DIGITAL INCLUSION, INNOVATION, AND DEVELOPMENT COMMUNICATION FOR SOCIETAL RESILIENCE: LESSONS FROM THE COVID-19 PANDEMIC

By

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Abstract

The study investigates how digital inclusion and innovation enhance development communication practices that promote societal resilience during crises. The essence is to examine the role of inclusive digital innovation in strengthening communication systems for collective adaptability and sustainable recovery. Despite the global shift toward digital solutions during the COVID-19 pandemic, disparities in access, participation, and digital literacy limited the effectiveness of communication strategies in fostering resilience, particularly in developing societies. This study is anchored on Development Communication Theory and Diffusion of Innovation Theory. The study adopts a descriptive and analytical research design based on secondary data from reports, policy documents, and scholarly literature. The Unit of Analysis and Document Corpus comprises global and national communication initiatives during the pandemic. Data were analysed thematically and descriptively. Findings indicate that societies with higher levels of digital inclusion and participatory innovation achieved stronger social cohesion, adaptability, and development continuity. The study recommends mainstreaming digital inclusion in national development communication policies to strengthen preparedness and resilience. It concludes that inclusive and innovative communication systems are critical for building equitable, adaptive, and sustainable societies.

Keywords: Digital Inclusion, Innovation, Development Communication, Societal Resilience, COVID-19 Pandemic.

Introduction

The twenty-first century has experienced rapid transformation in communication systems driven by digital technologies across education, governance, health and commerce. The COVID-19 pandemic, however, exposed both the strengths and limitations of this digital shift. While digital tools enabled continuity in information sharing and service delivery, they also revealed persistent inequalities in access, digital literacy and participation (United Nations, 2021). Digital inclusion equitable access to and effective use of ICTs became a critical factor in sustaining resilience during lockdowns. Countries with stronger digital infrastructure transitioned more successfully to online education, e-health, remote work and digital governance, whereas those with weak ICT penetration experienced severe disruptions (World Bank, 2020). This digital divide was particularly evident in developing countries such as Nigeria, Kenya and Bangladesh.

Development communication has evolved from traditional information dissemination to participatory, technology-driven engagement (Servaes, 2018). According to World Economic Forum (2021), during the pandemic, digital innovations such as telemedicine, online learning and mobile banking enhanced crisis response and adaptive capacity. However, socio-economic and infrastructural barriers limited their inclusive impact. The COVID-19 experience therefore highlights that, societal resilience depends not only on technological advancement but also on equitable digital access and integration into development communication systems.

Statement of the Problem

The rapid shift to digital communication during COVID-19 exposed deep digital inequalities, as many communities lacked reliable internet access, affordable devices and adequate digital literacy. These gaps weakened societal resilience and widened existing social disparities, underscoring the need to examine how inclusive digital innovation influenced development communication outcomes during the crisis.

Objectives of the Study

1. Examine how digital inclusion shaped communication practices during the COVID-19 crisis.
2. Analyse the role of digital innovation in strengthening communication systems for resilience.
3. Identify communication challenges arising from digital inequalities.

4. Recommend policy strategies for integrating digital inclusion into national development communication systems.

Theoretical Framework

This study is anchored on two theories:

1. Development Communication Theory (Nora C. Quebral, 1971)

This theory emphasises the use of communication as a tool to promote social change, improve quality of life, and support national development. Quebral defined it as "the art and science of human communication applied to the speedy transformation of a country from poverty to a dynamic state of economic growth". The theory emphasizes dialogue, inclusiveness, and empowerment (Servaes, 2008). During the COVID-19 pandemic, development communication efforts sought to promote public health behaviours such as mask-wearing, physical distancing, vaccination uptake, and hygiene practices. However, these efforts depended heavily on communication channels accessible to the public. Digital inclusion therefore became essential for ensuring participation in development communication processes. Communities without digital access were excluded from real-time updates, online community dialogues, and digital public health campaigns.

2. Diffusion of Innovation Theory (Everett M. Rogers, 1962)

Diffusion of Innovation Theory explains how innovations spread through a social system over time. Rogers (1962) identifies five adoption stages: knowledge, persuasion, decision, implementation, and confirmation along with adopter categories (innovators to laggards) and key factors such as relative advantage, compatibility, and complexity.

During COVID-19, digital tools like tele-health, tracing apps, and online learning diffused unevenly. Digitally advanced societies adopted them quickly, while excluded populations faced infrastructural and literacy barriers. The theory thus shows that digital exclusion constrains innovation adoption and weakens societal resilience.

Literature review

Digital Inclusion

Innovation within the context of this study refers to the creative application of digital technologies and platforms to enhance communication systems, crisis response, and societal resilience. During the COVID-19 pandemic, innovations such as telemedicine, digital dashboards, contact tracing systems, and online collaboration platforms became central to governance and public health management (OECD, 2020; WHO, 2020). Empirical evidence confirms that digital ecosystems significantly improved communication efficiency during the pandemic.

For instance, countries with advanced digital infrastructures such as Estonia, Singapore, South Korea, and Finland demonstrated superior real-time information dissemination and misinformation control (ITU, 2021). Baudier, Ammi, & Deboeuf-Rouchon (2022) found that, trust and facilitating conditions significantly increased telehealth adoption across European countries, while Khan and Reda (2023) showed that integrated public health dashboards improved transparency and communication speed. According to United Nations (2020), Digital inclusion refers to equitable access to digital infrastructure, literacy, and meaningful participation in digital environments. However, recent research demonstrate that inclusion extends beyond connectivity to digital competence. Aw, Williams, & Dixon (2025), found in the United Kingdom that digital literacy significantly predicted individuals' ability to interpret and act on COVID-19 guidance. In Sub-Saharan Africa, Shikali and Muneja (2024) documented that limited connectivity and digital skills constrained engagement with health communication platforms, while Okeke and Ojo (2023) and Mbogo and Wanjiku (2022) identified infrastructural deficits and high data costs as key barriers in Nigeria and Kenya. These studies reinforce Hilbert's (2016) argument that digital inequality undermines equitable participation in development processes. The COVID-19 crisis thus revealed digital inclusion as a structural determinant of communication effectiveness and crisis resilience.

Development Communication

Development communication involves the strategic use of communication processes to promote participation, social change, and sustainable development (Quebral, 2012). During COVID-19, digital platforms became primary channels for public health awareness and behavioral guidance. According to Zhang, Burr, Mutchler, & Lu (2023) digital platforms enabled rapid coordination of community-level responses, improving adaptive capacity. Research shows that digital literacy programmes promotes social inclusion and participatory engagement in crisis contexts. Furthermore, digital platforms allowed nation, patient and community organizations to sustain advocacy and psychosocial aid activities during lockdowns.

Conversely, where digital disparities persisted, development communication strategies were weakened. Research showed that, institutions with stronger digital systems experienced smoother educational transitions. Kamal and Farooq (2024) further demonstrated that remote work technologies preserved productivity in Pakistan, highlighting how innovation sustains economic communication flows. Collectively, these empirical findings confirm that development

communication effectiveness is contingent upon digital inclusion and innovation capacity.

Societal Resilience

Societal resilience refers to the ability of communities and institutions to anticipate, adapt to, and recover from disruptions (Folke, 2016). Evidence from COVID-19 demonstrates that digitally inclusive societies showed stronger adaptive capacity. UNDP (2021) concluded that digitally connected societies maintained governance continuity and service delivery during lockdowns. Also, BMC Health Services Research (2025) reported that cities leveraging digital communication systems improved service coordination and institutional responsiveness.

These empirical findings converge on a consistent pattern: digital inclusion strengthens communication efficiency; digital innovation enhances crisis management systems; digital disparities exacerbate vulnerability; and digital participation fosters social cohesion and resilience.

Methodology

This study adopted a qualitative desk-based research design grounded in systematic document analysis and thematic content analysis. Since the research relied exclusively on secondary data, it did not employ a survey or experimental design. Instead, it utilized a structured review and analytical synthesis of authoritative documents related to digital inclusion, innovation, and development communication during the COVID-19 pandemic.

Research Design

The study employed a qualitative descriptive-analytical approach, combining:

Systematic document analysis, thematic content analysis and Comparative policy analysis

Unit of Analysis and Document Corpus

The study analysed policy documents, institutional reports, and scholarly publications on digital inclusion, innovation, and COVID-19 communication strategies. As a secondary data study, no human participants were involved. Analysis was based on documents, not human participants. Documents, rather than individuals, served as the primary source for analysis.

Sources of data included global reports, COVID-19 policy frameworks, peer-reviewed articles, Publications from international organisations, including the World Health Organization (WHO), International Telecommunication Union (ITU), United Nations Development

Programme (UNDP), and World Bank, National digital response strategies from selected developed and developing countries

Method of Data Analysis

Data were analyzed thematically, with attention to digital inclusion, innovation, communication flows, and resilience outcomes.

Findings

The findings of the study revealed that:

1. Digital Inclusion Strengthened Public Communication Flow.
2. Digital Innovation Enhanced Crisis Response.
3. Digital Disparities Weakened Communication in Developing Countries.
4. Higher Digital Participation Promoted Social Cohesion.

Discussion of Findings

The findings reveal that digital inclusion significantly strengthened public communication and crisis management during the COVID-19 pandemic. Countries with advanced digital infrastructures such as Estonia, Singapore, South Korea, and Finland were better positioned to disseminate real-time updates, counter misinformation, and sustain citizen engagement (ITU, 2021). Empirical evidence supports this pattern, showing that strong digital ecosystems enhanced transparency, trust, and compliance with public health measures. For instance, Baudier et al. (2022) found that trust and enabling conditions significantly increased telehealth adoption across Europe, while Khan and Reda (2023) reported that digital dashboards improved the speed and clarity of public health communication. These findings suggest that digital access, combined with institutional coordination, improves crisis communication effectiveness.

The study further confirms that digital innovation sustained essential systems during lockdowns. Telemedicine ensured continuity of healthcare services, online learning platforms reduced educational disruption, and remote work technologies preserved economic productivity (Gopal & Singh, 2021). Additionally, digital platforms improved coordination at the community level, thereby strengthening adaptive capacity during periods of uncertainty. Together, these studies demonstrate that innovation was central to maintaining health, education, governance, and economic stability.

However, digital disparities weakened communication effectiveness in many developing contexts. Limited connectivity, low digital literacy, and high data costs restricted access to pandemic information in parts of Sub-Saharan Africa and rural Nigeria (Okeke & Ojo, 2023;

Shikali & Muneja, 2024). Vulnerable adults and low-income groups were disproportionately excluded from accessing telehealth and other online services. These inequalities highlight that digital inclusion requires not only infrastructure but also skills and affordability.

Finally, higher digital participation strengthened social cohesion and resilience, as online platforms supported peer networks, advocacy, and psychosocial support during lockdowns (Ahmed & Hossain, 2022; UNDP, 2021). Overall, evidence shows that digital inclusion improves communication efficiency, innovation enhances crisis response, digital inequality increases vulnerability, and active participation fosters societal resilience—confirming that digital technologies are central to effective development communication in crises.

Table 1

National and International Communication Initiatives during the COVID-19 Pandemic

Table content:

Type of Initiative	Implementing Body	Target Audience Digital	Communication Medium	Purpose/Function
Daily government briefings and press conferences	National governments	General public	TV, radio, online streaming	Provide updates on COVID-19, government measures, and health guidelines
Public health campaigns	National governments	General public	TV, radio, social media	Educate on mask-wearing, social distancing, hygiene practices
SMS and mobile alerts	National governments	Mobile subscribers	SMS, text messaging	Deliver timely health information, lockdown updates, and alerts
COVID-19 tracking apps	National governments	Smartphone users	Mobile applications	Contact tracing, exposure notifications, symptom

				tracking
Online dashboards and portals	National governments	General public researchers	Websites, portals	Monitor cases, vaccinations, and testing centers
Telemedicine and virtual consultations	Health institutions, governments	Patients	Telemedicine platforms, video calls	Enable remote consultations and reduce physical contact
Remote learning platforms	Education ministries, schools	Students, teachers	E-learning platforms, online classrooms	Maintain education continuity during lockdowns
Community radio & local outreach	Local authorities, NGOs	Rural populations	Radio broadcasts, community meetings	Disseminate localized information, culturally sensitive messaging
Engagement with traditional leaders	Local governments, NGOs	Local communities	Interpersonal communication, community events	Build trust, promote adherence to health measures
Government hotlines & chatbots	National governments	General public	Call centers, AI chatbots	Answer COVID-19 inquiries, provide guidance
WHO daily situation reports	World Health Organization	Global public, policymakers	Websites, reports	Provide global updates on cases, deaths, and preventive measures
WHO social media campaigns	World Health Organization	General public	Facebook, Twitter, Instagram, YouTube	Promote preventive measures and combat misinformation
UNICEF educational campaigns	UNICEF	Children, parents, educators	Social media, websites	Support safe practices, online learning, and hygiene

				education
UNDP resilience & awareness programs	UNDP	Vulnerable populations	Websites, social media, reports	Promote equity, digital inclusion, and community resilience
World Bank digital financial support	World Bank	Vulnerable households	Digital banking, mobile payments	Enable financial support, cash transfers, and economic resilience
ITU connectivity campaigns	ITU	Policymakers, telecom providers	Reports, workshops, media	Promote broad band access, afford able devices, and digital literacy
Global social media initiatives	Facebook, Twitter, TikTok	Global public	Social media platforms	Reduce misinformation, promote public health messages
COVAX communication campaigns	COVAX, WHO, UNICEF	Global populations	Websites, social media	Educate on vaccine access, safety, and equity
Cross-border public health collaboration	WHO, national health agencies	Policymakers, health agencies	Reports, data sharing platforms	Share outbreak data, guidelines, and research
Global innovation challenges & hackathons	International NGOs, tech partners	Innovators, developers	Online competitions, webinars	Develop digital solutions for telemedicine, remote learning, and contact tracing

Discussion of the Table

Table 1 presents a comprehensive overview of national and international communication initiatives adopted during the COVID-19 pandemic, showing that digital inclusion and innovation were central to effective development communication and societal resilience. National strategies such as daily briefings, SMS alerts, online dashboards, telemedicine and e-learning platforms enabled timely information dissemination and sustained social cohesion. Digitally advanced countries like Estonia, Singapore, South Korea and Finland were more effective in curbing misinformation and promoting compliance with public health measures.

At the international level, organisations such as the World Health Organization, UNICEF, United Nations Development Programme, International Telecommunication Union, and the World Bank supported coordinated responses through situation reports and digital campaigns. However, persistent digital disparities especially limited smartphone and broadband access in rural areas restricted inclusivity. Although digital innovation strengthened crisis communication, equitable access remains essential for effective and inclusive development communication.

Conclusion

Digital inclusion and innovation significantly shaped development communication and societal resilience during the COVID-19 pandemic. While digitally advanced societies demonstrated strong resilience and communication continuity, digitally excluded communities faced heightened vulnerabilities. The pandemic highlighted the urgent need for inclusive digital systems that allow all populations to participate meaningfully in communication processes. Integrating digital inclusion into national development communication strategies is essential for building equitable, adaptive, and sustainable societies capable of withstanding future crises.

Recommendations

1. Governments should incorporate digital inclusion strategies into national development communication policies to ensure equitable access to ICTs and digital services.

2. Digital tools should be embedded into crisis communication frameworks while ensuring accessibility for marginalized populations.

3. Programs should target women, youths, rural communities, and other vulnerable populations to bridge the digital literacy gap.

4. Collaboration among governments, private sector actors, NGOs, and global organizations is essential to achieve digital equity and strengthen societal resilience.

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