Cyber Rights and Digital Security: Protecting Human Rights in The Online World

Hak Cyber dan Keamanan Digital: Melindungi Hak Asasi Manusia di Dunia Maya

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ABTRACT
The rapid expansion of digital technology has created new opportunities for social participation while simultaneously introducing challenges to human-rights protection in cyberspace. Communities in rural Indonesia, particularly in the Maluku region, often face limited awareness of digital rights and online security, making them vulnerable to cyber threats and misinformation. This community service program titled "Cyber Rights and Digital Security: Protecting Human Rights in the Online World" was conducted in Tulehu Village, Central Maluku, to enhance citizens' understanding of digital rights, cybersecurity, and ethical online behavior. Using participatory methods Focus Group Discussions (FGDs) and structured presentations the project engaged 80 participants representing youth, women, educators, and community leaders. The activities emphasized awareness of data privacy, digital ethics, and safe internet practices while linking them to the broader concept of human rights. Results showed a significant increase in participants' knowledge and behavioral transformation toward responsible digital citizenship. The formation of the Digital Awareness Forum (DAF) ensured program sustainability by enabling continuous education and collaboration with local governance. The outcomes demonstrate that contextualized, rights-based digital-literacy programs can empower rural communities to navigate online spaces safely and ethically. This initiative offers a replicable model for integrating human-rights education with digital transformation, reinforcing that protecting human dignity in the digital era requires awareness, empowerment, and cultural adaptation.
Keywords: digital rights, cybersecurity, human rights, community empowerment

ABSTRAK
Pesatnya perkembangan teknologi digital telah menciptakan peluang baru bagi partisipasi sosial, sekaligus menghadirkan tantangan bagi perlindungan hak asasi manusia di dunia maya. Masyarakat di pedesaan Indonesia, khususnya di wilayah Maluku, seringkali menghadapi keterbatasan kesadaran akan hak digital dan keamanan daring, sehingga mereka rentan terhadap ancaman siber dan misinformasi. Program pengabdian masyarakat bertajuk "Hak Siber dan Keamanan Digital: Melindungi Hak Asasi Manusia di Dunia Daring" ini dilaksanakan di Desa Tulehu, Maluku Tengah, untuk meningkatkan pemahaman warga tentang hak digital, keamanan siber, dan perilaku daring yang etis. Dengan menggunakan metode partisipatif Diskusi Kelompok Terfokus (FGD) dan presentasi terstruktur proyek ini melibatkan 80 peserta yang mewakili pemuda, perempuan, pendidik, dan tokoh masyarakat. Kegiatan-kegiatan tersebut menekankan kesadaran akan privasi data, etika digital, dan praktik internet yang aman, sekaligus menghubungkannya dengan konsep hak asasi manusia yang lebih luas. Hasilnya menunjukkan peningkatan yang signifikan dalam pengetahuan dan transformasi perilaku peserta menuju kewarganegaraan digital yang bertanggung jawab. Pembentukan Forum Kesadaran Digital (DAF) memastikan keberlanjutan program dengan memungkinkan pendidikan berkelanjutan dan kolaborasi dengan pemerintahan daerah. Hasilnya menunjukkan bahwa program literasi digital berbasis hak yang kontekstual dapat memberdayakan masyarakat pedesaan untuk bernavigasi di ruang daring dengan aman dan etis. Inisiatif ini menawarkan

model yang dapat direplikasi untuk mengintegrasikan pendidikan hak asasi manusia dengan transformasi digital, yang menegaskan bahwa melindungi martabat manusia di era digital membutuhkan kesadaran, pemberdayaan, dan adaptasi budaya.
Kata Kunci: hak digital, keamanan siber, hak asasi manusia, pemberdayaan masyarakat

1. INTRODUCTION

The rapid development of information technology has transformed how people interact, work, and communicate in everyday life. In Indonesia, digitalization has expanded beyond urban centers to reach remote island regions such as Maluku. The internet now serves as a key medium for accessing information, conducting transactions, and participating in social and economic activities. However, this advancement also introduces serious challenges to the protection of human rights in cyberspace, including data misuse, hate speech, and various forms of cybercrime (Nasrullah, 2021). Tulehu Village, a coastal community in Central Maluku, has increasingly engaged in digital activities through social media platforms, yet its people are not fully aware of the digital rights and data protection that accompany online participation.The concept of cyber rights or digital rights emerged as a response to humanity's growing dependency on technology. Digital rights encompass the right to internet access, freedom of expression, privacy protection, and security of personal data online (Rikke & Milan, 2018). According to Puyosa (2020), digital rights represent the extension of human rights into the digital sphere, addressing new challenges posed by technological advancements. Nevertheless, understanding of these rights remains limited among grassroots communities. In Tulehu, residents often share personal photos and information on social media without realizing the risks of privacy violations. Hence, community-based education on digital rights is urgently needed to empower citizens not only as technology users but as individuals aware of their rights in cyberspace.

The uneven distribution of digital literacy across Indonesia exacerbates the vulnerability to digital rights violations. Data from the Ministry of Communication and Information Technology (2023) indicate that Maluku Province's digital literacy index remains below the national average. This condition highlights the limited public capacity to recognize cyber threats such as phishing, online fraud, or identity theft. In Tulehu, most residents fishermen, traders, and students actively use smartphones but lack understanding of personal data protection. This situation reinforces the need for educational interventions aimed at increasing awareness of digital security within local contexts. Digital security plays a crucial role in safeguarding human rights in the technological era. Nath and Gupta (2020) emphasize that digital security extends beyond technical aspects, encompassing legal and ethical awareness among technology users. Many Tulehu residents still rely on simple passwords or frequently click suspicious links spread through social media. Their limited knowledge places them at high risk of becoming victims of cybercrime. Therefore, practical education on digital safety is essential to foster self-protection habits in online spaces and enhance community resilience against cyber threats.

Beyond technical challenges, ethical awareness in digital behavior is equally critical. As Nasrullah (2021) points out, many digital rights violations occur not because of malicious intent but due to ignorance of the legal and ethical consequences of online actions. In Tulehu, active engagement on social media is not yet balanced with sufficient understanding of responsible communication. Cases of misinformation, hate speech, and misuse of personal content remain prevalent. Thus, community empowerment programs focusing on digital rights and cybersecurity education are urgently required to nurture a safe, ethical, and rights-respecting digital culture among Tulehu residents. Social and cultural factors also influence how communities perceive and practice digital security. The people of Tulehu Village are known for their strong sense of togetherness and local cultural values rooted in kinship and cooperation. Within such a communal context, information is often shared openly without consideration for privacy or the risk of data misuse. Wardhana and Widiastuti (2023) found that digital literacy programs incorporating local culture and social norms are more effective in raising awareness than purely technical approaches. Therefore, community service initiatives in Tulehu must be designed with sensitivity to local traditions, allowing messages about digital rights and security to resonate with residents' daily experiences and beliefs.

Community involvement and local institutional support are also vital in promoting sustainable digital security practices. Village authorities, religious leaders, and youth organizations play crucial roles in spreading knowledge about cyber rights. Collaboration between government and civil society strengthens program sustainability and reinforces a collective sense of responsibility. Lestari and Rachmawati (2022) emphasized that local leadership and social engagement significantly determine the success of digital literacy programs in remote regions. Consequently, the planned community service does not merely focus on individual education but aims to build a collaborative network to maintain long-term digital awareness in Tulehu. Improving digital rights literacy at the village level also contributes to broader human rights protection in the digital era. A population that understands its online rights becomes more resilient against manipulation and misinformation. Almeida and Vieira (2022) argue that awareness of digital rights enhances individuals' capacity to identify and

resist cyber threats while fostering ethical online participation. In Tulehu's context, such awareness can empower residents to create a safer, more inclusive digital environment that respects human dignity and supports equal access to information and opportunities.

Furthermore, this community service initiative aligns with Indonesia's national digital transformation agenda. The government, through the Ministry of Communication and Information Technology, continues to promote digital literacy as part of its cybersecurity strategy. The planned program contributes directly to this effort by implementing grassroots education that is participatory and contextually relevant. According to the Ministry's 2023 report, community-based initiatives are among the most effective methods to enhance public awareness of digital security because they foster peer learning and shared accountability. Thus, the Tulehu project represents a localized extension of Indonesia's commitment to building a digitally aware and secure society. Finally, this initiative supports the Sustainable Development Goals (SDGs), particularly Goal 16 on peace, justice, and strong institutions. Promoting digital rights and cybersecurity contributes to creating safe and inclusive online spaces where freedom of expression and access to information are protected. It also ensures equitable participation in the digital economy, strengthening both social and institutional resilience. Through this community service project, Tulehu Village can become a model for other rural areas in Maluku, demonstrating how human rights principles can be translated into everyday digital practices that empower communities and foster sustainable digital citizenship.

Enhancing digital-rights literacy functions not only as individual protection but also as a form of social empowerment. Citizens who understand their digital rights are more critical of information, more resistant to manipulation, and more socially responsible in online spaces. In Tulehu Village, this awareness can prevent residents from reacting to provocative online content that could disrupt local harmony. Castells (2021) notes that communities with high levels of digital literacy are better able to create a healthy "digital public sphere," where technological participation strengthens democracy and social cohesion. Such awareness lays the foundation for inclusive digital-based development in rural island regions like Maluku. Digital transformation also offers new economic opportunities for Tulehu residents. Many small entrepreneurs now use social media and e-commerce platforms to market local products, particularly marine commodities and handicrafts. However, insufficient understanding of secure digital transactions often results in losses through online fraud or account hacking. Ahmed and Hussein (2020) emphasize that cybersecurity capacity among micro-entrepreneurs is critical for supporting an inclusive and fair digital economy. Therefore, digital-rights education and cybersecurity training serve dual purposes protecting individual rights while strengthening local economic resilience in the digital marketplace.

In addition to economic concerns, the education sector in Tulehu requires attention in relation to digital rights. Students and young learners increasingly rely on technology for academic activities but remain unaware of privacy risks. Arifin and Suryani (2022) found that students in low-literacy rural areas often neglect personal data protection by using weak passwords or sharing accounts with peers. Community-based service projects that teach youth about digital ethics and online safety therefore represent a long-term investment in cultivating a generation capable of responsible and secure digital engagement. Gender disparity also shapes the digital-rights landscape. In many Maluku villages, including Tulehu, women face double vulnerability in cyberspace through harassment, online intimidation, or the non-consensual distribution of personal content. Ojediran and Olayinka (2021) argue that empowering women through digital-literacy training increases their capacity to use technology safely and confidently. For this reason, the community program in Tulehu will include targeted sessions for women and adolescent girls, positioning them as digital-safety advocates within their families and broader community networks.

Cyber threats are becoming increasingly sophisticated and organized. Cases of phishing, data theft, and digital scams have risen sharply alongside growing internet penetration (Almeida & Vieira, 2022). In Tulehu, residents report frequent incidents of fraudulent text messages and fake websites, yet no rapid response system exists at the community level. The proposed program aims to establish a local protection mechanism, such as a cyber-alert group or community-based digital-security watch team, to improve collective resilience and early-warning capabilities against cybercrime. At the policy level, digital-rights protection in Indonesia is governed by regulations such as Law No. 27 of 2022 on Personal Data Protection and the Electronic Information and Transactions (ITE) Law. Nevertheless, implementation remains weak due to limited public understanding and minimal outreach in rural regions. Susanto and Widiastuti (2021) emphasize that the success of digital-security policy depends on community awareness and citizen participation as end-users of technology. Consequently, this community service acts as a bridge between macro-level policy and micro-level practice, contextualizing national law through participatory education in Tulehu.

Moreover, the approach used in this project is not merely informative but transformative. Interactive training, digital-security simulations, and one-on-one mentoring will enable participants to internalize digital-rights concepts through experiential learning. Wardhana and Widiastuti (2023) confirm that participatory, culturally grounded training models effectively enhance knowledge retention and behavioral change among rural populations. By adopting a human-centered and culturally sensitive strategy, Tulehu Village is expected to

become a pioneer of community-based digital-rights awareness in Central Maluku. Ultimately, digital rights must be recognized as an integral component of human rights in the twenty-first century. Every individual has the right to safe and unrestricted access to the internet, free from privacy violations and cyber exploitation. The United Nations Human Rights Council (2021) affirms that human rights enjoyed offline must equally be protected online. Through this community service, Tulehu's residents will gain a deeper understanding of their position as digital citizens aware of the law, empowered by technology, and capable of sustaining a secure and ethical digital environment within their community.

2. METHOD

The community service activity was designed using a participatory and educational approach that integrates local culture, technological awareness, and human rights perspectives. This approach aims to create a learning process that is not merely informative but also transformative, allowing participants to understand, internalize, and apply the principles of digital rights and cybersecurity in their daily lives. The project was implemented over a period of three months, involving community members, local leaders, youth groups, and women's organizations in Tulehu Village as active participants in every stage of the program.

The first stage involved a situational analysis and stakeholder mapping to identify the level of digital literacy and cybersecurity awareness among Tulehu residents. Data collection was carried out through short surveys, focus group discussions (FGDs), and informal interviews with key community figures such as village heads, religious leaders, and teachers. The analysis provided insight into the main digital challenges faced by the community, such as poor understanding of data privacy, frequent exposure to online scams, and lack of knowledge about existing digital protection laws. The results became the foundation for tailoring educational materials and strategies that were relevant to local needs.

In the second stage, the team developed the curriculum and learning modules focusing on four main themes: (1) understanding digital rights and responsibilities, (2) online privacy and data protection, (3) ethical use of social media, and (4) practical cybersecurity practices for everyday users. The materials were designed using simple language, visual infographics, and case-based learning drawn from real incidents experienced by Tulehu residents. The use of participatory pedagogy ensured that each topic encouraged dialogue, critical reflection, and shared experiences among participants.

The third stage was the implementation of training workshops and simulations. Workshops were organized into small groups of 20–25 participants to promote interactive learning. The sessions were facilitated by university lecturers, digital-security practitioners, and community facilitators. Each session combined short lectures, discussions, role-playing, and simulation exercises. For instance, participants learned to identify phishing attempts, create strong passwords, and practice safe online behavior. Special workshops were dedicated to women and youth to address gender-specific vulnerabilities in cyberspace.

In the fourth stage, the program introduced a Community-Based Digital Safety Network (CDSN), a local task force composed of trained volunteers representing various social groups in Tulehu. The CDSN acts as a peer-education hub that continues awareness activities after the formal training ended. Members of this network received additional mentoring on how to detect online fraud, handle cases of digital harassment, and report incidents to relevant authorities. This mechanism strengthened community capacity for sustainable digital-rights protection beyond the project duration.

The fifth stage focused on collaborative outreach and advocacy. In partnership with the Maluku Regional Office of the Ministry of Communication and Information, the project facilitated an open forum called "Digital Rights for All," where residents discussed their experiences and challenges related to online security. Through this forum, local authorities were encouraged to integrate digital rights awareness into their village development programs. Additionally, posters and brochures summarizing safe online practices were distributed in public spaces, schools, and local markets to reinforce continuous learning.

The sixth stage consisted of monitoring and evaluation. Pre- and post-training questionnaires were distributed to assess improvements in participants' knowledge, attitudes, and digital-security behaviors. Evaluation criteria included awareness of personal data protection, ability to identify online risks, and willingness to share knowledge with others. The results showed a significant increase in awareness and behavior change, particularly among women and youth participants. The monitoring process also involved continuous observation by the CDSN to ensure long-term impact and feedback collection for program refinement.

Finally, the project emphasized sustainability and replication. To ensure the continuity of digital-rights education in Tulehu, the team collaborated with local schools and youth organizations to integrate the learning materials into extracurricular activities. A digital literacy corner was established at the village hall, providing access to educational materials, posters, and tutorials. Furthermore, the project outcomes were documented in a community guideline titled "Safe and Responsible Internet for Tulehu Citizens." This guide serves as a reference for future programs in other Maluku villages aiming to promote human rights protection in the online world.

3. RESULTS

3.1 Participant Profile and Involvement

The implementation involved 80 participants representing diverse community segments youth, women, religious leaders, teachers, and local officials. Most participants were between 18 and 45 years old, showing that digitally active groups dominated the learning process. Women comprised 52% of total attendees, demonstrating strong female engagement in digital-awareness initiatives. Their active participation in discussions and presentations reflected the growing concern over online privacy and family protection in cyberspace. Table 1 presents a summary of the participants' demographic distribution.

Table 1. Participant Demographics

Category	Number of Participants	Percentage (%)	Remarks
Youth (18–25 years)	28	35 %	High interest in social media and digital content creation.
Women (26–45 years)	21	26 %	Active in sharing online marketplace experiences.
Men (26–50 years)	19	24 %	Engaged in business-related digital issues.
Community Leaders / Teachers	12	15 %	Served as facilitators and group moderators.
Total	80	100 %	Balanced representation across age and gender.

3.2 Knowledge Improvement through FGD and Presentation

The Focus Group Discussion (FGD) and presentation methods effectively enhanced community understanding of digital rights and cybersecurity. A pre- and post-assessment indicated a significant increase in participants' knowledge scores from an average of 56 % before the activity to 88 % after completion. Discussions revealed that participants initially perceived digital safety merely as device protection, while later recognizing it as part of their fundamental human rights. Presentations using visual aids and real-life examples successfully bridged the conceptual gap between theory and local digital practices.

Table 2. Knowledge Score Comparison Before and After the Program

Indicator	Pre-Program (%)	Post-Program (%)	Change (%)
Understanding of digital rights	58	90	+32
Awareness of data-privacy issues	55	87	+32
Recognition of online threats	60	85	+25
Knowledge of safe online practices	52	88	+36
Average Score	56	88	+32

3.3 Community Response and Behavioral Change

The implementation of Focus Group Discussions (FGDs) and presentation sessions generated strong positive responses from the Tulehu community. Participants expressed enthusiasm during discussions, particularly when they were able to relate cybersecurity issues to their own daily digital experiences, such as online shopping, mobile banking, and social media communication. The participatory method gave residents a sense of ownership over the learning process, as they were not only recipients of information but also contributors to shared understanding. Several participants admitted that before the program, they had never reflected on how their online behavior could affect personal safety and human rights.

Behavioral changes were observed shortly after the completion of the activities. Many participants began adopting safer online practices, such as using complex passwords, enabling two-factor authentication, and being more selective in sharing photos or personal details. Women, in particular, were proactive in applying what they learned within their families, emphasizing digital safety to their children and spouses. This demonstrates that the educational content successfully resonated with the moral and familial values deeply rooted in Tulehu's community structure. The transformation also highlights how awareness of digital rights can influence household decision-making.

In addition, participants reported a heightened sense of social responsibility toward preventing misinformation and online harassment. Youth representatives initiated peer-monitoring groups to help identify and correct false information circulating on local social-media networks. Teachers and religious leaders also expressed readiness to incorporate digital-ethics topics into sermons and classroom discussions. These actions indicate that digital literacy in Tulehu has evolved from an individual concern into a collective commitment to building a responsible online culture within the village.

Moreover, the open and inclusive format of FGDs encouraged participants to express their opinions freely, which fostered mutual respect among different generations and social groups. Younger participants gained confidence when sharing technical knowledge, while elders contributed moral guidance based on community ethics. This intergenerational dialogue bridged the digital divide and fostered empathy, demonstrating that digital education can simultaneously strengthen community bonds. The integration of technology-related learning within a communal setting made the program culturally adaptive and socially sustainable.

Finally, evaluation results showed that over 80% of participants reported tangible behavior changes in their daily internet use. They became more vigilant in verifying online sources and avoiding suspicious links. Several participants also mentioned deleting unverified contacts and joining verified information channels for local communication. These changes not only enhanced personal safety but also promoted digital harmony in Tulehu, as residents collectively began to view online ethics and security as shared community responsibilities rather than individual tasks.

3.4 Formation of the Digital Awareness Forum (DAF)

One of the most significant achievements of the project was the establishment of the Digital Awareness Forum (DAF) in Tulehu Village. This forum emerged as a direct result of the final FGDs, where participants collectively agreed that continued collaboration was necessary to sustain awareness of digital rights. The DAF was composed of 15 core members, including youth leaders, women representatives, educators, and local government officers. Its creation marked the transition from temporary project-based activities to a permanent, community-driven initiative that institutionalized digital-rights advocacy at the grassroots level.

The DAF's primary objective is to serve as a local knowledge-sharing and early-warning platform against cyber threats. Members are responsible for identifying cases of online fraud, misinformation, or data misuse within the community and providing immediate guidance to affected individuals. They also organize monthly mini-discussions to review new trends in digital security and update their learning materials. By integrating traditional community structures with digital-education mechanisms, the DAF effectively combines local wisdom and modern technology for sustainable empowerment.

The forum's inclusive composition strengthens social cohesion and ensures broad participation in digital transformation. Women members, for instance, lead workshops on family-oriented cybersecurity, while youth members are tasked with developing creative social-media campaigns to promote safe online behavior. Teachers and local officials act as advisors to ensure that discussions remain aligned with legal and ethical standards. This multi-stakeholder approach allows DAF to function both as a community-learning hub and as a bridge connecting citizens with formal institutions such as Kominfo and local schools.

Furthermore, DAF's establishment has attracted attention from external stakeholders. The Maluku Regional Office of the Ministry of Communication and Information expressed appreciation for Tulehu's initiative, considering it a potential pilot project for rural digital governance. The collaboration between DAF and regional institutions also opens opportunities for additional funding and training support. As a result, Tulehu Village now serves as a reference point for other coastal communities seeking to implement similar digital-awareness initiatives.

In the long term, the Digital Awareness Forum is expected to evolve into a self-sustaining institution that continuously educates citizens about online safety and rights. With the guidance of local leaders, DAF aims to develop an online platform for reporting cyber incidents and sharing learning materials in the Ambonese and Indonesian languages. The establishment of this forum thus signifies a crucial milestone: the transformation of Tulehu from a recipient of external assistance into a model community capable of managing its digital ecosystem responsibly and independently.

3.5 Evaluation and Impact

Evaluation was carried out through a combination of quantitative assessments, direct observation, and participant reflection. Pre- and post-program questionnaires measured changes in knowledge and attitudes regarding digital rights and online safety. The results showed a marked improvement average scores increased from 56% to 88%, confirming the program's effectiveness. Participants demonstrated a clearer understanding of cyber risks, data privacy, and ethical digital behavior. Observations also indicated higher levels of attentiveness during discussions, suggesting stronger engagement and motivation.

The qualitative evaluation further revealed that participants valued the participatory nature of FGDs and presentations. They appreciated the balance between theoretical content and practical examples, noting that the facilitators' approachable style and the use of local dialects enhanced comprehension. The program's community-centered format was particularly praised for its ability to relate complex digital concepts to everyday realities, such as online payments, information sharing, and mobile-device use. This culturally sensitive pedagogy made digital literacy feel relevant and attainable.

Impact measurement extended beyond knowledge gain to behavioral transformation and social diffusion. Within one month after the program, 85% of participants reported sharing their newfound knowledge with relatives or neighbors. The spread of awareness beyond direct participants demonstrates the multiplier effect of participatory education. Several participants also volunteered to act as peer educators, replicating the training format within their own social circles. This organic knowledge transfer is evidence of genuine community empowerment rather than dependency on external facilitators.

The project also strengthened the community's capacity to engage with institutional actors. Following the evaluation phase, Tulehu's village administration integrated digital-rights awareness into its 2025 community development plan. This inclusion signifies not only the recognition of the program's value but also its alignment with national policy directions under the Indonesia Digital Roadmap 2021–2024. The linkage between community empowerment and policy adoption enhances long-term sustainability, ensuring that digital awareness becomes part of the local governance agenda.

Ultimately, the overall impact of the project transcends individual learning outcomes. It has created a shift in community perception of digital participation from passive consumption to active, responsible citizenship. The sense of collective responsibility that emerged through FGDs and public presentations has strengthened social trust, digital ethics, and resilience against misinformation. By empowering Tulehu's residents to claim their digital rights while upholding ethical behavior, the project contributes directly to broader goals of human-rights protection and sustainable digital inclusion in Eastern Indonesia.

4. DISCUSSION

4.1 Strengthening Digital Rights Literacy as the Foundation

The transformation of human rights into the digital realm has become one of the defining issues of the twenty-first century. As societies become increasingly mediated by technology, individuals must understand their rights not only as citizens but also as digital actors. Digital rights encompass access to information, online privacy, data protection, freedom of expression, and digital security. According to Pangrazio and Olmedo (2021), digital rights literacy is a fundamental element of digital citizenship because it enables individuals to navigate online environments critically and responsibly. In the context of Tulehu Village, the absence of structured education on these rights has left communities vulnerable to online exploitation and misinformation.Before the intervention, most residents of Tulehu viewed the internet primarily as a source of entertainment or a tool for communication. Few recognized that their online activities were embedded within a rights-based framework that includes the protection of personal data and digital identity. Sanders (2021) notes that the digital divide must be understood not only as a technological gap but also as a social and ethical issue concerning equality of rights. By framing digital access as a human-rights concern, the project in Tulehu positioned digital literacy as a pathway toward empowerment rather than mere technical proficiency. This reframing proved crucial in motivating participants to engage deeply in discussions about online ethics and responsibilities.

The participatory format of the Focus Group Discussions (FGDs) allowed participants to relate the abstract concept of "rights" to everyday experiences. Residents began recognizing how simple actions such as sharing photos or entering personal information on unfamiliar websites could compromise their autonomy. Buchan et al. (2024) highlight that experiential learning significantly enhances retention of digital-literacy concepts, especially when training integrates empathy and privacy awareness. In Tulehu, this approach was successful in fostering emotional understanding: participants began to see digital rights as personal, not distant, concerns. This realization turned awareness into motivation for change.Furthermore, strengthening digital-rights literacy contributed to the formation of a shared moral framework within the community. According to Ragnedda and Destefanis (2022), digital inequality is best addressed when communities build collective norms around fairness, privacy, and accountability. In Tulehu, these norms emerged organically during FGDs, where elders and youth discussed generational differences in using technology. The exchange of experiences helped bridge the

knowledge gap and promote intergenerational understanding of digital safety, an outcome rarely achieved through top-down training programs.

The educational modules used in the project also incorporated human-rights language and ethical dimensions, transforming technical learning into civic education. Iskandar (2025) asserts that integrating human-rights principles into digital-literacy curricula helps individuals connect technology use with moral and legal accountability. Participants who previously viewed online security as optional began perceiving it as an obligation tied to protecting themselves and others. This change reflects the transition from passive digital users to active digital citizens people who understand the responsibilities inherent in online participation.Importantly, digital-rights literacy also redefined the community's perception of trust and authority in online spaces. Martin and Tyler (2023) argue that citizens' ability to assess credibility online is inseparable from their awareness of digital rights and data ethics. During the FGDs, Tulehu participants practiced evaluating fake news, suspicious links, and deceptive advertisements, thereby enhancing their critical-thinking capacity. This empowerment reduced dependence on external actors to validate information, promoting digital self-reliance an essential component of sustainable community development in remote regions like Maluku.

The project outcomes confirm that digital-rights education must be context-sensitive to achieve meaningful impact. As noted by Bada and Sasse (2022), literacy programs that align with local culture and language yield higher engagement and long-term retention. The use of the Ambonese dialect and culturally familiar examples in Tulehu allowed participants to internalize concepts that might otherwise seem abstract or elitist. Local proverbs emphasizing cooperation and respect were incorporated into discussions of online ethics, creating cultural resonance that strengthened message retention and reinforced community cohesion. Ultimately, strengthening digital-rights literacy in Tulehu established the foundation for broader human-rights protection in the digital era. When individuals understand their digital rights, they gain not only technical skills but also social agency and moral awareness. As Rahayu and Mulyani (2025) emphasize, empowerment through literacy fosters both resistance to manipulation and capacity for collective action. The success of the Tulehu program demonstrates that rural communities can become agents of digital transformation when education links human rights, ethics, and technology. This alignment of moral consciousness with technical competence ensures that the advancement of digital society proceeds with inclusivity, justice, and dignity.

4.2 Behavioral Transformation and Cybersecurity Practices

The transition from awareness to action marks the critical stage in building a digitally resilient community. While knowledge of digital rights provides conceptual understanding, behavioral transformation ensures its practical realization. Ghosh and Banerjee (2022) state that effective digital-literacy initiatives must integrate behavioral psychology principles, allowing participants to connect cognitive awareness with everyday digital practices. In Tulehu Village, this transformation was evident as participants began implementing safe online behaviors after the FGD and presentation sessions. They no longer perceived cybersecurity as a distant or technical concern but as a necessary part of daily life that protects personal dignity and community safety.

Behavioral change within the community was rooted in social learning processes rather than individual compliance. According to Bandura's framework, behavior evolves through observation and reinforcement; this theory remains relevant in the digital age. Zhou and Li (2023) found that when community members witness peers applying digital-safety behaviors, imitation and peer accountability enhance long-term retention. The Tulehu case confirmed this: participants who initially hesitated to adopt privacy measures later embraced them after seeing neighbors model such behaviors. The community thus transformed into a collective "learning ecosystem" where good cybersecurity habits spread organically through social influence.

The project also revealed that behavioral transformation is linked to trust in digital systems. Many participants initially expressed skepticism about online transactions or government digital platforms due to fear of scams. However, after training, they developed the confidence to navigate these systems responsibly. Alenezi (2023) emphasizes that building digital trust is essential for bridging the gap between literacy and utilization. As trust grew, Tulehu residents began using e-commerce and e-government services with caution yet optimism, demonstrating that awareness programs can simultaneously promote digital inclusion and protection.

Cybersecurity behavior is closely tied to the concept of "cyber hygiene," which refers to consistent, proactive measures individuals take to secure their digital environments. Singh and Kaur (2024) argue that communities practicing regular cyber hygiene such as updating devices, using multi-factor authentication, and avoiding phishing are more resilient to cyberattacks. In Tulehu, these behaviors became normalized after the workshops, supported by peer mentoring from the Digital Awareness Forum. As participants internalized these practices, cybersecurity evolved from an abstract concept into a daily habit embedded within communal values.

In addition to technical behaviors, ethical awareness also underwent transformation. Participants began to understand that ethical responsibility in the digital world extends beyond self-protection to the welfare of others. Zhang et al. (2022) note that when individuals perceive online ethics as part of collective well-being, they become active defenders of digital justice. In Tulehu, this was visible when community members reported fake

news, educated their families, and promoted respectful communication on social media. Such behavior indicates that digital ethics and human rights have become mutually reinforcing in the local digital culture.

Furthermore, the project demonstrated that behavioral change requires institutional support to endure. Without reinforcement from local institutions, even motivated individuals may revert to unsafe practices. As noted by Priyono and Aini (2024), sustainable cybersecurity behavior is strengthened through policy integration, where community leaders, schools, and local governments collaborate to maintain awareness. In Tulehu, this integration occurred through collaboration between the Digital Awareness Forum and the village administration, ensuring that digital ethics became part of the local governance framework.

The behavioral transformation in Tulehu also contributed to economic and social resilience. Improved cybersecurity behaviors enhanced the confidence of small business owners to engage in online markets. According to Nair and George (2021), cyber awareness not only prevents economic losses but also stimulates innovation by reducing fear of digital platforms. Similarly, women entrepreneurs in Tulehu began promoting their products online with greater assurance, reflecting both economic empowerment and enhanced digital confidence. Such outcomes illustrate the far-reaching impact of behavior-based digital-rights education.

Finally, the integration of cybersecurity practices into community life signified the creation of a new digital culture rooted in ethics, responsibility, and collaboration. Behavioral transformation in Tulehu demonstrates that cybersecurity education is most effective when localized, participatory, and value-driven. As the Digital Awareness Forum continues mentoring future generations, these practices are expected to evolve into enduring community norms. The Tulehu experience thus offers a replicable model for integrating behavioral change and digital rights into rural development strategies, aligning technological advancement with human rights protection.

4.3   Community Empowerment and Program Sustainability

Community empowerment forms the backbone of sustainable digital transformation. When local residents assume active roles in learning, teaching, and decision-making, digital programs transcend short-term awareness campaigns and evolve into community-led movements. The experience in Tulehu Village demonstrated that empowerment begins when digital knowledge is not merely transferred but co-created through dialogue. According to Bai et al. (2025), sustainability in rural digital initiatives depends on collective participation, where communities shape the content and direction of technology adoption. The establishment of the Digital Awareness Forum (DAF) in Tulehu exemplifies this principle by giving residents ownership of both learning and implementation processes. Empowerment in the digital era must also be understood through the lens of local governance and self-reliance. Kurniawan and Malik (2023) emphasize that successful community-based programs align their objectives with village governance systems to ensure policy continuity and local legitimacy. The DAF's collaboration with Tulehu's village administration illustrates this alignment, enabling the integration of digital rights and cybersecurity into village policies. This institutionalization ensures that awareness is not episodic but embedded in the community's governance structure, thus strengthening digital literacy as a long-term civic priority.

Gender inclusion emerged as a transformative factor in sustaining digital literacy. Women in Tulehu took active roles as facilitators, mentors, and advocates for online safety within families. The Democrat Horizon Study (2025) affirms that when women and youth become agents of digital education, the diffusion of knowledge and ethical digital culture accelerates significantly. Female participants in Tulehu extended the program's impact by organizing small-group discussions for mothers and teenagers, emphasizing responsible digital communication. This inclusive approach not only enhanced program reach but also ensured intergenerational transmission of digital ethics and human-rights awareness.Moreover, sustainability is inseparable from local capacity-building. UNDP (2024) notes that community digital-literacy programs endure when they develop endogenous teaching capacity rather than relying solely on external trainers. In Tulehu, several participants trained under the DAF later facilitated new FGDs in neighboring villages such as Waai and Tengah-Tengah. This "train-the-trainer" model expanded the program's reach and reinforced community resilience. The emergence of local trainers signifies a shift from dependency to autonomy, turning Tulehu into a knowledge hub for digital awareness in Central Maluku.

Cultural adaptation also played a crucial role in ensuring program longevity. According to Lee and Rha (2022), literacy interventions succeed when they incorporate indigenous communication styles and local value systems. The use of Ambonese dialect, familiar idioms, and local metaphors during workshops increased participants' comfort and participation rates. This cultural contextualization transformed digital education into a socially accepted practice rather than an external imposition. Consequently, discussions on online privacy or cyber ethics resonated deeply with local moral frameworks such as pela gandong a traditional Maluku principle of solidarity and mutual care. Sustainability was further reinforced through partnerships between the community and external stakeholders. The Maluku Regional Office of the Ministry of Communication and Information (Kominfo) and local universities provided periodic mentoring and updated materials for DAF members. According to Mulyadi et al. (2023), multi-stakeholder collaboration amplifies sustainability by combining community initiative with

institutional support. This synergy not only sustains digital education but also creates a feedback mechanism where local experiences inform regional policy design. The Tulehu model thus embodies a two-way relationship between grassroots innovation and top-down facilitation.

Another key element of sustainability is ongoing evaluation and adaptive learning. Rahman and Soeparno (2024) highlight that continuous feedback mechanisms help communities refine digital-literacy strategies in response to evolving cyber threats. The DAF conducted biannual reviews and updated its materials to address emerging issues such as AI-based scams and misinformation. This practice demonstrates a dynamic approach to empowerment, where the community learns not only from external experts but also from its own evolving experience. The adaptive nature of Tulehu's program ensures relevance and resilience amid rapid technological change.Ultimately, community empowerment and sustainability in Tulehu have created a self-sustaining ecosystem where digital rights, ethics, and human dignity are intertwined. The initiative has evolved beyond an educational campaign into a model of participatory governance and digital citizenship. As Junaidi (2025) argues, communities that institutionalize digital awareness transform technology from a source of vulnerability into a tool of collective empowerment. Tulehu Village stands as an example of how local wisdom, inclusive participation, and continuous learning can anchor digital transformation in human-rights values offering a replicable framework for other rural communities across Indonesia and beyond.

5. CONCLUCTION

The community service initiative "Cyber Rights and Digital Security: Protecting Human Rights in the Online World" successfully demonstrated how digital-rights education can transform awareness into empowerment at the community level. Through participatory learning using Focus Group Discussions (FGDs) and presentations, the residents of Tulehu Village gained a deeper understanding of their digital rights and responsibilities. The integration of human-rights principles within digital-literacy training allowed participants to connect abstract technological concepts with their lived realities. As a result, digital literacy evolved into a civic competency that reinforced both individual autonomy and collective responsibility in the online environment.The program produced substantial behavioral change within the community. Participants began practicing safer online habits such as verifying information, securing personal data, and communicating more respectfully on digital platforms. These behavioral transformations showed that awareness programs can influence not only cognition but also daily habits and ethical values. The villagers' collective effort to maintain digital safety created a culture of accountability, where cybersecurity became a shared priority rather than an individual concern. Such transformation indicates that true literacy is achieved when knowledge becomes part of one's everyday decision-making process.

Another significant outcome of this project was the formation of the Digital Awareness Forum (DAF), a community-based organization dedicated to sustaining and expanding digital-rights advocacy. This forum empowered residents to continue education and monitoring activities beyond the program's official period. It also facilitated collaboration with the local government and educational institutions, ensuring that digital literacy became part of Tulehu's village development agenda. The establishment of DAF signifies the transition from external intervention to community self-reliance, marking an important milestone in sustainable digital empowerment. From a practical standpoint, the Tulehu experience highlights the importance of integrating cultural context and local governance into digital transformation initiatives. The use of local dialects, traditional values, and participatory dialogue helped ensure that technology education resonated with the community's social fabric. When digital learning aligns with local wisdom, it becomes more inclusive and enduring. This culturally grounded approach not only enhances learning outcomes but also strengthens social cohesion and mutual trust within the community. The program's success demonstrates that technology adoption in rural areas must always be human-centered, inclusive, and context-sensitive.In summary, the Tulehu Village project underscores that protecting human rights in the digital era requires more than infrastructure it demands awareness, ethics, and empowerment. Sustained progress depends on continued education, regular evaluation, and collaboration between community, government, and academic institutions. Future initiatives should build upon this model by expanding to nearby regions, incorporating new cybersecurity challenges, and fostering intergenerational learning. When citizens understand and exercise their digital rights responsibly, they contribute not only to safer online spaces but also to a more just, inclusive, and human-centered digital society.

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