Original Article

JOURNAL OF PEACEBUILDING & DEVELOPMENT

Journal of Peacebuilding & Development
1–19

DOI: 10.1177/15423166241293856
journals.sagepub.com/home/jpd

Sage

Navigating the Pandemic Through Technology: Colombian NGOs Promoting Peace During the COVID-19 Era

Laura Gianna Guntrum
Science and Technology for Peace and Security (PEASEC), Department of Computer Science, Technical University of Darmstadt, Darmstadt, Germany

Sofia Cerrillo
Science and Technology for Peace and Security (PEASEC), Department of Computer Science, Technical University of Darmstadt, Darmstadt, Germany

Christian Reuter
Science and Technology for Peace and Security (PEASEC), Department of Computer Science, Technical University of Darmstadt, Darmstadt, Germany

Abstract
This article examines how Colombian NGOs use Information and Communication Technologies (ICTs) for peacebuilding attempts amid the COVID-19 pandemic. Drawing from 17 interviews with NGO members, the study underscores the pivotal role of digital peacebuilding in sustaining and expanding peace attempts, effective data management, and a broader engagement of target groups beyond in-person activities often associated with safety and financial concerns. The findings also identify prevailing challenges of incorporating ICTs in NGO's peacebuilding activities, ranging from privacy-related concerns to connectivity issues. The article points out the potential for NGOs to enhance interactivity, knowledge transfer, and diversity in their activities with ICTs, including IT security training and awareness campaigns on hate speech and propaganda. It also emphasizes the importance of developing risk reduction strategies tailored to the specific needs of different target groups.

Keywords
case study, digital peacebuilding, ICT, PeaceTech, social media, NGOs, Colombia

Corresponding Author:
Laura Gianna Guntrum, Science and Technology for Peace and Security (PEASEC), Department of Computer Science, Technical University of Darmstadt, Darmstadt, Germany.
Email: guntrum@peasec.tu-darmstadt.de

Introduction

The COVID-19 pandemic and the associated measures, such as social distancing, have considerably changed our way of living, promoting the use of ICTs in nearly all areas of life, including peacebuilding (Clark & Alberti, 2021; Kassoumeh, 2020). Several digital tools facilitate online communication and the migration of analog activities to the online space (Dhawan, 2020). ICTs have diverse fields of applications, such as addressing violence, combating hate speech, and monitoring electoral fraud (Mukoya & Mukherjee, 2020). They are also used for online memorialization and extensive documentation, for example, in Yemen (Hofstetter, 2021) and Syria (Al-Kahwati & Mannergren Selimovic, 2021). In Colombia, which has suffered one of the world's most protracted and violent armed conflicts over the past five decades, ICTs have also been playing an increasingly important role in fostering peace (Chenou et al., 2019). After numerous (partly failed) peace talks, the guerrilla group *Fuerzas Armadas Revolucionarias de Colombia-Ejército del Pueblo* (FARC-EP) and the Colombian government signed a peace agreement in 2016 (Laengle et al., 2020). The "Final Agreement to End the Armed Conflict and Build a Stable and Lasting Peace" mentions communication and dissemination tools such as radio, television, and social media (SM) to educate the public about the agreement and its ongoing progress (Gobierno Nacional Colombia and FARC-EP, 2016).

In addition to officially appointed government actors (e.g., the Truth Commission), non-governmental organizations (NGOs) engaged in peacebuilding are actively participating in the peace process by providing a nexus between grassroots movements and high-level politics (Alther, 2006). Despite institutional digitalization efforts, particularly in the transitional justice sphere (Haunschild et al., 2024), the peace process experienced deceleration during the COVID-19 pandemic. NGOs had to deviate from in-person events and find digital alternatives to push their peacebuilding agendas (Clark & Alberti, 2021). In their quest for total peace in Colombia, NGOs are promising actors not only given their dynamic role as interlocutors but also due to their potential to foster greater cohesion among civil society towards a common peace agenda and meaningful participation (Abozaglo, 2009).

Despite the substantial state of research on digital peacebuilding, there is a notable gap both in the context of Colombia and in terms of understanding how NGOs employ ICTs for peacebuilding initiatives during the COVID-19 pandemic. In light of the "local turn" in peacebuilding, it becomes increasingly imperative to engage and empower local actors, including NGOs, in peacebuilding processes. This is because the active participation of local stakeholders substantially enhances the prospect of attaining sustainable peace. Hunt (2023) underscores the challenge of the disconnect between research and practical narratives, arguing that the local turn has not been effectively put into practice. Consequently, it is crucial from a scientific standpoint to pay increasing consideration to civil society entities, including NGOs, in the realm of digital peacebuilding. This guided our decision to conduct 17 semi-structured interviews with Colombian NGO members engaged in peacebuilding to address the following research question: To what extent did Colombian NGOs incorporate ICTs in their peacebuilding activities during the COVID-19 pandemic, and what were the identified opportunities and challenges related to this integration? Generally, the research seeks to address the identified research gap and contribute to the literature on digital peacebuilding by exploring the dynamics between Colombia's peacebuilding efforts and the growing adaptation of ICTs within the NGO sector.

The article proceeds in six parts: First, we will introduce the key literature on digital peacebuilding and our methodological considerations. Afterward, we will present a brief contextualization and the empirical analysis of how Colombian NGOs employ ICTs, exploring the opportunities and challenges they encounter. Subsequently, we will synthesize the primary findings, followed by the study's limitations and potential for future work.

Digital Peacebuilding: A Theoretical Approach

Within peace research, peacebuilding and technology were often not seen in relation to each other, given their different core disciplines. This has changed, and the trend towards digitizing peacebuilding activities has given rise to an entire field of practice called "digital peacebuilding," which has had a significant impact on the structures and approaches of international peacebuilding efforts (Hirblinger, 2024; Richmond et al., 2023). Hirblinger (2024, pp. 2–3) highlights that "when seeking out opportunities for transformative change toward a more peaceful world, the digital and the non-digital can't be thought as a binary, only as a dyad in which both elements matter in relation to each other."

Leveraging Technology for Peacebuilding: Unleashing Possibilities

Several studies, mostly focusing on the African and Arab context, discuss the role of digital technologies in peace processes and conclude that ICTs have "transformative effects (…) on political conflict" (Dafoe & Lyall, 2015, p. 401) and generally offer many opportunities to promote peace (e.g., Baytiyeh, 2019; Chenou et al., 2019; Hofstetter, 2021; Mukoya & Mukherjee, 2020; Ndawana, 2023; Spillane, 2015). Empirical examples show that ICTs, inter alia, enable affected communities to "self-organize and develop alternative infrastructures of peacebuilding" (Hofstetter, 2021, p. 5), shifting the role of civil society from being an object of peacebuilding to being actively involved subjects (Larrauri & Kahl, 2013). This fosters a more "society-oriented historical truth" (Chenou et al., 2019, p. 103). Schirch (2020) suggests a comprehensive list of 25 activities encompassing digital citizen journalism, gaming, digital governance, and digital public safety that various stakeholders employ in digital peacebuilding. Data management (including efficient data gathering, analysis, and visualization) is mentioned particularly frequently in the literature, aiming to improve rather tedious analog processes (Larrauri & Kahl, 2013). Richmond et al. (2023, p. 36) argue that "the most common technological feature of digital peacebuilding includes the utilization of 'big data' (…) for conflict mapping." Generally, AI-supported tools enable consultation with the general public at large in real time (Masood Alavi et al., 2022). Another area often mentioned is "communication," allowing quick information transfer. This helps different stakeholders, such as NGOs, promptly respond to people's needs and establish an exchange (Larrauri & Kahl, 2013). Furthermore, empirical examples demonstrate that technology also promotes networking and intergroup dialog, yielding a fruitful tool to promote peace (Hofstetter, 2021). It results in ICTs having the potential to shape powerful conflict transformation partnerships by, on the one hand, building and strengthening cohesive, participatory, and multi-sectorial peacebuilding networks at local, regional, and national levels (Hattotuwa, 2004, pp. 12–13). On the other hand, ICTs energize the creative dynamics of societies to fully engage with the paradigm shifts necessary for a post-conflict scenario and fertilize the peacebuilding process (Väyrynen, 1991). The strong overlapping with the nature and capacities of NGOs reinforces the assumption that ICTs can complement and potentialize their peacebuilding efforts. Another area, characterized by its creativity and its capacity to nurture empathy, is the realm of "gaming." It offers alternative incentives to foster intergroup dialogs and to promote peace education (Larrauri & Kahl, 2013).

Nevertheless, while numerous studies solely focus on the potentials of ICTs in peacebuilding, Tellidis and Kappler (2016, p. 75) state that "for every identified positive role that ICTs can play, there are corresponding risks that may spoil or stall peacebuilding efforts, or indeed reinforce or generate new power structures that render said efforts exclusionary."

Challenges of ICT for Peacebuilding: Navigating the Landscape

Although ICTs are often seen as an instrument to reach more people, not everyone has equal access to all types of technology. This can result in a "force of division" (Haque et al., 2022, p. 1), which may

potentially lead to further marginalization (Chenou et al., 2019). Access problems arise for various reasons, such as lack of internet connectivity and financial resources or technical knowledge to use certain technologies (Larrauri & Kahl, 2013). Yet another hurdle in utilizing ICTs for peacebuilding is that they can be misemployed to spread hate speech, misinformation, and propaganda. This often exacerbates polarization and intensifies existing tensions within a post-conflict society, hindering peacebuilding attempts (Welch et al., 2015).

In an era of increasing privacy concerns, data security considerations may become another challenge in using technologies for peacebuilding. Information exchange via the internet can be easily traced and used by third parties, which results particularly problematic in peacebuilding settings where institutions often handle sensitive data of victims and ex-combatants. An involuntary disclosure of sensitive data may harm peacebuilding efforts by increasing the risk for participants in peace activities and/or exacerbating divisions between conflict groups (Young & Young, 2016).

Another challenge concerns the design of ICT tools used for peacebuilding, which should promote empowerment, intervention, and active engagement rather than encourage passivity (Onditi, 2021). Larrauri and Kahl (2013, p. 2) remark that the inappropriate design and use of technologies can lead to the development of a culture of "clicktivism" in peacebuilding: "Sending information but receiving no feedback, clicking a 'like' button but not changing attitudes, discussing an issue online but failing to take action offline – are all examples of passivity resulting from technology use."

Research Gap

While the existing literature examines the potentials and challenges of digital peacebuilding, it often overlooks context-specific conditions that hold significant relevance for the field. Furthermore, the existing body of literature lacks comprehensive research addressing, first, the role of NGOs in digital peacebuilding and, second, a specific focus on a Latin American country, such as Colombia. Given NGOs' pivotal role as intermediaries and advocates of peace across diverse domains, it is essential to gain a deeper understanding of their ICT use. This encompasses areas varying from lobbying, advocacy, and welfare provision (Vakil, 2018) to capacity building and mediation (Abozaglo, 2009). While this study focuses on key literature regarding digital peacebuilding, it does not explore the use of ICT in areas such as transitional justice work in Colombia. Nevertheless, we acknowledge the substantial body of published work in this field (e.g., Bocanegra García et al., 2016; Dajer, 2021).

Methodology

Case Selection and Data Collection

Colombia represents an important case study in the realm of digital peacebuilding due to its unique peace agreement, characterized by an intersectional approach with a strong emphasis on territorial peace and the involvement of many different groups (e.g., Afro-Colombians, ex-combatants), all having very different needs. In 2024, marking eight years since the final agreement, the country still faces ongoing violence and high inequality in both the digital and physical realms. Structural issues linked to poor connectivity in rural areas are exacerbated by limited digital literacy, often resulting from prevailing inequalities in accessing information and education (Berrio-Zapata et al., 2017; Departamento Administrativo Nacional de Estedística, 2019). Although Colombia faces a strong digital divide, the country stands out globally for its high daily average internet usage (Kemp, 2022).

Aiming to gain in-depth insights, 17 semi-structured ($X_{max} = 78$ min, $X_{min} = 31$ min, $\bar{X} = 51$ min) interviews with members of 14 different Colombian NGOs, thematically focusing on peacebuilding, were

conducted between December 2021 and March 2022 (see Table 1, Appendix). Such NGOs represent "the greatest source for sustaining peace in the long term" since they are familiar with local structures (Lederach, 1997, p. 94) and the level on which they operate facilitates communication and engagement among civil society. During the pandemic, they were namely "the driving force behind peacebuilding, (…) with international organizations unable to be on the 'frontlines'" (Clark & Alberti, 2021, p. 4).

A semi-structured questionnaire was developed in advance to query relevant aspects related to ICT and peacebuilding, inspired by related work on digital peacebuilding and NGO characteristics (see Table 2, Appendix). The selected timeframe—nearly two years after the outbreak of the COVID-19 pandemic—enabled us to examine the extent to which NGOs digitized their peacebuilding activities and the perceived opportunities and challenges they experienced during this period. Employing purposive sampling, we carefully selected NGOs meeting predetermined criteria (based in Colombia, utilizing ICTs, and actively involved in peacebuilding efforts) pertinent to our research inquiry. After the first interviews, additional NGOs that were recommended by the interviewees were contacted (snowball sampling) (McIntosh & Morse, 2015; Patton, 2014). The interviews were conducted in Spanish via encrypted communication tools and were recorded with the interviewee's consent. None of the interviewees was financially remunerated. All participants were of legal age and gave their consent to be named as an organization. Other research ethics requirements and do-no-harm principles were met (The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979; Wood, 2006).

Data Analysis

Inspired by qualitative content analysis (Gläser & Laudel, 2010), the coding scheme was iterative, guided by both the theoretical framework and the empirical data (Elliott, 2018). The main categories are primarily rooted in theoretical frameworks on digital peacebuilding (deductive coding), albeit with some augmentations (inductive coding). Using the qualitative data analysis software MAXQDA, the empirical data was manually clustered into four main categories, that is, NGO characteristics, opportunities and challenges of digital peacebuilding, and approaches to address challenges. These categories encompass sub-categories and a collective of 757 codes that have been grouped together due to their shared thematic focus (see exemplary Figure 1). Within the overarching category of "opportunities of digital peacebuilding," for example, subcategories have been created, including data management and communication, leading to the creation of numerous codes (e.g., public digital polling, fostering intergroup dialogues). Adhering to the quality criteria, one's own positioning was constantly reflected during the coding process.

Empirical Analysis: NGO's Use of ICTs for Peacebuilding in Colombia in Times of COVID-19

The following section is structured in alignment with the identified core categories.

Colombian NGOs Engaged in Peacebuilding

First, we will draw attention to the main observations of the NGO sample in terms of size, outreach, scope of action, and target audiences. In our study, 57% of the NGOs were mid-sized (10–50 salaried employees), and most organizations had several volunteers who actively supported different kinds of activities (see Table 1, Appendix). Twelve NGOs indicated their involvement in multiple regions, entailing extensive travel expenses and presenting difficulties in sustaining in-person meetings. Regarding the scope of activities, all NGOs were active in at least two fields of activities, including lobbying, advocacy, and welfare provision. Welfare provision, together with lobbying and advocacy,

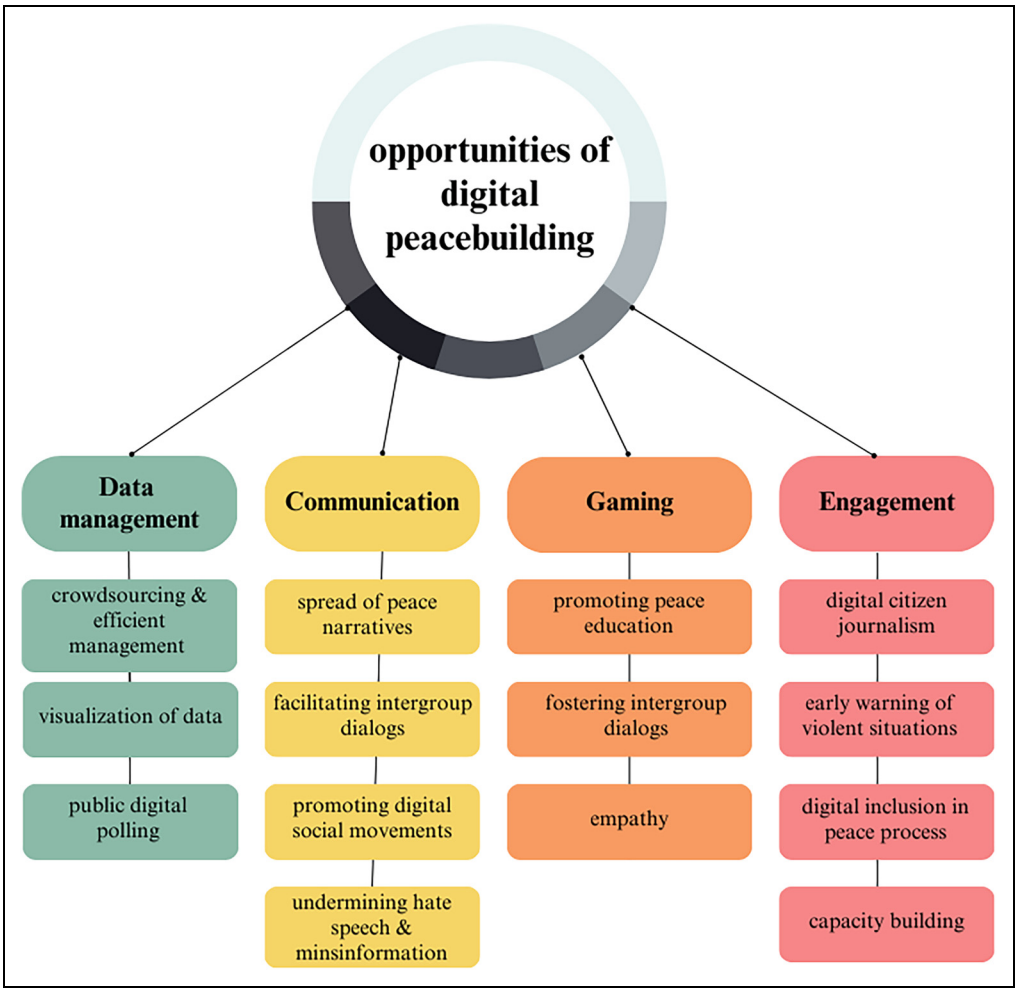

Figure 1. Coding scheme of opportunities of ICT for digital peacebuilding.
Source: Own depiction.

account for the most common activities. This information pertains to the time of the interview and may change in the future, given that NGOs frequently operate on a project-centric approach and rely on external funding. All NGOs served similar target audiences, namely victims of the armed conflict and marginalized communities, such as Afro-Colombians. Therefore, four NGOs worked with women and two with ex-combatants. All NGOs reported changes in the way they worked because of the COVID-19 pandemic, pointing out the challenges of virtualizing their workflows and the need to cooperate with other organizations working in peacebuilding to develop more efficient solutions for their common problems (IP8).[1] Nevertheless, one of the interviewed organizations had to partially suspend its activities due to a lack of financial resources for digitizing its operations (IP4).

Digitizing Peace Activities: An Exploration of Their Opportunities

Secondly, the subsequent section will outline key findings in how the chosen NGOs leverage ICTs and present the perceived benefits of their implementation at a local scale, as already introduced in Figure 1.

Data Management. Our analysis revealed that data management emerged as the most significant advantage of digital peacebuilding ($n = 16$). Nine interviewees specified that digital tools facilitated the development of internal databases, which were used, for example, to manage relevant information related to projects involving victims. Moreover, four highlighted that virtualization enabled them to optimize their resources and better coordinate projects. Contrary to the current state of research, the use of AI and big data sets was not mentioned, which is likely associated with a lack of profound technical expertise by employees, high expenses, and difficulties in obtaining relevant big data sets. Concerning polling, falling within the realm of data management, interactive presentation software such as "Mentimeter" and Google Forms were frequently used due to their capacity for efficient information gathering. As IP8 opined, "now, there are some things that you send to people, and they have the opportunity to fill them out. This changes everything, it is a hit, it is great because you have fewer mistakes"[2]. Google Forms were also used as a tool to monitor conflict-related indicators and advancements in the implementation of the peace accords and as registration lists for events (IP6; IP12). In terms of data visualization, seven interviewees stated that virtual tools were helpful for creating infographics. These helped organizations to simplify their daily work, adapt their presence and/or focus on meeting local needs, and illustrate the progress of their projects to ensure transparency and accountability ($n = 7$).

Engaging With Target Audience. Even though overcoming geographical barriers ($n = 9$), spreading knowledge and information ($n = 9$), and being able to accompany groups more closely ($n = 5$) have always constituted pivotal elements of daily work operations, their significance was amplified during the pandemic era of social distancing. ICTs were crucial in addressing these needs and were mostly well-received by diverse target audiences. Given that not everyone had constant internet access, information about the NGO's work and activities was primarily disseminated through WhatsApp, enabling individuals to engage with informative material whenever internet connectivity was available (IP16). Nevertheless, whenever feasible, options that enabled two-way-communication were given precedence due to the possibility of direct exchange and widely known applications, such as Zoom ($n = 6$), WhatsApp ($n = 5$), Google Meets ($n = 4$), Signal ($n = 1$), and Microsoft Teams ($n = 1$) were employed. The primary reason behind the widespread use of Zoom and WhatsApp was the applications' high popularity among the user group and the fact that WhatsApp is predominantly free of charge (Free Basics).

Throughout the pandemic, NGOs increasingly used ICTs to involve a broader range of stakeholders from different regions of the country "to connect with people that you can't meet in person" (IP8). This offers a particular advantage to NGOs with activities spanning multiple regions. Besides this, two interviewees emphasized the role of ICTs in facilitating intergroup dialogue between individuals with diverse backgrounds who would otherwise be unlikely to engage in discourse on socio-political topics. The project "we have to talk about Colombia" served as a good example for addressing prevalent apprehensions and possible solutions (IP8). This demonstrates that ICTs are essential for exploring different formats to engage in peacebuilding in a cost-effective and low-threshold way. Ensuring low-threshold services is essential to increase engagement among the various target groups. In general, 11 interviewees reported an increase in peacebuilding participation, partly attributed to the convenience of online engagement, which allowed individuals to participate regardless of their geographical location. Particularly for people from remote and non-secure areas or with high travel costs, digital activities provided an opportunity to participate. Additionally, five interviewees highlighted that ICTs enabled a more intimate and continuous accompaniment of the target groups. IP7 described a similar impression: "Through technology, it was possible to provide immediate accompaniment. It was wonderful to deepen [it] and to make it more constant." It was emphasized on multiple occasions that providing close guidance is essential for establishing trust, a crucial component within peace processes.

Gaming. One facet of the advantages of digital peacebuilding, according to the identified literature, is gaming for peace. Nonetheless, in our specific case study, gaming appeared to have limited relevance, as only two NGOs had hands-on experience in utilizing virtual gaming as a tool for peacebuilding. Of these, one developed a virtual game to explain the United Nations resolutions for Colombia (IP11). IP2 stated that they attempted to introduce a game app for peace education but encountered technical problems and high costs that prevented its success. The concept of developing games that allow users to empathize with different perspectives of actors involved in the armed conflict appeared to be of pedagogical importance. It is vital to consider context-specific circumstances and ensure the game is not too memory-intensive and works with a poor internet connection (IP2). In response to existing circumstances, the selected NGOs rather used other interactive tools, including "Mural" (a digital whiteboard) and online quiz platforms to increase the audience's engagement with topics related to the armed conflict and to foster creativity ($n = 4$).

Engagement. In response to the question about active engagement, two participants mentioned that ICTs enable social leaders to rapidly send alerts when they are in danger and to inform NGOs about ongoing instances of violence (IP12; IP15). This holds particular significance in remote areas, where the availability of warning mechanisms is limited due to, inter alia, long distances that impede the rapid dissemination of information. IP12 emphasized that "to protect people under threat, different instruments have been used and one of them was an app that was installed on the mobile phone, which did not require internet, and they could send an SMS alerting that the person was at risk."

Downsides of Digitizing Peace Activities and Charting a Path Forward

Having presented the advantages of digital peacebuilding, we will proceed to introduce the identified sub-categories related to the challenges of digital peacebuilding and the ways in which they were addressed to some extent.

Unequitable Access and Digital Divide. According to all interviewees, the foremost obstacle to digital peacebuilding initiatives is the issue of inequitable access and the digital divide, encompassing four distinct dimensions: (1) geographical ($n = 13$), (2) socioeconomic ($n = 8$), (3) age ($n = 6$), and (4) technical expertise ($n = 5$). The interviewees agreed that, even when available, the internet connection frequently lacks strength, thereby impeding the effective use of specific applications (IP5). The poor internet connection and the absence of electricity ($n = 4$) continue(d) to pose significant challenges in rural areas, particularly because these regions are disproportionately affected by the armed conflict and where most peacebuilding activities are carried out. Moreover, access problems were sometimes intensified by the presence of guerrilla and neo-paramilitary groups operating outside the law. They frequently restricted internet access and damaged infrastructure to prevent residents from sharing information with their adversaries (IP12; IP16). Concerning mobile data, most people owned a smartphone but lacked the financial resources to afford a data plan ($n = 8$) for using data-intensive applications such as downloading certain content ($n = 7$). Historically, rural areas have experienced higher levels of monetary poverty compared to urban centers, and in 2021, the percentage of households with internet access in urban regions was more than double that in rural areas (Departamento Administrativo Nacional de Estedística, 2021). Moreover, internet access in households with Indigenous, Black, and Afro-Colombian populations was significantly below average (Departamento Administrativo Nacional de Estedística, 2019). In such cases, most interviewed NGOs frequently covered the expenses for mobile data ($n = 12$) or the transportation to the nearest location with internet ($n = 4$). Although these alternatives may not be as interactive or suitable for group discussions, they ensured that people could remain connected. When internet access was entirely unavailable, the primary means

of communication included SMS and phone calls, with the added challenge of stable phone connections being rare in certain areas ($n = 6$). Considering the insufficient internet coverage, some NGOs stressed the government's responsibility to supply affordable internet access nationwide. Since NGOs mostly lack the financial resources to do so, they encouraged the use of more non-simultaneous peacebuilding activities that do not require an intermittent internet connection. Five NGOs suggested renting a community room with internet access to enable hybrid participation and secure a space for people to come together, which became feasible as the pandemic restrictions eased. Moreover, eight interviewees indicated that low income – given the unaffordability of a stable (wireless) internet connection – and poor technical knowledge were two additional barriers to digital peacebuilding. Regarding little technical know-how, NGOs implemented digital literacy training to help individuals gain basic knowledge to effectively use technology ($n = 8$). Additionally, some employees operated as technical support during online activities.

Regarding age, NGO members affirmed that younger participants in digital peacebuilding activities typically exhibit more familiarity with virtual tools and thus encounter fewer barriers than older participants ($n = 6$). Additionally, in the context of technical expertise, limited technical know-how also proved to discourage the use of ICTs ($n = 5$).

Hate Speech, Misinformation, and Propaganda. Polarization, hate speech, and the spread of misinformation were identified to affect peacebuilding efforts and to constrain the organizations' work significantly ($n = 9$). Several NGOs frequently used group chats to implement activities – a practice that occasionally faced difficulties stemming from polarization and the presence of hate speech. IP8 reported that "hate speech on virtual spaces becomes a snowball and is very polarizing. The whole effort to spread peace narratives can fail if someone in a group sends hate messages. Hate speech has affected the work of the organization." The inhibition threshold to post something malicious or inaccurate often seemed quite low because of the facility to send anonymous threats on the net ($n = 3$). In response, two organizations established dedicated teams to swiftly counter hate speech and misinformation by providing accurate information in response (IP3; IP9). Furthermore, credible sources are proactively shared on various networks on a regular basis to disseminate truthful information (IP1; IP9). IP1 and IP9 expressed a specific interest in training the individuals they collaborate with to detect fake news and critically evaluate different information sources. However, unlike what is commonly highlighted in existing literature, countering misinformation was not a universal priority for all NGOs.

Beyond encountering hate speech, encompassing violent content, IP16 shared that s/he had experienced personal exposure to direct threats on WhatsApp: "It obviously puts us at great risk. (…) We get messages on WhatsApp to attack us. Most of the threats have been sent through technological means."

Data Security. Another aspect that has hitherto received scant attention in the existing literature on digital peacebuilding is data security. About one-third of the respondents expressed concerns about the participants' personal privacy when engaging in virtual activities ($n = 6$). During virtual sessions, most participants were at home or in settings where others could hear them, imposing significant limitations on their ability to speak openly about sensitive topics: "Many people live in houses very close to each other, so they share a wall. There is a presence of armed groups in these areas, an armed actor can be your neighbor, and you are sharing a wall, so we couldn't talk about many things" (IP11).
Besides that, the interviewees touched upon the inadvertent exposure of sensitive data, hacking, and digital surveillance without naming potential adversaries ($n = 5$). IP9 reported having experienced digital surveillance during a meeting with the Colombian Truth Commission – one of the three transitional justice institutions: "We had a meeting where many of the things that were said were sensitive

issues, and in that meeting, we received cyber-attacks to disrupt the transmission. They tried to take control of the meeting" (IP9). In addition to isolated incidents during meetings, nine organizations mentioned that they had to deal with systematic cybersecurity issues, such as hacking attacks on their websites or SM channels. While three NGOs have established internal privacy policies that involve pseudonymizing personal data related to target groups, many organizations have taken additional steps to enhance data security. For instance, five NGOs provided privacy and cybersecurity training to their employees, thereby equipping them with a better understanding of managing sensitive data and safeguarding their accounts. Although three organizations had incorporated more capacity-building mechanisms into their work, they highlighted the importance of developing further strategies: "We had to consult with people in cyber fraud and digital security issues to find out what measures we had to take to prevent such things from happening again and to prevent other types of digital attacks" (IP9).

Furthermore, some interviewees proposed the implementation of preventative measures, such as the regular backup of data, in order to mitigate the risk of data loss (IP3; IP9) or occasionally setting online meetings as private, requiring employees to manually admit attendees to prevent uninvited guests from joining the session ($n = 4$). IP11 and IP12 mentioned that they had provided participants with a secure location for attending online activities without exposing themselves to risk or limiting the discussion of highly confidential topics to non-virtual spaces (IP11; IP12). Here, COVID-19 lockdown measures posed an additional challenge ($n = 3$).

Tool Design and Participant Behavior. Another challenge pertains to the partially unpredictable behavior of participants in the digital realm. In certain instances, virtual tools appeared to encourage passivity and behaviors such as clicktivism. IP16 commented that "in the case of Arauca [region in Colombia], a guerilla war and violence continue. Thus, everyone shows solidarity with Arauca on social media and says that it is necessary to achieve peace, but then, in reality, not much is happening. People live through social media." IP5 emphasized that some participants turn off their cameras when using video platforms and seemed to be distracted quite easily: "(…) the anonymity allows for a greater lack of attention: you're connected, and you can switch off at any time and do something else." To counter "online fatigue" and to promote more interactive and less exhausting participation, four respondents reported to have used new approaches, such as break-out-rooms ($n = 4$). IP16 suggested that the passivity fostered through ICTs should involve a revival of in-person activities, emphasizing the importance of not solely focusing on digital peacebuilding efforts. Striking a balance was evidently crucial, as the convenience of virtual participation had partially led to an increase in reluctance among individuals to attend in-person meetings when they were possible during the pandemic ($n = 5$).

Discussion

Recognizing the increasing importance of digital peacebuilding within the broader context of peacebuilding efforts, the article examines the principal opportunities and challenges Colombian NGOs face in using ICTs for peacebuilding during the COVID-19 pandemic. In Colombia, the integration of ICTs into peacebuilding activities has yielded a multitude of positive and challenging outcomes for NGOs, aligning with recent contributions within the field of digital peacebuilding (Chenou et al., 2019; Hofstetter, 2021; Larrauri & Kahl, 2013; Schirch, 2020; Welch et al., 2015; Young & Young, 2016). Before the COVID-19 pandemic, digital peacebuilding activities were not as prevalent in Colombia as they are nowadays, although larger institutions, like the Truth Commission, used ICTs to visualize the historical account of the armed conflict and the milestones of the peace agreements (Haunschild et al., 2024; Marín Ochoa, 2018). The pandemic brought along the urgent need to rethink peacebuilding efforts (Kassoumeh, 2020), encouraging NGOs with a focus on peacebuilding to largely

develop suitable formats that would improve access to digital peacebuilding activities within their local context. Both the unleashing possibilities and the potentially harmful impacts of ICTs require further attention by academics and practitioners since the applications of ICTs in the peacebuilding field will keep evolving after the COVID-19 pandemic. Subsequent research, also in other (post) conflict settings, can expand upon the presented results and investigate whether the increased use of ICTs has effectively contributed to fostering reconciliation and peaceful coexistence. Moreover, it would be worthwhile to investigate the measures presently being implemented to alleviate digital fatigue and counteract passivity and clicktivism (Onditi, 2021) that have been observed by the NGOs.

Despite the existence of various ICT-enabled fields, as defined by Schirch (2020), most NGOs were only active in a selected few, particularly in facilitating data management, communication, and engagement. Other domains, such as gaming or election monitoring, were scarcely or not represented at all, either due to limited finances and technical know-how or other factors not considered in the present study (Larrauri & Kahl, 2013; Mukoya & Mukherjee, 2020). Nonetheless, we highlight the potential of games for peace that are developed in a targeted and interactive manner to raise empathy and interest in peacebuilding among individuals who would otherwise be less inclined to partake in analog peacebuilding activities. This may serve the longer-term aim of promoting peace education and fostering a profound social dialogue around the possibilities of promoting peace in a country with ongoing conflict dynamics.

In cases where ICTs were frequently employed, they were perceived as valuable for optimized and coordinated data management and for providing information on peacebuilding to a broader public. Simplifying daily tasks, such as visualizing project progress, contributed to enhanced transparency and accountability towards beneficiaries and funders, as well as to the implementation of evidence-based decision-making processes and potential improvement strategies. ICTs proved their potential to serve as warning mechanisms, as illustrated by Gaskell et al. (2016), to vulnerable communities living in areas under the presence of non-state armed actors with significant intimidation power. Thereby, rather low-tech solutions (microblogging, video-conferencing, and instant-messaging apps) were used the most. In contrast to the initial discourse in the literature (Masood Alavi et al., 2022; Richmond et al., 2023), advanced technologies like AI and big data had no discernible role within Colombian NGOs during the interview period. It is vital to verify which technology can be used in a context-specific manner (Hirblinger, 2024) and to consider whether to invest resources in developing tools that potentially cannot be used by a majority of people due to for example, memory or connectivity constraints. In terms of developing technology for peace (PeaceTech), practitioners and developers need to engage in a dialogue to share insights on context-specific conditions and needs. NGOs are particularly well-suited for this task due to their close engagement with local communities and their in-depth understanding of context-specific requirements.

While some activities were easily digitized, others, such as the exhibition of *salón del nunca más*, required more time and financial means to be fully transferred to the virtual sphere. Nonetheless, small-sized NGOs with a small or middle-scale outreach and often limited resources were able to carry out most of their activities online, using mostly low-cost applications. The results indicate that many different factors determine how and to what extent certain activities are digitized. Licensing costs, the technical expertise of the employees, and the need to develop own applications (e.g., games for peace) play, inter alia, an essential role. In such cases, NGOs may incorporate expenses for digitizing their tasks into their future budgets and seek (additional) financial support from (inter-)national donors to sustain their initiatives tailored to their context-specific needs. In contrast to government-appointed institutions like the Truth Commission, Colombian NGOs usually rely on donor funding, which may affect their priorities, strategies, and decision-making process, also potentially shaping their approach to using ICTs for peacebuilding (Richmond et al., 2023). For sustainable peacebuilding, it is crucial for donors to gain a comprehensive understanding of where requirements lie to ensure that funds are allocated and used effectively.

Generally, we recognize the potential of expanding and adapting online peacebuilding activities (e.g., We have to talk about Colombia) to the changing needs of the communities. These can bring many people together to address fundamental structural and societal problems. This, however, is under the principles of assertive participation and active listening, both fundamental for rebuilding social relationships and trust, particularly in the Colombian context. Additionally, digitizing many peacebuilding activities and incorporating more two-way-communication tools facilitated the opportunities for engagement and participation of people who typically face significant barriers stemming from geographical, financial, and security-related constraints. The two-way communication enables NGOs that collaborate closely with grassroots movements to gain insight into the concerns of individuals in remote territories, which, in turn, allows for a more targeted response to their needs. This holds particular significance in settings where certain groups are frequently marginalized and excluded. NGOs should take measures to prevent the replication of existing forms of discrimination in the digital realm, such as limiting participation to individuals with superior connectivity, and should integrate low-tech alternatives in a pedagogically valuable way.

Having outlined the most relevant opportunities, the interviewees also pointed out the challenges associated with the use of ICTs for peacebuilding purposes. As stated in Haque et al. (2022) and the OECD report (2019), inequitable access to ICTs was on top of the challenges named by the NGOs sample. Although the Colombian government bears the responsibility to reduce the digital continuum, NGOs persist in offering temporary measures to enhance digital participation and internet accessibility. Given the fact that several attributes, such as age and technical expertise, determine the digital divide, the process of addressing all becomes intricate (Berrio-Zapata et al., 2017). To enhance digital literacy, we acknowledge the potential of fostering collaboration within civil society to promote exchange, capacity building, and technical support. These endeavors can be supplemented by awareness training aimed at promoting the responsible and ethical use of ICTs, as well as encouraging innovative approaches to counteract identified challenges, particularly related to misinformation, hate speech, and polarization (Welch et al., 2015).

To a similar extent, privacy concerns were often cited as one of the most prevalent challenges associated with ICT use, even though most NGOs tend to employ relatively data-insecure applications such as Zoom and WhatsApp due to their popularity and low cost. There is an underlying contradiction here: The NGOs seem to have limited alternatives to using these applications, which, despite posing data security risks, enable low-threshold and constant interaction with their target groups. Creating awareness of the potential (digital) risks with participants is one initial step toward finding an adequate strategy to harmonize the need for protecting privacy with the need to maintain communication with the target audience. Overall, NGOs will increasingly need external IT security assistance and, most importantly, foster stronger partnerships with local, regional, and international NGOs and academia to share strategies for improving data security collectively.

Conclusion and Limitations

The presented study contributes to the state of research on digital peacebuilding in two ways. Firstly, it highlights the role of NGOs as intermediaries between institutional peacebuilding efforts and civil society, including grassroots peacebuilding agendas. Secondly, it examines the impact of the COVID-19 pandemic on these processes. Generally, ICTs are expected to be increasingly incorporated into everyday work due to their high acceptance, outreach, and affordability. In the Colombian context, where the historical urban–rural disparities and marginalization of vulnerable groups persist, the potential of ICTs to facilitate peacebuilding should be harnessed in a manner that is emancipatory, inclusive, and participatory. This intersectional approach to digital peacebuilding shall encompass all overlapping forms of discrimination based on, for example, age, gender, and ethnicity. Thereby, academia is

encouraged to engage in a more direct and context-sensitive dialogue with the local communities. This can be achieved by collaborating more closely with local NGOs, enabling them to better understand the specific needs. Furthermore, academic institutions may serve as advocates for civil society and address the structural and institutional gaps in policymaking processes, which keep perpetuating the historic two-fold digital divide. Additionally, conducting a follow-up study on this case would enable us to assess the enduring effects of the increased digitalization observed during the pandemic and to develop new approaches that adapt to the needs of the communities involved in peacebuilding initiatives. Collecting and assessing user experiences, for instance, helps academia, NGOs, and practitioners to have real-time data on the acceptance of ICTs for peacebuilding purposes and identify opportunities for improvement.

The overall findings apply beyond the Colombian post-conflict scenario and may be appropriate for analyzing and engaging in other contexts aiming to set the ground for long-lasting peace. Furthermore, the study reiterates the practical relevance of both ICTs and NGOs in enabling peacebuilding initiatives, whose outreach and success would otherwise be limited considering the ongoing violence and the prevailing socioeconomic disparities and exclusion forms that hinder meaningful participation for all. Considering the number of active conflicts worldwide, this study may encourage a stronger consideration of NGO's ICT use in other scenarios undergoing a conflict transformation. Studying the involvement of NGOs in peacebuilding offers academia an opportunity to contribute to the field by deepening knowledge, identifying best practices, evaluating outcomes, generating innovative ideas, and fostering collaborations. This knowledge can inform policy and practice, leading to more effective and sustainable peacebuilding efforts. Furthermore, empirical studies can facilitate the development of technology that is tailored to the needs of a given context.

While we acknowledge that the study has limitations in drawing generalized conclusions about the use of ICTs by a broad NGO landscape in Colombia, the research findings provide valuable insights into how NGOs have adjusted their methods and tools to promote peace within a dynamic environment. In general, the study does not capture the full spectrum of organizations engaged in peacebuilding activities in Colombia. Consequently, it is essential to recognize that the findings and conclusions drawn from this sample may not be universally applicable to NGOs. The presence of selection bias stemmed from our criterion of selecting NGOs with an established online presence, which was deemed as a minimum criterion for our empirical research. NGOs that do not maintain an online presence may offer additional insights and (dis-)advantages of ICTs, making it an intriguing area for further research.

Acknowledgments

We sincerely thank the interview partners for their support and the time they invested in participating in this study. Additionally, we would like to express our gratitude to those who provided suggestions and feedback to enhance the quality of this paper. This contribution was funded by the German Federal Ministry of Education and Research (BMBF) as part of TraCe, the 'Regional Research Center Transformations of Political Violence' (01UG2203E), as well as by the Hessian Ministry of Higher Education, Research, Science and the Arts within their joining support of the National Research Center of Applied Cybersecurity ATHENE.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the Bundesministerium für Bildung und Forschung, Hessisches Ministerium für Wissenschaft und Kunst (grant number 01UG2203E, ATHENE).

ORCID iD

Laura Gianna Guntrum https://orcid.org/0000-0002-9540-2488

Notes

1. IP means interview partner and the number corresponds to the interviewee.
2. All direct quotations have been translated from Spanish to English to enhance clarity and comprehension.

References

Abozaglo, P. (2009). *The Role of NGOs in Peacebuilding in Colombia*. Kimmage Development Studies Centre. https://mural.maynoothuniversity.ie/9959/1/Patricia-Abozaglosmallpdf.com_.pdf

Al-Kahwati, A., & Mannergren Selimovic, J. (2021). *Addressing Atrocity in Syria: New Challenges for Transitional Justice*. The Swedish Institute of International Affairs.

Alther, G. (2006). Colombian peace communities: The role of NGOs in supporting resistance to violence and oppression. *Development in Practice*, *16*(3–4), 278–291. https://doi.org/10.1080/09614520600694828

Baytiyeh, H. (2019). Social media's role in peacebuilding and post-conflict recovery. *Peace Review*, *31*(1), 74–82. https://doi.org/10.1080/10402659.2019.1613599

Berrio-Zapata, C., Gil, B., & Sebastian, D. (2017). *When Digital Democracy Falls Short: Insights from Colombia*. Research Brief, IT for Change.

Bocanegra García, J. J., González, R. A., & Olaya Bello, L. (2016). Una estrategia para la apropiación de las TIC en la reconciliación de las víctimas Del conflicto armado colombiano'. *Trilogía Ciencia Tecnología Sociedad*, *8*(14), 53. https://doi.org/10.22430/21457778.416

Chenou, J.-M., Chaparro-Martínez, L. P., Mora Rubio, A. M., & Rubio, M. (2019). Broadening conceptualizations of transitional justice through using technology : ICTs in the context of *Justicia y Paz* in Colombia. *International Journal of Transitional Justice*, *13*(1), 92–104. https://doi.org/10.1093/ijtj/ijy028

Clark, S., & Alberti, C. (2021). COVID-19 and adapting to the new normal: Lessons learned for peacebuilding. *Journal of Peacebuilding and Development*, *0*(0). https://doi.org/10.1177/15423166211052832

Dafoe, A., & Lyall, J. (2015). From cell phones to conflict? Reflections on the emerging ICT–political conflict research agenda. *Journal of Peace Research*, *52*(3), 401–413. https://doi.org/10.1177/0022343314563653

Dajer, D. (2021). Colombia: The use of social media in democratic spaces: A double-edged sword. In *Social Media Impacts on Conflict and Democracy: The Techtonic Shift* (pp. 59–80). Routledge.

Departamento Administrativo Nacional de Estedística. (2019). *Indicadores Básicos de TIC En Hogares*. Bogotá. https://www.dane.gov.co/index.php/estadisticas-por-tema/tecnologia-e-innovacion/tecnologias-de-la-informacion-y-las-comunicaciones-tic/indicadores-basicos-de-tic-en-hogares

Departamento Administrativo Nacional de Estedística (2021). *Comunicado de Prensa. Encuesta de Tecnologías de La Información y Las Comunicaciones En Hogares*. Bogotá. https://www.dane.gov.co/files/investigaciones/boletines/entic/comunicado_entic_hogares_2021.pdf

Dhawan, S. (2020). Online learning: A Panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems*, *49*(1), 5–22. https://doi.org/10.1177/0047239520934018

Elliott, V. (2018). Thinking about the coding process in qualitative data analysis. *The Qualitative Report*, *23*(11), 2850–2861. https://doi.org/10.46743/2160-3715/2018.3560

Gaskell, J. R., Larrauri, H. P., Rieken, J., Ali, A., & Ritgerink, A. (2016). *'Uses of Information and Communication Technologies (ICTs) for EU Conflict Prevention and Peacebuilding'*. The London School of Economics and Political Science.

Gläser, J., & Laudel, G. (2010). *Experteninterviews und qualitative Inhaltsanalyse als Instrumente rekonstruierender Untersuchungen*. VS Verlag für Sozialwissenschaften.

Gobierno Nacional Colombia; FARC-EP. (2016). *Acuerdo Final para la Terminación del Conflicto y la Construcción de una Paz Estable y Duradera*. La Habana. https://www.jep.gov.co/Normativa/Paginas/Acuerdo-Final.aspx.

Haque, Z., Bock, J. G., & Tarkhani, H. (2022). The Impact of Information and Communication Technologies on Conflict. In Baikady, R., Sajid, S., Nadesan, V., Przeperski, J., & Islam, M. R. (Eds.), *The Palgrave Handbook of Global Social Change* (pp. 1–18). Palgrave Macmillan.

Hattotuwa, S. (2004). *'Untying the Gordian Knot: ICT for Conflict Transformation and Peacebuilding', Report*. ICT for Peace Foundation.

Haunschild, J., Guntrum, L., Cerrillo, S., Bujara, F., & Reuter, C. (2024). 'Towards a digitally mediated transitional justice process? An analysis of Colombian transitional justice organisations' posting behaviour on Facebook. *Peace and Conflict Studies*, *30*(2), 4. https://nsuworks.nova.edu/pcs/vol30/iss2/4

Hirblinger, A. T. (2024). When the digits don't add up: Research strategies for post-digital peacebuilding. *Cooperation and Conflict*, *59*(3), 425–446. https://doi.org/10.1177/00108367231184727

Hofstetter, J.-S. (2021). *'Digital Technologies, Peacebuilding and Civil Society: Addressing Digital Conflict Drivers and Moving the Digital Peacebuilding Agenda Forward', Report*. University of Duisburg-Essen, Institute for Development and Peace.

Hunt, C. T. (2023). How many turns make a revolution? Whither the 'dialogue of the deaf' between peacebuilding scholars and practitioners. *Journal of Intervention and Statebuilding*, *17*(4), 333–350. https://doi.org/10.1080/17502977.2023.2197446

Kassoumeh, B. (2020). Online peace-building dialogue: Opportunities & challenges post-Covid-19 pandemic emergence. *Journal of Dialogue Studies*, *8*, 86–112. https://doi.org/10.55207/SRDM8118

Kemp, S. (2022). 'Digital 2022: Global Overview Report', https://datareportal.com/reports/digital-2022-global-overview-report

Laengle, S., Loyola, G., & Tobón-Orozco, D. (2020). Bargaining under polarization: The case of the Colombian armed conflict. *Journal of Peace Research*, *57*(4), 551–563. https://doi.org/10.1177/0022343319892675

Larrauri, H. P., & Kahl, A. (2013). Technology for peacebuilding. *Stability: International Journal of Security and Development*, *2*(3), 1–15. http://dx.doi.org/10.5334/sta.cv

Lederach, J. P. (1997). *Building Peace: Sustainable Reconciliation in Divided Societies*. United States Institute of Peace Press.

Marín Ochoa, B. E. (2018). Treatment of post-conflict Colombia through infographics and data visualisation. *Revista Latina de Comunicación Social*, *73*, 700–717. https://doi.org/10.4185/rlcs-2018-1277

Masood Alavi, D., Wählisch, M., Irwin, C., & Konya, A. (2022). Using artificial intelligence for peacebuilding. *Journal of Peacebuilding and Development*, *17*(2), 239–243. https://doi.org/10.1177/15423166221102757

McIntosh, M. J., & Morse, J. M. (2015). Situating and constructing diversity in semi-structured interviews. *Global Qualitative Nursing Research*, *2*, https://doi.org/10.1177/2333393615597674

Mukoya, F., & Mukherjee, A. S. (2020). The Role of Social Capital in Mediating ICT-enabled Peace Building Efforts: A Case Study from Kenya. In Bandi, R. K., Ranjini , C. R., Klein, S., Madon, S., & Monteiro, E. (Eds.), *The Future of Digital Work: The Challenge of Inequality. IFIPJWC 2020. IFIP Advances in Information and Communication Technology* (Vol. 601, pp. 326–340). Springer. https://doi.org/10.1007/978-3-030-64697-4_24

The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. (1979). 'Belmont Report. Ethical Principles and Guidelines for the Protection of Human Subjects of Research', Report.

Ndawana, E. (2023). The potential role of social media in peacebuilding in Zimbabwe. *Journal of Peacebuilding and Development*, *18*(1), 53–67. https://doi.org/10.1177/15423166231154408

OECD. (2019). *OECD Reviews of Digital Transformation: Going Digital in Colombia*. OECD Publishing.

Onditi, F. (2021). New possibilities for a peaceful digital society in violence prevalent geographies. *Journal of Peacebuilding and Development*, *16*(2), 162–178. https://doi.org/10.1177/1542316620958673

Patton, M. Q. (2014). *Qualitative Research and Evaluation Methods. Integrating Theory and Practice* (Fourth Edition). Sage Publications Ltd.

Richmond, O. P., Visoka, G., & Tellidis, I. (2023). *'Peace in Digital International Relations. Prospects and Limitations' (Elements in International Relations)*. Cambridge University Press.

Schirch, L. (2020). *'25 Spheres of Digital Peacebuilding and PeaceTech', Policy Brief No.93*. Toda Peace Institute.

Spillane, J. (2015). ICT4P: Using information and communication technology for peacebuilding in Rwanda. *Journal of Peacebuilding and Development*, *10*(3), 97–103. https://doi.org/10.1080/15423166.2015.1091269

Tellidis, I., & Kappler, S. (2016). Information and communication technologies in peacebuilding: Implications, opportunities and challenges. *Cooperation and Conflict*, *51*(1), 75–93. https://doi.org/10.1177/0010836715603752

Vakil, A. C. (2018). 'A return to the classification problem: Revising a framework for studying NGOs' in Kellow, Aynsley & Murphy-Gregory, Hannah. *Handbook of Research on NGOs*, 95–113. https://doi.org/10.4337/9781785361685.00011

Väyrynen, R. (1991). To settle or to transform? Perspective on the resolution of national and international conflicts. In *New Directions in Conflict Theory: Conflict Resolution and Conflict Transformation* (pp. 1–25). Sage Publications.

Welch, J. R., Halford, S., & Weal, M. (2015). Information and Communication Technologies (ICTs) and Peacebuilding: A Conceptual Framework. Proceedings of the 2015 ACM Web Science Conference (WebSci '15).

Wood, E. J. (2006). The ethical challenges of field research in conflict zones. *Qualitative Sociology*, *29*(3), 373–386. https://doi.org/10.1007/s11133-006-9027-8

Young, O., & Young, E. (2016). 'Technology for Peacebuilding in Divided Societies. ICTs and Peacebuilding in Northern Ireland', Report. Transformative Connections.

Author Biographies

Laura Gianna Guntrum (she/her), MA, is a research associate at Science and Technology for Peace and Security (PEASEC) within the Department of Computer Science at the Technical University of Darmstadt. She is currently working on the "TraCe" project, where she delves into the transformative potential of technology in the realm of political violence. Broadly, her research is driven by a passion for exploring intersectional perspectives in peace and conflict studies and investigating the role of information and communication technology (ICT) in social movements and conflict resolution.

Sofía Cerrillo (she/her) has finished her master's studies in International Studies/Peace and Conflict Research at the Goethe University of Frankfurt and Technical University of Darmstadt. Her research interests include digital peacebuilding processes, the use of ICT in post-conflict situations, and ethical questions concerning artificial intelligence. Currently, she is working as a consultant for the Mechanical and Plant Engineering Association (VDMA e.V.). She worked as a student assistant at Science and Technology for Peace and Security (PEASEC) during her studies.

Prof. Dr. Christian Reuter is a Full Professor and Dean of the Department of Computer Science at the Technical University of Darmstadt. His chair, Science and Technology for Peace and Security (PEASEC), combines computer science with peace and security research. He holds a PhD in Information Systems (University of Siegen) and another PhD in the Politics of Safety and Security (Radboud University Nijmegen).

Appendix

Table 1. Overview of NGOs, Including the Position of Employees, the Number of Employees, the Fields of Activities Involved, the Operating Range, and Potential Changes Because of the COVID-19 Pandemic. It is Important to Acknowledge That NGO Activities can Evolve Over Time, Often Influenced by Funding Sources and Project Priorities.

Interviewee	Interviewee's position in the NGO	Number of salaried employees in the NGO (Approx.)	NGOs' operating range	Fields of activity	Changes because of COVID-19
1	Project manager for peacebuilding projects, *Corporación Región*	30	> one locality	Capacity building and accompaniment; welfare activities; memory construction	Challenging to digitize activities
2	Project manager for peacebuilding projects, *Corporación Región*	30	> one locality	Capacity building and accompaniment; welfare activities; memory construction	Challenging to digitize activities
3	Head of conflict and post-conflict monitoring center, *Corporación Nuevo Arcoíris*	80	> one locality	Capacity building and accompaniment; research	Challenging to digitize activities
4	Manager of *Salón del Nunca Más, Asovida* organization	0 (all volunteers)	one locality	Capacity building and accompaniment; welfare activities; lobbying and advocacy	Partly stopped
5	Head of Project Conflict, State and Peace, *CINEP*	100	> one locality	Capacity building and accompaniment; welfare activities; mediation; research	Challenging to digitize activities
6	Leader of Dialog, Negotiation, and Mediation Team, *CINEP*	100	> one locality	Capacity building and accompaniment; welfare activities; mediation; research	Challenging to digitize activities
7	Member of the monitoring team for peace initiatives, *CINEP*	100	> one locality	Capacity building and accompaniment; welfare activities; mediation; research	Challenging to digitize activities
8	Leader of the learning experience designment team, *Fundación Ideas para la Paz (FIP)*	16	> one locality	Capacity building and accompaniment; mediation; research	Cooperation with different organizations
9	Director at *Rodeemos el diálogo*	6	> one locality	Capacity building and accompaniment; mediation; research; welfare activities; lobbying and advocacy	Challenging to digitize activities

(continued)

Table 1. Continued

Interviewee	Interviewee's position in the NGO	Number of salaried employees in the NGO (Approx.)	NGOs' operating range	Fields of activity	Changes because of COVID-19
10	Director at *Diálogos improbables*	10	> one locality	Capacity building and accompaniment; lobbying and advocacy; mediation	Challenging to digitize activities
11	Fundraising manager, *Círculo de Estudios*	40	> one locality	Capacity building and accompaniment; welfare activities; memory construction; lobbying and advocacy	Challenging to digitize activities
12	Project Manager for Human Rights and International Humanitarian Law, *Vivamos Humanos*	5–6	> one locality	Capacity building and accompaniment; welfare activities; lobbying and advocacy; mediation; research	Challenging to digitize activities
13	Project manager for territorial peace, *Corporación Con-Vivamos*	22	> one locality	Capacity building and accompaniment; welfare activities; lobbying and advocacy; mediation; research	Challenging to digitize activities
14	Promotes citizen mobilization, *Corporación Otraparte / El Derecho a No Obedecer*	40–50	> one locality	Capacity building and accompaniment; lobbying and advocacy	Challenging to digitize activities
15	Project manager, *Centro de Apoyo Popular*	19	> one locality	Capacity building and accompaniment; welfare activities	Challenging to digitize activities
16	President and project manager, *Comité Permanente por la Defensa de los Derechos Humanos capítulo Norte de Santander*	17	> one locality	Capacity building and accompaniment; welfare activities; lobbying and advocacy; mediation	Challenging to digitize activities
17	Project manager for community communication and culture, *Corporación Mi Comuna*	2	one locality	Capacity building and accompaniment; lobbying and advocacy	Challenging to digitize activities

Source: Own depiction.

Table 2. Semi-Structured Questionnaire, Based on Identified Categories From the Literature.

	Main question	Sub-questions
Personal background	- In which area of the NGO do you work?	
Characteristics of the organization	- Is the NGO you are part of primarily focused on local or national operations? - Could you share the approximate size of its workforce?	
Fields of activity	- In which of the following fields of activity would you categorize the NGO you work for? - Could you please express your agreement or disagreement with the following statements?	- Does the NGO primarily serve specific target groups and provide services to them? Is so, please clarify - Does the NGO actively engage in raising awareness and advocating for specific issues, such as peaceful conflict resolution or advocating victim's rights? - Does the NGO primarily support dialogue and peace negotiations processes? - If the main goal of your organisation is none of the above mentioned, how would you describe the main goal of your organisation?
Potentials of digital peacebuilding	- Could you please specify which ways ICTs are used in your NGO's peacebuilding efforts? - Which of the following opportunities of ICTs for peacebuilding do you identify?	- Data management - Communications → Does technology help you to spread peace narratives, e.g., through hashtags and also to undermined hate speech and misinformation? - Gaming → Do you use (online) gaming for any peacebuilding purposes? - Civic engagement - Is there any further opportunity that you can identify, such as early warning of violent situations, citizen journalism or intergroup dialogue?
Challenges of digital peacebuilding	- What are some difficulties you encounter while integrating ICTs into your NGO's operations? - Which of the following challenges do you identify when using ICTs for your work?	- Access problems - Digital divide - Hate speech and misinformation - Privacy concerns - Design of the tools - Can you pinpoint additional challenges, such as issues with a certain application or infrastructure limitations on your end?
Addressing identified challenges	- How would you address the challenges you have mentioned? - Do you have any ideas/thoughts on how these limitations can be overcome?	
Influence of the COVID-19 pandemic	- Did the COVID-19 pandemic influence your work? If so, which areas of your peacebuilding efforts were altered due to the pandemic?	

Source: Own depiction.