Digital Inequality and Resilience in Humanitarian Refugee Organizations

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We explore resilience and digital inequality within refugee-oriented humanitarian organizations during COVID-19. Interview data show that individual and organizational digital inequality are interdependent and that ICTs can serve as both facilitators and barriers to resilience. Individual employees and refugees mitigated digital inequality that significantly hampered organizational operation, yet such efforts unveil a tension where digitally proficient individuals may encounter disruptions in their routine work, jeopardizing organizational resilience. We contribute to existing research about resilience and ICTs by showcasing how digital inequality emerges as an interdependent disruption to individuals and organizations. This necessitates systemic interventions to alleviate technological cleavages to bolster the resilience of refugees and the organizations serving them.

Keywords: resilience, digital inequality, organizational technology, refugee organizations

Central to the idea of digital inequality is when vulnerability gets amplified due to limited access to and through technology. Refugees are particularly susceptible to this form of inequality, which is compounded by their reliance on the goodwill of others, including humanitarian organizations (Edwards, 2016). Refugee-oriented humanitarian organizations (ROHOs) play a crucial role in assisting refugees with resettlement, providing support in areas such as social integration and access to resources (Caidi, Allard, & Quirke, 2010).

The resilience of both refugees and ROHOs is threatened when an acute disruption occurs. For instance, the COVID-19 pandemic significantly undermined the resilience of ROHOs (conceptualized as the ability to sustain routine operations; Boin & Comfort, 2010; Jung, 2017; Kim, Kwestel, Youn, Quow, & Doerfel, 2021), thereby affecting the continuity of services to refugees (De, Pandey, & Pal, 2020; Verhoef et al., 2021). As a result, the disruption to ROHOs' resilience heightened health risks for refugees because the usual access to essential information and resources, such as hygiene measures, was disrupted (Raju & Ayeb-Karlsson, 2020; Vince, 2020). Importantly, the disruption to both ROHOs and refugees was exacerbated by the sudden shift to technology-mediated service delivery. This shift highlighted various degrees of digital inequality, including limited access, connectivity, and skills in using and adopting technology for operations.

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Existing research treats digital inequality mostly as an individual concern, focusing on disparities in how people access, connect to, and use ICTs (e.g., Katz, Moran, & Ognyanova, 2019). In resilience and ICTs scholarship, technology is a critical facilitator of organizational resilience (Chewning, Lai, & Doerfel, 2012). However, as individuals work for and with vulnerable populations, the degree of inequality can cascade to the organizational level, threatening resilience. We thus draw on resilience scholarship to examine how ICTs can both threaten and sustain resilience when potential digital inequalities may manifest across individuals and organizations.

Findings show that digital inequality spans individual and organizational levels, hampering resilience for both: Individual-level digital inequality cannot be decoupled from organizational resilience. As employees and refugees faced digital inequality, ROHOs' responsibility to mitigate the gap became evident even when organizations, themselves, were confronted with digital disparities at the system level. We argue that attempts to address digital inequality impose additional burdens on ROHOs, potentially undermining resilience-building efforts and revealing unnecessary tensions. Thus, digital inequality is not solely an individual's or organization's responsibility. Rather, it requires systemic intervention efforts. We first review the literature on resilience and digital inequality; then we present the research design and conclude with theoretical and practical implications.

Resilience and Technology for Healthy Organizations

Large-scale disruptions (e.g., climate-related disasters) threaten social and physical resilience, endangering the health of individuals, organizations, and communities (Mayunga, 2007). The notion of resilience evolved from a focus on sustainable infrastructure or environmental systems to encompass societal, organizational, and individual well-being, emphasizing the commitment to building a healthier society—physically, socially, and systematically (World Health Organization [WHO], 1948; Wulff, Donato, & Lurie, 2015).

Organizational Resilience

When disruptions occur, resilient individuals, organizations, and communities demonstrate the ability to recover more quickly and effectively (Comfort, 1994; Kendra & Wachtendorf, 2003). Organizational resilience manifests as the collective ability of individual employees and their organization to process and respond to disruptions while also adapting to evolving circumstances (Tonkin, Malinen, Näswall, & Kuntz, 2018). Organizational resilience minimizes the impact of disruptions and maintains regular workflow, ensuring survival (Boin & Comfort, 2010). Organizational resilience is bolstered by broader communication infrastructures, such as system preparedness or collaborative efforts among organizations and their stakeholders (Doerfel, Kim, Kwestel, Youn, & Quow, 2022; Seaman, McNeice, Yates, & McLean, 2014). Thus, we conceptualize organizational resilience as the ability of organizations to offer stable and uncompromised operations (Boin & Comfort, 2010; Jung, 2017).

For organizations dedicated to community welfare, resilience serves as a crucial conduit not only for their own survival but also for the well-being of the individuals they serve (Kim et al., 2021). Resilience is paramount to building healthy organizations, which then facilitate the continuing of operations for their communities (Doerfel, 2016). For example, ROHOs play a vital role in fostering refugees' resilience by ensuring the availability of essential services, including access to information, resources, and direct survival

assistance (Chaskin, 2008). As organizations like ROHOs navigate stable functioning to serve their constituents, technology emerges as a pivotal factor in determining resilience, particularly in mitigating threats when disruptions impede operations (Yuan, Fulk, Monge, & Contractor, 2010). The following sections delve into the role of technology as a determinant of organizational resilience.

Organizational Technology and Digital Inequality

Organizational ICTs play a crucial role in ensuring efficient and stable operations. ICTs encompass an array of digital media, devices, services, and platforms used for communication, information exchange, and networking, which include but are not limited to digital media, social media, and the Internet (Jankowski, Van Selm, & Hollander, 2001; McLeod et al., 1999). The advent of newer technologies such as clouds, big data systems, and mobile computing has significantly transformed organizational infrastructure, altering work systems, scopes, and collaboration modes (Barley, 2015; Cascio & Montealergre, 2016).

Organizational ICTs have reshaped the pattern and dynamics of communication within organizations (Rice, 1994). Traditionally, information flow within organizations was controlled by leaders, reflecting top-down communication. However, the emergence of ICTs shifted this dynamic toward more member-centered, bottom-up communication, enhancing access to organizational resources (Coovert & Thompson, 2014; Miles & Hollenbeck, 2014). Arguably, the organizational capacity to effectively leverage ICTs also determines the level of technological readiness and adaptability.

When effectively deployed, ICTs provide a competitive edge over organizations that do not adopt similar technology practices (Massini, Lewin, & Greve, 2005; Zhu, Kraemer, & Xu, 2006). Organizations equipped with proficient ICT capacity can facilitate problem-solving across multiple units and divisions (Gibbs, 2009), offer more fluid services with increased work efficiency, and improve stakeholder communication (Saxton & Guo, 2011). Arguably, robust organizational ICTs significantly enhance collaboration and interactivity among members, teams, and leaders (Cameron & Webster, 2005; Quan-Haase, Cothrel, & Wellman, 2005).

When organizations face disruptions due to adverse events such as public health crises, however, routinized ICT use and workflow can also be disrupted, thereby impeding resilience. Contextually, ICTs are essential tools that enable individuals and organizations to be aware of changing situations and to build resilience (Boh, Constantinides, Padmanabhan, & Viswanathan, 2023). During crises, organizations must also adapt to changing situations that necessitate deviation from routine tasks and operational procedures (Stallings & Quarantelli, 1985). Consequently, ICTs enable organizations to pivot their routines to meet situational demands (Banipal, 2006). Yet COVID-19 fundamentally altered perceptions of how ICTs influence work and communication in organizations.

COVID-19 and ICTs

The COVID-19 pandemic compelled ROHOs to predominantly rely on ICTs to sustain their operations while adjusting to new health regulations mandating remote work (Boh et al., 2023). This unprecedented organizational digitization significantly impacted operations and the flow of routine work (Khan, 2016; Verhoef et al., 2021). For instance, video-conferencing platforms like Zoom experienced a 10-fold usage surge since the

onset of the pandemic (Branscombe, 2020). Notably, one of the most significant challenges posed by COVID-19 was the sudden shift to a virtual environment worldwide, affecting refugees and ROHOs alike (Bajaj, 2020; Leonardi, 2020). However, due to insufficient technological preparedness among organizations and their members, the abrupt adoption of new technologies disrupted the resilience of ROHOs, impeding their routine operations that serve refugees (Iansiti & Richards, 2020; Raeymaeckers & Van Puyvelde, 2021).

The pandemic compromised refugees' resilience, and also the resilience of ROHOs that support refugees, who were already vulnerable to begin with (Kim & Doerfel, 2024). ROHOs rely on ICTs because their advocacy work often transcends geographical boundaries when they communicate with and work for refugees (Madianou, Longboan, & Ong, 2015; United Nations Office for Disaster Risk Reduction, 2015). Simultaneously, ICTs grant refugees access to resources and opportunities to build networks with ROHOs (Alencar, 2017; Leung, Lamb, & Emrys, 2009). Although ICTs are critical for survival, many refugees are vulnerable to digital inequality due to unstable living conditions or financial limitations (Ritchie, 2018; van Dijk, 2006).

Digital (in)access or (in)capability further complicated the health and well-being of refugees because it was through ICTs that they could obtain information about how to protect their health and access care from organizations during this time (Raeymaeckers & Van Puyvelde, 2021). Thus, the ROHO system's health was hit twice at both individual and organizational levels: Both refugees and ROHOs were confronted with disruption to their resilience, making digital inequality—especially with respect to access and capability—more pronounced.

Digital Inequality

Digital inequality broadly refers to the disparities individuals face in terms of access, connectivity, and literacy in technology (Hargittai, 2022; Katz & Gonzalez, 2016; Katz et al., 2019). Within organizations, digital inequality manifests as inadequate resources, such as financial constraints for acquiring devices or software, or insufficient technical support for technology adoption and integration in operations (Burt & Taylor, 2000; Grobman, 2001). Digital inequality is more than a simple dichotomy between those who have access to technology and those who do not; it also encompasses disparities in accessibility, skills, and outcomes (Shakina, Parshakov, & Alsufiev, 2021).

Digital inequality scholarship identifies three levels of disparities. The first-level divide pertains to access to ICTs, predominantly computers and the Internet, distinguishing between individuals who have access and those who do not (Dewan & Riggins, 2005; Hoffman, Novak, & Schlosser, 2000). Moving beyond this binary perspective, the second-level divide focuses on the presence or absence of requisite knowledge and skills for individuals to effectively use ICTs (Hargittai, 2022; Lythreatis, Singh, & El-Kassar, 2022; van Deursen & van Dijk, 2011). The third-level divide shifts attention from skills and access to the outcomes of ICT use (Wei, Teo, & Chan, 2011). This perspective suggests that the digital divide occurs when digital skills and ICT usage fail to generate positive or expected outcomes for users (van Deursen, Helsper, & Eynon, 2016).

Scholars contend that second-level divides in skills and literacy form the bedrock of inequalities (DiMaggio, Hargittai, & Shafer, 2004; Hargittai, 2002). For example, in response to COVID-19 particularly, Hargittai (2022) argues that digital inequality no longer adheres to a binary classification of users and nonusers

or haves and have-nots in terms of access, connectivity, and usage. Instead, digital inequality is shaped by diverse individual digital experiences, access, and capabilities—or the lack thereof—marked by social disparities such as education level or income. Additionally, types of ICTs, community infrastructure, along with large-scale events can cause even greater digital inequalities (Lythreatis et al., 2022).

Digital Inequality and Resilience

While research underscores that ICTs serve as pivotal mechanisms to bolster organizational resilience during crises (e.g., Chewning et al., 2012), individual and organizational-level digital inequalities are often treated as independent of one another. Despite extensive knowledge about each level of inequality individuals experience, research is scarce about how digital inequalities interdependently manifest from individuals to organizations, or vice versa. For example, within the humanitarian sector, technology plays an increasingly transformative role, expediting aid opportunities for refugees and ROHOs and creating new pathways for resilience (Betts, Bloom, & Weaver, 2015). ROHOs are reliant on technology for delivering humanitarian aid while fostering connections with civil society partners and refugees (Leung et al., 2009; United Nations High Commissioners for Refugees [UNHCR], 2016). Ultimately, technology-mediated communication facilitates the exchange of information and resources, ensuring individual and organizational resilience (Palen & Hughes, 2018).

However, both refugees and ROHOs are susceptible to heightened digital cleavages when their physical and/or financial access to ICTs, along with skills to employ them are impeded (Alam & Imran, 2015). For instance, people, organizations, and countries may not have access to affordable devices or the Internet and may lack skills or resources (Armbrecht, 2016; Scheerder, van Deursen, & van Dijk, 2017). During the pandemic, high competency and literacy with ICTs became a global necessity, yet local access and connection availability remain unresolved (Chhibber, 2020). Notably, not all organizations and their members were digitally prepared or equipped to cope with changes that challenged operations (Murashkin & Tyrväinen, 2020). For organizations, resource capacity (e.g., funding, material support, employee digital literacy, etc.) tends to wane for most nonprofit organizations (what most ROHOs are) such that they typically experience greater degrees of digital inequality (Saxton, Guo, & Brown, 2007). Thus, digital inequality occurs at both individual and organizational levels but how they are interdependent remains less understood. Therefore, we ask the following research question:

RQ1:   *How does individual-level digital inequality intersect with organizational resilience?*

Methods

We employed semi-structured interviews to explore the interdependence of digital inequality and resilience in ROHOs. The data were collected between June and November 2021, when social distancing mandates were still enforced.

COVID-19 as Critical Incident

The COVID-19 pandemic was a critical incident (i.e., an unforeseen event that significantly affects individuals and communities) that brought substantial disruptions to everyday life (Kuenzi, Stewart, & Walk, 2023). Therefore, we treated the stay-at-home order associated with the pandemic as a critical incident for participants to use in recalling their work routines before and after stay-at-home orders. These disruptions included challenges such as the sudden shift to remote work and the inability to provide routine refugee services. To distinguish the periods around the disruptions caused by COVID-19 lockdowns, our study defined two time frames: Time 1 (T1), the period leading up to the onset of the pandemic in March 2020, and Time 2 (T2), the period during the pandemic. Informants were asked to reflect retrospectively on these particular times during interviews.

Resilience

Organizational resilience was operationalized as organizations' capability to leverage ICTs (Hackler & Saxton, 2007) that support routine workflows for ROHOs such as having the competency to access, use, and adopt technology resources. These include being equipped with in-house technical support and up-to-date devices (e.g., computers, database systems) and organizational members having the capacity to access and use the ICTs for performing routine workflow for refugees. These reflect second-level and third-level digital disparities with a focus on not just access but also capabilities and outcomes.

Information and Communications Technologies

We operationalized organizational ICTs following Fu, Cooper, and Shumate's (2019) ICT use framework, which focuses on the common technologies in organizational settings that support workflow and collaboration such as e-mails, phones, texting, instant messaging, and chat systems (e.g., WhatsApp), and synchronous communication platforms (e.g., Zoom).

Recruitment and Data Collection

We recruited ROHOs that offer (a) operational services such as welfare assistance (e.g., financial, material, medical, legal), developmental/relief services (e.g., educational), technical services (e.g., vocational), and activity coordination for refugees (Weiss & Gordenker, 1996). Only ROHOs that were in operation before and throughout the pandemic in the United States were considered for participation. To recruit participating organizations, we used snowball sampling by initiating cold calls and e-mails to ROHOs registered in databases (e.g., Guidestar) and asking participants to refer other ROHOs. Recruited informants represented cross-sector ROHOs in the United States, holding various professional positions and were not refugees (see Table 1 for organizational and participating employee profile).

Table 1. Organizational and Participating Employee Profile.

	Type	Location	Participant Position
Categories	Faith-based nonprofit: 33%	Eastern states: 61%	Coordinators/Associates: 33%
	Secular nonprofit: 41%	Central states: 11%	Directors: 33%
	Government: 25%	Western states: 16%	Executive leaders: 27%
		Southern states: 11%	Others: 0.05%

Note. To safeguard the identities of ROHOs and their employees, we refrained from disclosing specific states and exact titles.

Interviews

We conducted semi-structured interviews (n = 36) that were designed to yield rich details to help us understand additional issues that the quantitative data may not capture (Schutt, 2019). Informants were asked about the following: (a) routine roles and responsibilities; (b) types of ICTs used for work and communicating with refugees; (c) operational procedures leading up to and during the pandemic; (d) how service delivery shifted with the onset of the pandemic; (e) transition to virtual work and service delivery during the height of the pandemic; and (f) other issues related to their organizations' ICT use and associated challenges. The interviews were first transcribed using an auto-transcription generator application, Otter AI. Then, to ensure transcription accuracy, we reviewed the raw transcripts and compared them with the interview recordings before analysis.

Analysis

We analyzed interview data with a series of iterative steps of thematic analysis (Braun & Clarke, 2006). Thematic analysis proved invaluable for uncovering the subjective meanings attributed by informants to their experiences. Initially, we immersed ourselves in the interview data, allowing themes to emerge organically through an inductive approach (Pistrang & Barker, 2013). Given our focus on specific themes—COVID-19, digital inequality, and resilience—we scrutinized the data with a keen eye on these key variables. As Braun and Clarke (2006) emphasize, aligning identified themes with the research question is essential in analyzing interview data effectively. After familiarizing ourselves with the data, we compiled an initial list of codes to categorize the data into "meaningful units" although these were not yet fully developed themes (Riger & Sigurvinsdottir, 2016, p. 34). Throughout this process, we engaged in memo-ing and compared theoretical notes. Major themes were further dissected into subthemes, followed by refinement and naming. We also deliberated on how different codes might coalesce into broader themes, refining and naming them accordingly (Tracy, 2020). These analytical processes were facilitated using NVivo 12 software. Throughout these stages, we implemented constant comparison techniques (Braun & Clarke, 2006), fostering discussions and comparing each other's thematic memos and interpretations to address any discrepancies or differences in our individual understanding of the data. This collaborative approach ensured rigor and consistency in our analysis.

Results

Findings illustrate that digital inequality manifested interdependently at both individual and organizational levels, with collaborative mitigation efforts.

Organizational ICTs

Informants used various ICTs for their routine operations, including direct services to refugees and communicating with other organizations (e.g., immigration office). Among the most commonly used ICTs were digital devices like cellphones and laptops, plus e-mail, social media platforms, video-conferencing tools, and instant-messaging applications notably WhatsApp. Regarding organizational capacity to facilitate ICT adoption, ROHOs indicated that during T1, they benefited from robust information technology (IT) support (69.7%), in-house technology training programs (71.4%), and the ability to troubleshoot assistance for ICT-related issues (54.2%). During T2, there was a slight increase in all three aspects—IT support (70.6%), in-house training (74.2%), and troubleshooting availability (56%).

Technological Shift

Interviews elucidated how ROHOs navigated the sudden shift of work mode brought about by the pandemic. The implementation of real-time ICTs such as Zoom was crucial in smoothing the transition, coupled with the availability of in-house technology support. For example, Participating Organization-28 (PO-28)[1] said the adoption of "Microsoft Teams and Zoom" made the transition to virtual work easier. Furthermore, ROHOs relied on in-house IT teams to provide support to employees. PO-13 explained, "We have a very strong IT department and we began using a cloud system [because of the pandemic] so that people can access their documents without needing to go into the office." PO-1 also shared the support provided by their small IT team at the onset of T1, including setting up personal computers and facilitating virtual private network access for employees. Despite such efforts, she noted limited resources compared with corporations, expressing a desire for software tools and the need for volunteers to manage data. Despite organizational-level support, digital inequality persisted at both individual and organizational levels.

Digital Inequality of ROHOs

Digital inequalities in ROHOs showed interdependence between individuals—employees and refugees—and the organizations. At the individual level, digital inequality hampered ROHO employees who needed to adapt to technology-mediated work but had insufficient capacity or skills (second-level inequality). Their incapacity hampered organization-level adaption. Likewise, individual refugees also grappled with communication barriers when interacting with ROHOs via ICTs, exacerbating their second-level digital inequality. These individual aspects of inequalities across levels from access to capacity to outcomes propagated organizational-level disparities.

Individual Inequality Breeds Organizational Inequality

Within ROHOs, digital inequality manifested in two ways. First, digital inequality among individual employees came from disparities in skills and knowledge in adopting or using ICTs. More specifically, generational gaps were primarily the source of these first- and second-level inequalities. For instance,

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[1] In compliance with Internal Review Board (IRB) requirements, we anonymized participating organizations and used PO with a number to distinguish different organization's identities and their respective data.

informant PO-9 pointed out that elderly employees struggled to comprehend platforms like Zoom or had unrealistic expectations, such as the ability to "print from a home office miles away." Similarly, PO-34, a senior member (in terms of position and age) echoed similar sentiments. Initially grappling with leveraging ICTs for work during the lockdown, her responsibilities at a rural ROHO during T1 primarily involved delivering meals to refugees, with minimal involvement with technology. However, as the pandemic progressed, she had to adapt to additional technologies like instant messaging, which posed challenges. Consequently, the lack of technological skills and understanding hindered her collaboration with other staff members, leading to communication breakdown and task disruptions. Ultimately, these limitations threatened organizations, hampering the way ROHOs served their refugee clients.

Next, second-level digital inequality of refugees was compounded as a third-level organizational digital disparity, stymieing the quality of ROHOs' services. PO-6 stated that even fundamental outcomes of their work were disrupted by the digital inequality between ROHO and the refugees. Essential tasks like "calling, checking in and seeing how [refugees] are doing, or figuring out ways to help them" became challenging because refugees struggled to adapt to the virtual environment. PO-12 also mentioned that the digital inequality among refugees stemmed from both "generational and individual capacity differences." She explained that "with older refugees, a phone call is easier to communicate with than WhatsApp because [WhatsApp] requires more technology fluency." PO-17 added that she had to find ways to assist refugees "who were not technology savvy and who don't own a computer or a smartphone." During counseling sessions or meetings with refugees, her ROHO had to "help individuals [learn] how to download the app or walk them through how to participate using a computer," which took additional time. Consequently, digital inequality resulted in increased workload for employees trying to accomplish routine tasks.

Additionally, PO-4 highlighted, ICTs are "complicated and it takes a really long time to learn how to use them." He further explained that many refugees struggle with even basic tasks on cell phones or computers, such as reading their phone numbers. Moreover, PO-16 said that with the onset of the pandemic, in-person classes had to transition to online sessions via Zoom. However, he said that "refugees being comfortable with technology was a big concern" as the class transitioned online. As a result, the more refugees struggled with ICTs, the more difficult it was for ROHOs to accomplish their tasks and work for refugees, generating third-level digital inequities for both employees and organizations. For instance, PO-12 highlighted the challenge of disseminating crucial health information (e.g., handwashing, social distancing protocols) to refugees via Zoom or phone calls. Despite the organization's efforts, refugees could not access Zoom effectively or understand the staff's instructions. Consequently, using essential features became challenging.

Organizational Inequality to Individual Inequality

Findings also showed that organizational digital inequality resulted in individual inequality. Across ROHOs, there were first-level inequalities in terms of organizational ICT access. For instance, PO-27, who oversees refugee education programs at the public library, underscored the significant digital access disparity due to the lack of institutional support. This absence of technological access resulted in refugees' inability to obtain proper education. Because PO-27 was not granted access support such as obtaining e-books and computers, refugees could not gain educational support. Such inequality was the result of

inconsistent and insufficient organizational resources for access (first-level inequality), which worsened during T2 when the educational landscape shifted to remote learning, exposing systemic obstacles. PO-27's remarks explained how simple access (first-level) was generative of third-level inequalities. She explained that these limitations greatly hindered their resilience, directly affecting her organization and the refugees.

On the other hand, some ROHOs experienced abundant digital access granted through organizational networks. PO-24 mentioned that her state had initiated efforts to mitigate the digital gap by launching a program connecting local ROHOs across the state, enhancing service delivery. This initiative successfully facilitated collaboration among multiple cities within the state to address digital literacy and accessibility issues, "bringing everybody into a space to coordinate and network and talk about what they were providing to their [refugee] constituents and their jurisdictions." The program facilitated the distribution of technical resources such as laptops, tablets, and smartphones for refugees to use and connect with ROHOs. These resources were provided by one of PO-24's for-profit sponsor organizations. PO-7 also partnered with an organization offering a free, mobile-based learning platform accessible to all refugee clients for learning English, employment skills, or technology-based skills during T2. PO-30 echoed similar resource distribution from the federal network, where the Office of Refugee Resettlement provided technology resources like tablets and computers to local ROHOs to support technology-mediated communication and learning.

Mitigating Digital Inequality

Findings underscored that addressing digital inequalities required collaborative efforts among individual organizational members and refugees. First, organizational members supported each other in overcoming potential challenges associated with digital inequality within ROHOs. When some members encountered difficulties with tools like Zoom or transitioning to remote work, those more adept with technology stepped in to assist. For instance, PO-10 said, "I'm the youngest person in the office and have been delegated [to] quite a few of the technical issues. I became the point person for any tech issues." Furthermore, ROHO members adapted their roles and helped colleagues become more proficient in using technology resources over time. PO-27, responsible for overseeing refugee resettlement services, also assumed the role of the designated IT person during T2, providing technical guidance and assistance. She noted that employees from health departments sought her guidance on virtually connecting with refugees for mandatory health screenings when in-person visits were suspended due to social distancing measures. Consequently, she adapted her role to facilitate socially distanced meetings with local nonprofits and refugees. Additionally, PO-18 highlighted the challenges posed by the sudden shift to virtual services and remote work, emphasizing,

> We needed to start teaching technology upon the initial contact with [refugees], help them set up an e-mail address, help them understand why e-mail addresses are important, help them make sure they have at least one digital device within the household.

These activities revealed how organizational networks are an important aspect of mitigating digital inequality.

Second, refugees played a vital role in mitigating digital inequality, contributing to the resilience of ROHOs. PO-5 highlighted how established refugees who had been in the United States longer than others served as technology guides for newly arrived refugees. Teaching newcomer refugees how to access Zoom was particularly challenging due to language and digital obstacles. To address this, PO-5 sought assistance from refugees who had previously received support from his ROHO and identified those who could speak the language and provide instruction on technology use. Additionally, PO-32 said that "younger refugees were well aware of technology and how to use it. Even if they don't know [how to use it at first], it was a lot easier than their parents." Younger refugees also played a crucial role, helping their parents "make online appointments" or "sign up for counseling sessions." These efforts helped alleviate the burdens on ROHOs. In sum, findings showed that the individual-level digital inequality affected employees as they worked for refugees and ROHOs, as well as along with them. Ultimately, the individual-level inequality of employees and refugees resulted in organizational challenges.

Consequences of Digital Inequality Mitigation

Despite the various efforts ROHOs made to mitigate digital inequality, they encountered drawbacks to their resilience. Even though the informants were not technicians responsible for technology mitigation in their respective ROHOs, they had to assume these roles to ensure service delivery and communication with refugees. During the pandemic, this often meant deviating from their primary roles or tasks to become technology mediators or taking on additional workload. For example, informant PO-5 described the challenge of teaching refugees how to use ICTs, such as navigating online schooling or vocational training. Despite the assistance of seasoned refugees within his organization, PO-5 and other staff members had to be readily available to ensure efficient service delivery. He said, "It took a lot of time" to either find staff assistance or help refugees. Similarly, PO-9 became the technology point person when senior staff members struggled with ICTs. Although she actively assisted, this added more tasks to her routine responsibilities. Additionally, PO-8 said that she ended up "taking calls throughout the day from people who needed help [with technology]." Ultimately, as ROHOs mitigated or found others to help them facilitate reducing digital inequality and associated outcomes, they were also saddled with unexpected tasks and responsibilities due to technological shifts.

Discussion

Findings reveal that digital inequality manifested at and mutually between individual and organizational levels, affecting both, with each exacerbating the other. Yet when people with digital capacity could assist others, their actions supported the ability of organizations to break a spiral from access to outcomes for both marginalized constituents they served and the organizations themselves.

Theoretical Implications: Multilevel Digital Inequality and Resilience

This study contributes to resilience research through the lens of digital inequality by showing how individual-level disparities span organizational levels. This multilevel effect can be detrimental to organizational resilience, particularly for those serving vulnerable communities who are at a greater risk of digital cleavages from accessibility and connectivity to associated resilience outcomes. Research on digital

inequality consistently illustrates how ICTs can marginalize vulnerable people, primarily due to infrastructure-related barriers such as limited connectivity, access, and capacity for intended usage (e.g., Hargittai, 2022; Katz & Gonzalez, 2016).

However, digital gaps organizations experience can also compromise organizations' operations, generating disparities for members, their organizations, and the constituents they serve (De et al., 2020). Simply put, since organizations cannot function without their employees, when individual workers face first- and second-level inequalities, organizational survival is threatened, let alone the resilience of the refugees they serve. Thus, findings elucidate how ICTs can serve as both enablers and obstacles to ROHOs' resilience due to the interdependent nature of the way digital inequality manifests between individuals and organizations with multiple levels of disparities. Furthermore, when organizations are equipped with resources for digital connectivity and access, their operational stability can be enhanced (though not every organization is granted the same resources to counter the multilevel inequalities).

In organizations, while ICTs play a crucial role in bolstering resilience during crises (Chewning et al., 2012; Stephens, Robertson, & Murthy, 2020), their effectiveness depends on the availability of digital resources and infrastructure (Murashkin & Tyrväinen, 2020). Despite the necessity for organizations to adapt to evolving environments alongside ICT use (Duarte & Snyder, 2006), many encounter digital cleavages when employees struggle with technology and lack support from their employers. Even if organizations proficiently employ ICTs, as demonstrated by numerous ROHOs with robust in-house technology support, they often find themselves taking on the responsibility of enhancing refugees' digital acumen, diverting attention from the routine ways they support refugees. The findings suggest that such professionals inadvertently compartmentalize digital inequalities as peripheral to their work in serving the vulnerable.

Role Adaptation and Resilience

The reliance on individual employees or refugees to mitigate digital gaps facilitated ROHOs' resilience. However, this also meant that employees with higher levels of digital competency had to reprioritize their roles and responsibilities to address digital disruptions for others, raising the question: To what extent (or for how long) must technologically proficient people pause their core functions to facilitate others' ability to navigate new workflows? Role adaptation becomes apparent when prioritizing others' need to access shifts to bridging technological competency for others. In turn, shifting priorities may introduce new organizational threats, depending on the type of work the technologically proficient employees normally do. For example, at a time when reliance on technology was amplified by all workers and stakeholders, technology support teams' work became more heavily relied on by more people. Thus, when those technologically proficient people have to adapt to support clients, their support of the organization's technology-related needs receives less priority. This may undermine the organization's resilience while helping the constituents' resilience, putting one in tension with the other. The result is a paradox *across* levels because the tech support presents a contradiction: It adapts to direct attention to individuals (refugees) rather than the organizations that serve those individuals.

From a functional perspective, technology-mediated communication facilitates organizational members' collaborations and accomplishments (Leonardi, Treem, & Jackson, 2010). However, effective

collaboration assumes that the employees possess the necessary competence and adaptability to navigate complex ICTs as they work. Contrarily, our findings reveal that the digital challenges due to COVID-19 introduced hidden barriers to resilience. While mitigating digital inequality improved service delivery and continuity, helping others' ICT access and capacity introduced new responsibilities that diverted ROHO employees from their routine work. Notably, informants whose primary roles were *not* as technicians in their respective ROHOs helped other employees and refugees with technology, which took time away from their core tasks. This introduced tensions when it came to striving for resilience in one way, introducing challenges in other ways for ROHOs. If such patterns and expectations persist, individuals with higher digital competency can anticipate increased responsibilities and pressures that may jeopardize their routine workflow, which is critical to ROHOs' resilience in the first place. This additional burden could result in employee fatigue (Lingo, 2022), potentially prolonging the impact of disruptions, hampering resilience.

Findings therefore highlight the interconnectedness between technological inequality and organizational resilience: Digital inequality among employees and refugees affects organizational operations, and conversely, organizational limitations (e.g., funding and resources for technology accessibility) can hinder refugees' digital engagement. The digital disparities of ROHOs such as the lack of digitally competent employees or systemic supports (e.g., funding and material resources) were significant barriers to embracing technology-mediated communication. Technology infrastructure is critical for organizational sustainability, and organizations with more robust digital foundations tend to produce greater profits (Westerman, Spence, & Van Der Heide, 2014). Nonprofit organizations (which is what most ROHOs are) typically have substantially less digital capacity to support their work (Saxton et al., 2007). Thus, the organizations' systemic support, or lack thereof, substantially impacts how ROHOs build resilience (Murashkin & Tyrväinen, 2020).

Practical Implications

Policy makers have been prioritizing efforts to mitigate the digital divide for years (Kerr & Tromble, 2021), with lingering questions about accountability—who is responsible for mitigating the inequality? Findings show that while some ROHOs had access to federal support to leverage ICTs, this was not granted in all states. Yet the responsibility for bridging the digital inequality fell on the employees of ROHOs anyway, as well as on refugees, who were already vulnerable, to begin with. This reflects that digital inequality is still regarded as an individual responsibility, highlighting the need for a shift toward governments to bridge the gap (Epstein, Nisbet, & Gillespie, 2009). Our findings suggest that one way to reduce the inequality is by recognizing that when disruptions like COVID-19 generate increased aid to nonprofits (Raeymaeckers & Van Puyvelde, 2021), those resources should be diverted to support ICT adaptation and training. Thus, funders (e.g., governments and foundations) can offer meaningful support by focusing on digital resources for organizations serving vulnerable people (Seaman et al., 2014).

Second, digital inequality is theoretically concerned with three levels of divides—haves and have-nots, accessibility, and outcomes (Shakina et al., 2021), all of which revolve around user-centered capacity at individual or organizational levels. However, findings show that the root issue may lie in the way organizations use the ICTs despite such ICTs not being universally shared by their constituents. What ROHOs in this study experienced reflects that digital inequality may also come from technologies' design: Refugees often faced challenges concerning access due to the interface or configuration of ICTs or their cultural and/or linguistic

illiteracy. Users are assumed to possess some degree of digital literacy. However, findings show that for refugees, this was not the case because they lacked exposure to advanced ICTs or had not learned how to use them. As a result, refugees may experience even more intense digital inequality especially when the crisis warrants rapid and meaningful adoption (Camargo, Cogo, & Alencar, 2022). This issue suggests that equipping and training vulnerable populations long before disasters strike provides important access during normal times and also complements the above point about how organizations' attention must change during disruptions. If more of their vulnerable constituents already have access and capacity, organizations' resilience can better persist because the employees can stay focused on the usual services that in turn support their constituents' resilience.

Limitations

First, our study assessed organizational ICTs primarily focusing on functional and task-driven tools such as the Internet and real-time, instant applications and platforms. Yet, social media has become an additional mechanism that facilitates resilience (Stephens et al., 2020). Future research might focus on the role of social media and how organizations harness it to protect their routine operations and engage with the refugees they serve. Second, the interview questions were tailored to a specific crisis context, a prolonged, system-wide disruption. However, research suggests that the use of ICTs varies across different types of organizational disruptions. Future studies could explore how digital inequality influences resilient operations amid varying degrees of crisis impacts on organizations. Last, though our participants represented various levels and positions within ROHOs, a majority of them held leadership or managerial roles and were not refugees. Due to the limited representation of the membership, informants representing the leadership may lack the knowledge or experience to understand the struggles experienced by refugees. Thus, future research could broaden its scope to include a variety of organizational roles to better understand and represent varying experiences of how ICTs are implemented and used in day-to-day tasks in service to clients, and how needs get heightened during significant disruptions that disasters generate.

Conclusion

This study explored how digital inequality within organizations across individuals can hamper resilience. To mitigate the disparity, both employees and refugees played an important role in enhancing organizational resilience as they stepped in to reduce operational gaps caused by digital challenges. The issue of digital inequality has persisted, overwhelming ROHOs and refugee communities, alike. Consequently, there is a pressing need for systemic interventions to confront potential digital divides and reduce the inequalities that threaten the resilience and health of both refugees and ROHOS. Ultimately, healthy ROHOs can foster healthy and resilient refugees.

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