But, as the new field of digital ethnography evolves, it also poses some important methodological and ethical questions. Credible and ethical digital research continues to be bound by principles of privacy and informed consent, data protection and responsible interpretation. Moreover, the growing role of artificial intelligence, datafication, and algorithmic systems adds to these issues, and ongoing reflexivity and methodological awareness are necessary to address online cultures.

To guarantee that digital ethnographic inquiry is ethically justifiable and methodologically sound, it is important to tackle these challenges.

Moreover, today's digital spaces are complex and require ongoing methodological development and interdisciplinary work. To strengthen competences in digital tools and build computational literacy and to integrate multiple qualitative approaches for an enhanced depth and accuracy of cultural analysis in digital contexts. Additionally, it is necessary to further discuss digital inequality to make sure cultural representations in digital ethnography are inclusive and representative of social groups.

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