JIPS 6 (3) (2025)

Jurnal Inovasi Pendidikan dan Sains

E-ISSN 2721-9119

https://ejournal.unwmataram.id/JIPS

Developing Digital Literacy Networks and Technology's Impact on Gresik Village Communities

Taufiq Harris[1]*, M. Furqon Wahyudi[2]

[1,2]Master of Education Management Study Program, Universitas Gresik, Indonesia

Corresponding Author:
Author Name*: Taufiq Harris
Email*: taufiqharris12@gmail.com

Accepted: July 30th 2025. Approved: October 20th 2025. Published: November 1th 2025

ABSTRACT

This study aims to analyze the role of multiple stakeholders in developing digital literacy, its impact on social and economic dynamics, and the challenges encountered in rural contexts. Using a qualitative approach grounded in grounded theory, data were collected through interviews, observations, and documentation. The findings reveal that village stakeholders implement synergistic programs to build a productive and sustainable empowerment ecosystem. The Village Government serves as the primary facilitator by formulating digital literacy programs that promote technological adoption; community leaders act as social catalysts, fostering trust and encouraging citizen participation; the private sector supports by providing market access, digital financial services, and technological innovations aligned with local needs; and academics contribute through Community Service Programs (KKN) that enhance digital literacy capacity. However, residents' awareness and trust in digital technology remain low, collaboration between users, providers, and platforms is suboptimal, and e-commerce, financial technology, and social media utilization are limited. While digitalization fosters more interactive communication and economic growth for micro and small enterprises, it also risks weakening social ties, creating inequality, and eroding local culture. Overall, digital transformation has improved service efficiency and connectivity, yet it requires sustained trust-building, infrastructure maintenance, and inclusive digital literacy development to ensure long-term impact.

Keywords: stakeholders' role, community network, digital literacy, technological change, development

INTRODUCTION

Digital transformation is a major driving force behind Indonesia's economic growth in its pursuit of becoming a developed nation, in line with the Vision of Golden Indonesia 2045. Based on the results of the *Indeks Masyarakat Digital Indonesia* (IMDI) or Indonesia Digital Society Index measurement conducted by the Communication and Digital Human Resources Development Agency, Ministry of Communication and Digital of the Republic of Indonesia. Indonesian Digital Society Index.

The 2024 National Scale has a National IMDI score of 43.34. The results of the IMDI Measurement, conducted by the Communication and Digital Human Resources Development Agency, Ministry of Communication and Digital, in 2024, were 43.34. Based on its constituent pillars, the digital skills pillar has the highest value, at 58.25, while the pillar with the lowest value is the empowerment pillar, with a value of 25.66. It shows that the Indonesian digital society is currently quite skilled in using digital devices in general, but has not yet optimized its use in an economically productive direction [1].

Furthermore, the Human Resources Development Agency in the Communication and Digital Ministry noted that in 2024, the Digital Society Index or IMDI for East Java Province reached a score of 46.07. The infrastructure & ecosystem pillar obtained the highest score of 62.63, while the empowerment pillar obtained the lowest score, namely 26.44. It is comparable to the National IMDI and East Java, which are also not optimal in their utilization for increasing economic productivity. Gresik Regency reached 48.38, with the infrastructure and ecosystem pillar at 65.40 and the empowerment pillar at 26.14 [1]. It demonstrates sufficient support for the acceleration of digital transformation that can be accessed and utilized by the community equally; however, the low value of the empowerment pillar suggests that the use of digital technology is not optimal for increasing economic productivity within the community.

The disparity between the high infrastructure & ecosystem pillars and the low empowerment pillars creates a significant gap, as the business sector in the Gresik Regency community is more focused on the tertiary/service sector, which prioritizes digital aspects, as presented in the BPS Gresik Regency data in Picture 1 below.

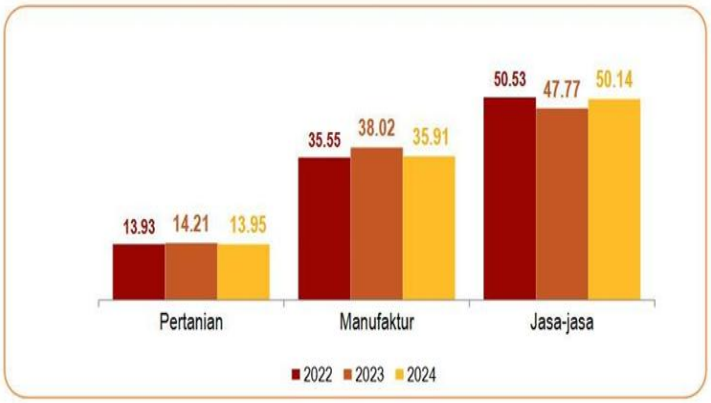

Figure 1: The Percentage of Employed Population by Industry 2022 – 2024

Source: BPS Gresik Regency, 2025

Based on the percentage of the employed population by industry and the results of the Survey *Angkatan Kerja Nasional* (Sakernas) in August 2024, the service sector, accounting for 50.14 per cent of the workforce, was the largest employer in Gresik Regency, followed by the manufacturing sector, which absorbed 35.91 per cent of the workforce. The remaining share was absorbed by the agricultural sector, with the smallest share at 13.95%[2].

This situation has impacted the economic activities of the people of Gresik Regency. In this context, the tertiary or service sector is the primary actor prioritizing digital technology as a tool to create innovation, increase productivity, and expand access to opportunities. Therefore, the digital literacy gap is one of the challenges faced by the people of Gresik Regency, particularly in rural areas [3]. The implementation of digital technology is expected to bring about disruptive changes and new challenges, including altered supply chain patterns, digital security risks, data privacy issues, and shifts in cultural values [4]. The low level of empowerment pillars in Gresik Regency indicates that the use of digital technology for financial services, internet or mobile banking, and e-wallet transactions is not yet optimal. E-commerce transactions, cash-on-delivery (COD) methods, and other similar methods have also not maximized creative economic activities that are marketed through applications[5]. Community-based education can strengthen empowerment by maximizing the use of local potential[6]. Village innovation to build digital literacy in suburban communities is a fundamental need, particularly in the context of technology and information development[7]. Gresik Regency is an industrial area where the majority of the workforce comes from suburban communities that support the local economy. In this case, the role of stakeholders, including the government, the private sector, and educational institutions, is crucial in building a digital literacy-based community network in rural communities. Economically productive digital utilization has become a priority in Gresik Regency[8].

Building a digital literacy-based community network in Gresik Regency is a challenging task. Building an empowered digital society means creating individuals who are not only capable of using technology but also able to utilize it to improve the quality of life and create new opportunities[9]. The development of information and communication technology requires collaboration from all stakeholders. This event has both positive and negative impacts on individual lives[10]. Digital literacy encompasses not only the ability to use digital technology but also the capacity to filter information, think critically and creatively, and possess practical communication skills[11]. This condition results in the absence of a structured and integrated approach to building a digital literacy-based community network, which means that the pillars of IMDI empowerment in the Gresik Regency community are low, despite the rapid development of Gresik City. Empowering local communities is not just an option, but a necessity[12].

Based on the background above, the researcher formulated the problem of this research, namely: what is the role of stakeholders in building a digital literacy-based community network in the village community of Gresik Regency?; what are the challenges faced by stakeholders in efforts to build a digital literacy-based community network in the village community of Gresik Regency?; what is the impact of technological change, especially in the field of digital literacy on the social and economic development of village communities in Gresik Regency?

Research Gap, Novelty, and Objectives: Indonesia's digital transformation is a key driver toward achieving the "Golden Indonesia 2045" vision. However, findings from the 2024 Indonesian Digital Society Index (IMDI) reveal a critical imbalance: while digital skills scored relatively high (58.25), the empowerment pillar remained the lowest (25.66). This pattern persists in East Java (46.07) and Gresik Regency (48.38), where digital infrastructure is strong, yet community empowerment through productive digital utilization is still weak. Such disparity indicates that the presence of technology and connectivity does not automatically lead to inclusive digital participation or economic productivity. In Gresik, a region dominated by the service sector (50.14%), this gap manifests in rural areas where digital literacy and trust remain low despite adequate infrastructure.

To address this issue, this study proposes a multi-stakeholder collaboration model involving village governments, community leaders, the private sector, and academia to develop a digital literacy-based community network aimed at strengthening the empowerment pillar of IMDI. This integrative approach links technological development with human capacity building, supported by local education initiatives and participatory innovation.

The novelty of this study lies in constructing a grounded theoretical framework that explains how multi-sector collaboration can foster digital empowerment in semi-industrial rural contexts. Unlike prior research focused merely on digital access or skills, this study positions digital empowerment as a socio-cultural and economic transformation process. Accordingly, this research aims to analyze stakeholder roles, identify key challenges, and evaluate the socio-economic impacts of digital literacy transformation in Gresik's rural communities.

The urgency of this research is in line with the development of Gresik Regency as an industrial city that absorbs a lot of tertiary or service sector labor, there are several urgent things to be studied, namely: village communities in Gresik Regency have sufficient equal access to build an inclusive digital ecosystem, but are not optimal in utilizing digital towards economic productivity; stakeholders at the village level have played a pioneering role in building a digital literacy-based community network. However, these efforts have not entirely led to productive empowerment. It has led to a lack of recognition of the role of the sharing economy in the digitalization process, which should be a priority in building a community network. As a result, the use of digital literacy in village communities has not fully supported the community's economic productivity; and the role of stakeholders in building a digital-based community network in villages requires an understanding of the impact of technological change in helping the government, private sector, and community to identify challenges and opportunities in Gresik Regency.

RESEARCH METHODS

This research method examines field data on the role of stakeholders in establishing a digital literacy-based community network, with a focus on the impact of technological change on rural communities. This research employs a qualitative approach, specifically grounded theory research [13]. This type of grounded theory research produces a theory of the role of stakeholders in building a digital literacy-based community network, a theory of technological change in rural communities, and a model of stakeholder roles in building a digital literacy-based community network. [14]The researchers' presence in the field is from January to April 2025. Researchers live in the research location with the intention of identifying the pillars of technological empowerment and the role of stakeholders in building community networks. Researchers also observe the environmental conditions of the target village. The presence of researchers in the field captures the activities of utilizing digital literacy to empower the village economy, the challenges faced by stakeholders in building community networks, and the analysis of the impact of technological change on rural communities.

The research location is in Gresik Regency, specifically in Gapurosukolilo Village, Gresik, and Giri Village, which are the researcher's target because they are home to multicultural communities. These villages comprise various ethnic groups; descendants of Arabs, Chinese, Javanese, and other tribes coexist in one community. For data sources and research subjects, the researcher used primary research data sources (field observations and direct interviews) and secondary research data (document study data).

The research subjects used by the researcher were community members directly involved in the village, particularly in building community networks.

Based on digital literacy and the impact of technological influence, the research subjects used by the researcher were village residents directly involved in the village, particularly in building community networks, village digital literacy, and the impact of technological change. In this study, the research subjects consisted of 10 stakeholders, including six members of the general public, six academics, and six religious tourism managers from two villages. A total of 28 informants were involved in the data collection process.

The researcher used in-depth interviews, participant observation, and document study techniques.

Data Analysis Technique, Data analysis in this ethnographic research was carried out through several interconnected stages following the principles of grounded theory. The process began with data reduction, where field notes, interview transcripts, and documentation were organized and categorized according to emerging themes. This was followed by open coding, identifying key concepts and categories that describe stakeholders' roles and community digital literacy practices.[15] The next step was axial coding, which examined the relationships between categories to form a coherent understanding of how technological change influences community dynamics. Finally, selective coding was used to integrate these categories into a substantive theory that explains the patterns of stakeholder participation in developing a digital literacy-based community network.

To ensure data validity, the researchers applied triangulation techniques, involving the cross-checking of information from multiple data sources (interviews, observations, and documents) and the use of member checking to confirm the accuracy of interpretations with informants. Continuous reflection and theoretical sampling were conducted until theoretical saturation was achieved, consistent with the ethnographic and grounded theory approach

RESULT AND DISCUSSION

1. The role of stakeholders in building a digital literacy-based community network to encourage the IMDI empowerment pillar in Gapurasukolilo and Giri villages in Gresik Regency

Research findings in Gapurasukolilo and Giri villages confirm that rural digital literacy development is determined not only by individual capabilities but also by synergy between stakeholders. This synergy forms a community network that serves as the foundation for the empowerment pillar of the Indonesian Village Development Index (Indeks Membangun Desa Indonesia). As expressed by the Head of Gapurasukolilo Village during the interview:

> "*In our village, digital literacy has developed through collaboration among many parties. Not all of our residents are technologically literate, so we rely on the support of multiple stakeholders, the village government, student volunteers, and universities that often visit through the Community Service Program (KKN).*"

Meanwhile, the Head of Giri Village stated:

> "*It is difficult if we only depend on individual abilities. But when there is synergy, students assisting with training, village officials providing facilities, and residents learning from each other, the impact becomes tangible. We have begun to use technology for administrative purposes and to promote local MSME products.*"

This view was further reinforced by the same Head of Giri Village, who added:

> *"In Giri, what stands out most is the emergence of a digital community network. Villagers share information through WhatsApp groups, and there are even online forums for farmers and small business owners. The synergy among the community, village government, and universities has created a kind of community network that has become a new social strength."*

From a theoretical perspective, these findings align with the concepts of stakeholder synergy and community empowerment. The collaboration among various actors creates a social structure that supports the pillars of community empowerment, as represented by the Indeks Membangun Desa Indonesia (IMDI), or the Indonesian Village Development Index. This perspective was echoed by the Head of Gapurasukolilo Village, who stated:

> "*Indeed, we have come to realize that this kind of collaboration is not just a temporary activity. It builds a new mindset that digital development is not only about tools and technology, but also about social relationships and mutual trust among citizens and institutions.*"

In conclusion, the success of digital literacy development in both villages is not solely the result of individual capability, but rather the outcome of stakeholder synergy that has formed a digital community network serving as the foundation for rural community empowerment. The role of each actor can be fully understood by linking it to several theories.

a. The Village Government as a Primary Facilitator

The findings reveal that the village government functions as the central facilitator in the development of rural digital literacy initiatives. Rather than operating solely as a policy controller, the village government plays a multidimensional role as a policy designer, infrastructure provider, and program coordinator. This transformation in governance approach reflects a shift from hierarchical administration toward a more participatory and collaborative model.

In both Gapurasukolilo and Giri villages, local authorities actively formulated digital literacy policies, established digital learning centers within village halls, and ensured internet accessibility for training programs. These efforts embody the essence of Governance Theory proposed by Rhodes, which argues that governance is no longer defined by top-down control but by *networked coordination* among diverse actors government, academia, and community organizations[16]. The village government thus operates as a facilitator that connects these actors to achieve shared development goals.

The head of the village emphasized that collaborative engagement among stakeholders creates a stronger sense of ownership and accountability. This aligns with Rhodes's notion of *governance as steering rather than rowing*, where government acts to guide and enable rather than dominate. The sustainability of the village's digital literacy programs, therefore, depends largely on the government's ability to maintain and coordinate this collaborative ecosystem.

Furthermore, the study confirms that the long-term success of rural digital innovation requires institutional embedding, as emphasized in Institutional Theory Scott[17]. Both villages have begun institutionalizing digital literacy practices through formal regulations (*Peraturan Desa*), integration into the Village Medium-Term Development Plan (RPJMDes), and dedicated budget allocations from *Dana Desa*. These measures transform digital literacy from a temporary initiative into a permanent institutionalized program.

Hence, the village government acts as both facilitator and institutional anchor, ensuring that digital innovation becomes part of the village's administrative and cultural system. This dual function demonstrates that sustainable rural

digital transformation depends not only on the provision of technology and skills but also on the institutionalization of digital practices through governance structures that promote continuity, inclusiveness, and shared responsibility.

b. Public Figure as Social Agent

The findings indicate that community leaders play a crucial role as social agents who bridge the gap between innovation and community acceptance. In both Gapurasukolilo and Giri villages, digital literacy initiatives gained traction not merely through formal government programs but through the trust and influence held by local figures. As one community leader in Gapurasukolilo explained, villagers are more willing to engage in digital training and technology use when trusted leaders endorse the initiative and demonstrate its tangible benefits.

This phenomenon illustrates the core concept of Social Capital Theory Putnam, which argues that social trust and community networks are vital forms of capital that enable collective participation. The credibility of community leaders functions as *trust capital* transforming external innovations into shared local practices. In this sense, trust is not only a moral value but also a strategic social asset that fosters participation, cooperation, and sustainability in rural digital programs[18].

From another theoretical lens, Diffusion of Innovations Theory Rogers provides a relevant framework to understand how community leaders act as *opinion leaders* who influence the rate and pattern of innovation adoption. In Giri village, for example, when local leaders began using social media platforms to promote micro-enterprises or conduct digital-based meetings, villagers were motivated to replicate such practices. This "demonstration effect" accelerated the diffusion of digital behaviors across the community, creating a localized momentum for technological adaptation[19].

Overall, the role of community leaders extends beyond symbolic representation; they serve as social legitimizers who ensure that technological adoption aligns with local norms and values. Their engagement transforms digital transformation from a top-down intervention into a community-driven social process, reinforcing that successful rural digitalization depends as much on social trust and leadership legitimacy as it does on access to technological resources.

c. Private Sector as Provider of the Digital Economy

The research findings reveal that the private sector plays a vital role in driving rural digital transformation, particularly by providing market access, digital financial services, and technological support. In both Gapurasukolilo and Giri villages, private enterprises, especially those engaged in e-commerce, fintech, and logistics, have become key partners in the local digital ecosystem. As stated by one village head, private sector involvement has enabled local micro, small, and medium enterprises (MSMEs) to reach broader markets through online platforms and digital payment systems, thus enhancing transparency and efficiency in local transactions.

This finding aligns closely with the Triple Helix Model Etzkowitz & Leydesdorff which posits that innovation emerges from the dynamic interaction between government, academia, and industry[20]. Within this framework, the private sector serves as the *economic engine* that translates local innovation into market-oriented solutions. The collaboration between businesses, village governments, and universities in these areas has led to the development of training programs, product branding initiatives, and online marketing channels, all of which strengthen the village's digital economy.

Furthermore, the partnerships observed in this study reflect the principles of Public-Private Partnership (PPP) as outlined by Hodge and Greve. In rural contexts, PPPs often take the form of *mutually beneficial collaborations*, where the private sector provides technological tools, mentorship, or infrastructure, while villages offer access to local markets and communities.[21] This reciprocal relationship not only promotes economic inclusion but also creates shared social value villages gain access to technology and digital literacy, whereas private companies enhance their market reach and corporate social responsibility image.

Ultimately, the active participation of the private sector demonstrates that rural digital transformation cannot rely solely on government or academic initiatives. It requires a balanced synergy among all three pillars of the Triple Helix Model, ensuring that innovation is both economically viable and socially sustainable. In this sense, private sector involvement acts as a catalyst that connects digital literacy efforts with real economic outcomes, transforming rural innovation into inclusive digital growth

d. Academics as Knowledge Transfer

Academics are present through community service programs (KKN), training, and mentoring of village communities. It aligns with Knowledge Transfer Theory specifically the SECI (Socialization, Externalization, Combination, Internalization) model, where knowledge from academics is transformed into concrete practices that the community can implement.

Furthermore, the role of academics is viewed through the lens of Empowerment Theory, which emphasizes that empowerment not only increases technical capacity but also enhances the community's critical awareness,

enabling them to navigate social and technological change. In this case, academics are not only teachers but also facilitators of critical awareness.

The findings reveal that academics play a central role in facilitating digital literacy transformation within rural communities, not merely as instructors but as knowledge mediators who bridge theoretical frameworks and local practices. Through community engagement programs such as *KKN* (Community Service Learning), digital training, and participatory workshops, academics serve as facilitators of social learning processes that foster both cognitive and structural empowerment.

This dynamic aligns closely with the Knowledge Transfer Theory proposed by Nonaka and Takeuchi, particularly the SECI model (Socialization, Externalization, Combination, Internalization). In practice, knowledge exchange begins with *socialization*, as academics and students immerse themselves in the daily realities of the villagers. It then evolves into *externalization*, where experiential insights are translated into applicable concepts such as digital marketing and online administration. The *combination* phase occurs when local wisdom and academic knowledge are synthesized to produce community-based digital innovations, followed by *internalization*, in which villagers integrate these competencies into their everyday economic and administrative activities.

Furthermore, the role of academics can also be understood through the lens of Empowerment Theory by Zimmerman, which emphasizes that true empowerment transcends technical skill acquisition. Instead, it involves the development of critical awareness that enables communities to interpret and manage technological and social change autonomously. In both Gapurasukolilo and Giri villages, the academic involvement has not only enhanced residents' digital skills but also cultivated a reflective understanding of digital ethics, inclusion, and sustainability.

Overall, academics act as social catalysts, transforming passive learning into active co-creation processes. Their engagement promotes a shift in community mindset from perceiving digital technology merely as a tool, toward recognizing it as a medium for empowerment and social transformation. This reinforces the notion that successful digital literacy development in rural areas requires the integration of academic knowledge, local experience, and collective reflection within a sustainable framework of community based learning.[22]

e. Stakeholder Synergy in the Village Digital Ecosystem

The findings of this study demonstrate that the multi-actor collaboration in rural digital transformation forms a cohesive digital literacy ecosystem, reflecting the principles of Collaborative Governance Theory . Within this framework, collective decision-making emerges from continuous interaction among diverse stakeholders village governments, community leaders, private actors, and academics each bringing distinct interests yet sharing a unified goal of community empowerment. Such collaboration fosters mutual trust, shared responsibility, and adaptive problem-solving, which are essential for sustaining digital innovation at the local level[23].

From the perspective of Community Development Theory, this process embodies the essence of people-centered development, emphasizing autonomy, solidarity, and participatory engagement. The establishment of a community network not only enhances digital literacy but also revitalizes the traditional values of *gotong royong* (mutual cooperation) within a modern digital context. In this sense, digital literacy initiatives become more than technological adaptation—they represent a social movement that strengthens community cohesion and self-reliance[24].

Consequently, the rural digital ecosystem is not a product of top-down intervention but a collaborative social construct, emerging from the synergy between governance, culture, and innovation. This finding underscores that sustainable digital transformation in rural settings depends on inclusive governance mechanisms and the collective capacity of stakeholders to translate shared values into digital practices that promote local resilience and empowerment

2. Stakeholder struggles in building a digital literacy-based community network to support IMDI empowerment in Gapurasukolilo and Giri villages in Gresik Regency.

Findings from Gapurasukolilo and Giri Villages suggest that the struggles of building a digital literacy-based community network are multidimensional, encompassing technological, social, economic, and cultural aspects. Challenges such as low productivity awareness, weak trust, inadequate stakeholder synergy, minimal e-commerce utilization, and suboptimal digital learning require a diverse theoretical framework. As expressed by the Head of Gapurasukolilo Village during the interview:

> *"The biggest challenge is awareness. Many residents still use digital technology only for entertainment, not for productive purposes. For instance, young people often focus on social media rather than using digital tools to support learning or promote local businesses. We need to change this mindset first"*

Meanwhile, the Head of Giri Village stated:

> *"In our village, the issue is trust. People still feel insecure about using online platforms,*

especially for financial transactions. They worry about fraud or data misuse. Building digital trust takes time, especially among older citizens"

Therefore, the success of digital literacy development in rural areas depends on strengthening cross-sector collaboration, enhancing community trust in digital systems, and ensuring continuous capacity-building programs to support knowledge transfer and the sustainability of digital transformation initiatives

a. Public Awareness of Digital Technology Usage

The study found that the level of productive digital awareness among rural residents remains low. Many villagers perceive digital technology primarily as a means of entertainment rather than as a tool for improving their livelihoods or supporting economic productivity. This finding aligns with the Technology Acceptance Model (TAM) proposed by Davis, which highlights that an individual's willingness to adopt technology is largely determined by *perceived usefulness* the extent to which a person believes that using a particular technology will enhance their performance or quality of life[25].

In the context of Gapurasukolilo and Giri villages, the lack of perceived economic value from digital engagement has limited the community's motivation to adopt technology for productive purposes. Most residents have yet to recognize the potential of digital platforms for marketing local products, improving agricultural practices, or managing small-scale businesses. As a result, digital adoption remains surface-level, often restricted to social media use or entertainment consumption.

Furthermore, the findings resonate with the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al, which adds two key determinants: *social influence* and *facilitating conditions*. Both factors appear weak in the rural context. Social influence such as encouragement from community leaders or peers has not been sufficient to motivate villagers to use digital technology productively. Likewise, *facilitating conditions*, including access to training, mentorship, and institutional support, remain limited and inconsistent.

The weak interplay between perceived usefulness, social influence, and facilitating conditions explains why digital transformation in rural areas often progresses slowly. Without strong social reinforcement or tangible benefits, technology remains an external innovation rather than becoming an embedded cultural practice. Therefore, strengthening digital awareness in rural communities requires continuous mentoring, community-based learning, and role models who can demonstrate the real economic and social benefits of digital engagement.

These findings reinforce that digital literacy is not merely about access or skills, but about building *perceived value* and *social legitimacy* that can sustain behavioral change. Hence, digital empowerment in rural settings must be approached as a socio-cultural transformation process rather than a purely technological intervention.

b. Trust in Digital Transactions

The findings reveal that the limited trust of rural communities in digital transactions represents a major barrier to the advancement of digital literacy and economic participation. This situation aligns with Trust Theory as conceptualized by Mayer, Davis, and Schoorman, which posits that trust develops through individuals' perceptions of a system's *ability*, *benevolence*, and *integrity*. In the context of rural digital ecosystems, villagers' hesitation toward online transactions reflects their uncertainty about the system's reliability, data security, and ethical transparency[27].

Empirical observations from Gapurasukolilo and Giri villages show that residents remain skeptical about using digital payment systems or e-commerce platforms. This distrust is largely rooted in the absence of consistent success stories and the lack of direct experience with secure, successful digital transactions[26]. For many, anecdotal experiences of fraud or transaction failures either personal or heard from others reinforce their reluctance to engage in digital trade. Consequently, despite increasing smartphone ownership and internet connectivity, digital economic activities remain minimal.

From an institutional perspective, this finding resonates with Institutional Theory, which suggests that technological adoption often depends on *institutional legitimacy*. In rural contexts, trust in digital systems tends to emerge not from individual experience alone but through endorsement and validation by legitimate institutions such as local governments, cooperatives, or rural banks[28]. When these institutions fail to provide normative pressure (through advocacy and education) or regulative support (through official policies or safeguards), the digital adoption process slows down significantly.

Therefore, building digital trust in rural areas requires a dual strategy: strengthening institutional legitimacy while cultivating experiential trust among citizens. Local governments can play a pivotal role by endorsing digital financial tools, facilitating public awareness programs, and partnering with credible financial institutions to demonstrate reliability. Likewise, the creation of transparent and community-endorsed digital systems can enhance perceived *ability*, *benevolence*, and

integrity, which together form the foundation of sustainable digital participation.

In summary, trust is not merely a psychological construct but a structural requirement for digital transformation. Without institutional validation and collective assurance, digital inclusion efforts risk stagnating, even in communities with adequate technological infrastructure.

c. The Weakness of Stakeholder Collaboration

The study identified weak collaboration among key stakeholders local communities, digital service providers, and village institutions as a major constraint in building an inclusive and sustainable digital ecosystem. This condition can be explained through the Triple Helix Model proposed by Etzkowitz and Leydesdorff, which emphasizes innovation as a product of collaboration among government, industry, and academia[29]. In the rural context, this model can be adapted into a triadic framework involving the village government, local enterprises or community-based organizations (UMKM/communities), and technology providers. However, findings from Gapurasukolilo and Giri villages reveal that such collaboration remains fragmented and largely informal.

Village governments often act independently in designing digital literacy programs, while technology providers and academic institutions are involved only intermittently, mostly during short-term projects or student community service programs. Meanwhile, small local enterprises and community groups lack the capacity and institutional support to sustain long-term collaboration. As a result, innovation initiatives tend to be sporadic, lacking integration across stakeholders.

This finding also aligns with Social Capital Theory Putnam, which highlights the importance of *trust*, *networks*, and *shared norms* as the social glue that enables collective action[30]. The weak social capital observed in both villages manifested through limited inter-group cooperation and low levels of mutual trust hampers the creation of a collaborative digital ecosystem. Without a foundation of trust and shared goals, technological adoption remains individualistic rather than communal.

Conversely, when social capital is strengthened, digital technology can become an extension of *gotong royong* the traditional Indonesian value of mutual cooperation translated into a digital form of collective participation. Strengthening networks among village governments, community actors, and private partners would thus not only enhance program sustainability but also embed digital transformation within local cultural values of collaboration and mutual benefit.

In summary, the findings suggest that the success of rural digital transformation depends not merely on technological access, but on the quality of inter-stakeholder collaboration grounded in social trust and shared responsibility. Building cross-sectoral partnerships that combine institutional coordination with community-based trust is, therefore, crucial for realizing a resilient and inclusive village digital ecosystem

d. Collaborative Economy dan Digital Sharing Economy

The findings indicate that the potential of digital platforms to serve as spaces for collaboration and collective economic activity remains largely untapped in rural communities. Most residents still perceive digital technology as a personal tool rather than as a shared resource for community advancement. This pattern reflects a missed opportunity to develop the Sharing Economy as described by Botsman and Rogers, which is built upon collaborative access, mutual trust, and the efficient use of shared resources[31].

In the context of village communities, the sharing economy aligns closely with the traditional value of *gotong royong,* collective cooperation, and reciprocity embedded in Indonesian rural culture. However, the transition from physical to digital collaboration has not yet been fully realized. Digital platforms such as e-commerce, crowdfunding, and community learning networks could serve as modern extensions of these traditional cooperative values, but their collective potential remains underutilized.

From the perspective of the Resource-Based View (RBV), digital platforms represent valuable, rare, and inimitable strategic resources that can strengthen the village economy by providing access to markets, capital, and broader social networks[32]. When managed collectively, these resources could form the foundation for sustainable competitive advantage at the community level. However, current practices show that villagers tend to engage with digital tools individually, focusing on personal benefits rather than collective outcomes. As a result, the transformative potential of digital platforms as *community assets* has not yet emerged.

This finding highlights a crucial gap between technological adoption and socio-economic transformation. While the infrastructure for digital engagement exists, the cultural and institutional mechanisms for collective utilization are still weak. Encouraging a shift toward a *digital gotong royong* where technology facilitates shared ownership, collaborative entrepreneurship, and mutual benefit could bridge this gap.

In conclusion, realizing a digital sharing economy in rural contexts requires not only technological literacy but also a reactivation of social and cultural values that support collective economic behavior. When local communities begin to perceive digital platforms as shared assets rather than individual tools, the village economy can evolve into a more inclusive and resilient collaborative ecosystem

e. Utilization of E-Commerce and Media Social for Trade

The gap in e-commerce and social media utilization is linked to the Digital Divide Theory, which categorizes the digital divide into four levels: access, skills, usage, and outcomes. Villages have reached the access level, but still lag in skills, productive usage, and economic outcomes.

This finding also resonates with Sen's Capability Approach, which emphasizes that the value of technology lies not merely in access or ownership but in how it enhances individuals' *capabilities* their real freedoms to achieve outcomes they value. In this context, the mere presence of digital tools has not yet increased villagers' economic agency or capacity to engage in productive trade[33]. When social media and e-commerce platforms are used only for leisure, they fail to expand the community's capabilities for improving income, creativity, and self-sufficiency.

Therefore, digital inclusion programs in rural contexts must move beyond infrastructure provision to focus on *capability enhancement*. This includes strengthening digital literacy, entrepreneurial training, and peer-to-peer learning that enables villagers to transform social media into marketing tools and e-commerce into viable market access channels. When digital platforms are reframed as enablers of local enterprise rather than sources of entertainment, the rural digital divide can begin to narrow not just technologically, but economically and socially as well.

In conclusion, bridging the digital divide requires integrating the principles of *Digital Divide Theory* and *Capability Approach* ensuring that digital transformation enhances both the *means* (access and skills) and the *ends* (well-being and opportunity) of rural development.

f. Utilization of Technology for Education

The suboptimal use of technology for learning reflects a gap in Connectivism, which emphasizes that knowledge is formed through digital networks.[34] If villages cannot access knowledge networks, the quality of human resources will stagnate.

The limited use of technology for educational purposes in rural areas reflects a critical gap in the realization of Connectivism Theory, which posits that knowledge is created and sustained through digital networks of information, interaction, and collaboration[34]. The findings from Gapurasukolilo and Giri villages indicate that digital learning has not yet become an integral part of the community's educational ecosystem. While basic access to digital tools exists, the community's ability to connect, exchange, and co-create knowledge through online networks remains underdeveloped. Consequently, the local learning environment remains isolated, and the potential for collective intelligence and continuous learning is largely unrealized.

This situation has significant implications for the development of Human Capital, as articulated by Becker, who emphasized that education functions as an investment to enhance individual productivity and societal value. The underutilization of digital learning platforms means that the community has yet to leverage technology as a strategic instrument for human capital formation[35]. Without digital integration in learning processes, villagers face limitations in accessing contemporary knowledge, technical skills, and innovation-driven competencies that are crucial for improving the Indeks Membangun Desa (IMDI).

Furthermore, the absence of structured digital learning initiatives weakens the link between technological access and educational outcomes. When technology is used merely as a communication tool rather than a learning enabler, it fails to transform the cognitive and creative capacities of the rural population. Bridging this gap requires the establishment of community-based digital learning ecosystems, integrating local schools, libraries, and community centers as nodes of continuous learning. These spaces should facilitate the use of open educational resources (OER), digital literacy programs, and skill-based microlearning modules tailored to local needs.

In sum, optimizing digital learning in rural areas demands a dual approach: enhancing connective capacity as outlined in Connectivism, and strengthening investment in human capital as proposed by Becker. When technology is embedded in the learning culture, it not only expands access to knowledge but also amplifies the community's capability to innovate, adapt, and sustain socio-economic progress.

Therefore, building a digital literacy-based community network in villages requires a multi-level approach: building awareness, fostering trust, strengthening collaboration between stakeholders, leveraging the potential of the sharing economy, and optimizing technology-based education.

3. The impact of technological change, especially in the field of digital literacy, on the social and economic dynamics of the Giri and Gapura village communities in Gresik Regency

Research findings in Gapura Sukolilo and Giri Villages demonstrate that digital literacy brings significant changes to social, economic, public service, and cultural aspects of the community. As expressed by the Head of Gapurasukolilo Village during the interview:

> "*Honestly, the changes have been very visible. People here now use smartphones for almost everything communication, buying goods, and even accessing government services. However, not everyone uses it productively. Many still use the internet mainly for entertainment or chatting, not for learning or business"*

Meanwhile, the Head of Giri Village stated:

> "*Yes, but it's uneven. Some young people are starting small online shops through social media, and farmers use WhatsApp groups to connect with buyers. But overall, e-commerce is still limited. Many residents are hesitant because they don't fully trust online transactions yet some are afraid of scams or data theft*".

Your insights clearly show that digital literacy in rural areas is not just about technology, but also about changing mindsets, trust, and collaboration. These findings will help us frame strategies for inclusive digital transformation in rural communities. The understanding of changes is through several relevant theories:

a. Social Impact: More Open Interactions but Weakened Family Ties

The use of digital technology has expanded the forms of interaction between villagers through social media and online communication applications. However, the intensity of face-to-face interactions has decreased, weakening emotional bonds and family values.

The findings indicate that digital technology has expanded the avenues of social interaction among rural residents through social media and online communication applications. Villagers now have greater opportunities to connect beyond traditional geographic boundaries, facilitating information sharing and community engagement.

However, this shift toward digital interaction has been accompanied by a decrease in face-to-face communication, which has weakened emotional bonds and traditional family values. This phenomenon can be interpreted through Social Interaction Theory, which emphasizes that social identity and communal cohesion are largely developed through direct, in-person interactions[36]. As social engagement increasingly occurs in digital spaces, the traditional mechanisms for reinforcing emotional and familial ties are disrupted.

Furthermore, the findings align with the Displacement Effect proposed by Kraut, which suggests that time spent in virtual environments can displace real-world interactions[37]. As villagers allocate more time to digital activities, opportunities for meaningful, in-person socialization diminish, potentially reducing the quality of community relationships.

In summary, while digital platforms enhance the scope of interaction and provide new opportunities for social connectivity, they simultaneously pose challenges to maintaining traditional social structures and family cohesion. These findings underscore the need for strategies that balance the benefits of digital engagement with the preservation of essential interpersonal and familial bonds in rural communities

b. Economic Impact: UMKM Development through E-Commerce, but Gaps Emerge

E-commerce opens up significant opportunities for rural UMKMs to expand their markets and increase revenue. However, a gap exists between digitally literate and non-digitally literate businesses. Competition is also intensifying, which can be detrimental to small UMKMs without assistance.

It is relevant to Social Capital Theory, which explains that success in the digital economy depends not only on access to technology but also on trust and social networks. Businesses with broader digital networks will be more likely to succeed, while those without digital literacy will be left behind. Furthermore, Digital Economy Theory, emphasizes that information technology creates new economic opportunities but also widens disparities if community capacity is unequal[38].

The findings indicate that e-commerce has created substantial opportunities for rural SMEs (Small and Medium Enterprises) to expand their markets and increase income. Many entrepreneurs now leverage online platforms to reach customers beyond their immediate geographic area, improving sales and visibility of local products.

However, this growth has not been evenly distributed. A digital divide exists between entrepreneurs who are digitally literate and those who are not, resulting in unequal access to market opportunities. Competition has also intensified, which may disadvantage smaller businesses lacking proper digital skills or mentorship.

This phenomenon aligns with Social Capital Theory, which posits that economic success in digital environments is not solely determined by technology access, but also by trust and social networks.[30] Entrepreneurs with broader digital networks can mobilize resources, gain market insights, and establish credibility more

effectively, while those without such networks face significant barriers to success.

Moreover, the findings resonate with Digital Economy Theory, which emphasizes that information technology generates new economic opportunities but can also exacerbate inequalities if community capacities are uneven[38]. In the villages of Gapurasukolilo and Giri, SMEs that adopt digital tools efficiently gain a competitive edge, while those lacking digital literacy or network connections risk being marginalized.

In conclusion, while e-commerce has the potential to drive economic empowerment and market expansion for rural SMEs, targeted interventions are necessary to reduce the digital divide. Enhancing digital literacy, fostering collaborative networks, and providing mentorship can ensure that the economic benefits of technology are equitably distributed among all community members.

c. Impact on Public Services: More Efficient but Dependent on Infrastructure

Digitizing village services increases efficiency, transparency, and accessibility. However, its sustainability is highly dependent on the quality of internet infrastructure, devices, and the capacity of village human resources.

The findings indicate that the digitalization of village services has enhanced efficiency, transparency, and accessibility. Residents can now access administrative services, submit applications, and receive information more quickly, reducing bureaucratic delays and improving overall service delivery.

However, the sustainability and effectiveness of these digital services heavily depend on the quality of internet infrastructure, availability of adequate devices, and the capacity of human resources in the village administration. Gaps in any of these components limit the full potential of digital service delivery.

This observation aligns with Socio-Technical Systems Theory, which emphasizes that the success of digital innovations is determined by the integration of technical aspects (infrastructure, devices) and social components (human capacity, regulations). When either dimension is weak, the system cannot function optimally[39]. In the villages of Gapurasukolilo and Giri, infrastructure improvements and capacity-building initiatives are essential to ensure that digital public services remain reliable and accessible to all residents.

In conclusion, while digitalization has positively transformed public service delivery, its long-term success requires a balanced investment in both technological infrastructure and human resource development, highlighting the interdependence of socio-technical factors in rural digital governance.

d. Impact on Stakeholder Communication: Faster Coordination but Need for Regulation

Digital technology accelerates communication between stakeholders (government, community, private sector, and academics). However, rapid communication without clear coordination risks creating confusion or overlapping programs.

The findings reveal that digital technology has significantly accelerated communication among key stakeholders government institutions, community groups, private sectors, and academia. Information exchange, program updates, and decision-making processes have become faster and more responsive, enabling more dynamic collaboration in village development initiatives.

However, this rapid flow of communication also brings potential risks. Without clear coordination mechanisms and regulatory frameworks, the speed of digital communication can lead to confusion, duplication of programs, or misalignment of priorities among stakeholders.

This condition aligns with the Collaborative Governance Theory, which emphasizes that successful multi-actor collaboration depends on structured dialogue, mutual trust, and shared commitment[40]. In the context of rural digital governance, fast communication alone is insufficient it must be supported by coherent coordination, transparency, and regulatory clarity to ensure that collaborative efforts remain productive and aligned with shared goals.

In summary, while digital platforms enhance stakeholder connectivity and accelerate coordination, they also highlight the necessity of establishing formal communication protocols and governance frameworks. Ensuring that digital communication is guided by trust and structured collaboration will prevent fragmentation and sustain effective cross-sector partnerships in rural digital ecosystems.

e. Impact on Transactions: Convenient and Safe but Still Prone to Fraud

Digital transactions make it easier for residents to buy and sell goods and services, as well as make payments. However, low digital literacy leaves them vulnerable to fraud and misuse of personal data.

The findings demonstrate that digital transactions have brought significant convenience to rural communities, particularly in facilitating buying, selling, and payment activities. Residents now benefit from faster and more efficient processes, reduced dependency on cash, and improved access to various financial services.

However, the study also reveals that low levels of digital literacy leave many users vulnerable to online fraud, misinformation, and misuse of personal data. Although the technology provides convenience and accessibility,

insufficient understanding of digital security practices exposes villagers to new forms of risk associated with the digital economy.

This phenomenon aligns with Technology Risk Theory, which argues that modernization inevitably introduces new categories of risk, including digital threats such as online fraud, identity theft, and transaction insecurity. In rural contexts, these risks are amplified by limited awareness and lack of cybersecurity education[41].

In summary, while digital transactions enhance efficiency and accessibility for rural populations, they also require strong preventive measures, such as cybersecurity awareness programs and institutional safeguards. Strengthening digital literacy and promoting responsible digital behavior are essential steps to minimize vulnerabilities and ensure that the benefits of digital financial systems are equitably and safely realized in rural communities.

f. Impact on Access to Information: Broader Insights but Eroding Local Culture

Access to digital information broadens the horizons of rural communities. However, if not balanced with cultural filters, the flow of global information can erode local identity.

The explanation of this phenomenon is through Globalization Theory, which states that globalization brings both opportunities and threats of cultural homogenization[42]. Furthermore, Cultural Imperialism Theory, emphasizes that global information flows often dominate local culture, necessitating a strategy for cultural preservation in the digital age[43].

The study indicates that digital information access has significantly broadened the knowledge horizons of rural communities. Through online platforms, villagers are increasingly exposed to diverse sources of knowledge, global trends, and innovative practices that were previously inaccessible. This exposure enhances educational opportunities, awareness of socio-economic issues, and engagement with broader societal dynamics.

Nevertheless, the findings also highlight an emerging cultural challenge. Without sufficient cultural filters or local content reinforcement, the influx of global information tends to erode traditional values and weaken local identity. Younger generations, in particular, show shifting preferences in language, lifestyle, and social norms influenced by global media.

This phenomenon aligns with Globalization Theory, which emphasizes that globalization simultaneously presents opportunities and risks, including the potential for cultural homogenization. Furthermore, Cultural Imperialism Theory asserts that global information flows often dominate and marginalize local cultures, leading to a gradual displacement of indigenous traditions and narratives.

Therefore, while digital information access enriches community knowledge and connectivity, it necessitates strategic efforts to preserve and revitalize local culture. Integrating digital literacy with cultural education and promoting locally produced digital content are essential steps to ensure that technological progress strengthens rather than diminishes cultural identity in rural contexts

From a theoretical perspective, understanding this dynamic is crucial as part of the transition to a digital society, where the primary challenge is maintaining a balance between the adoption of technology, social trust, and the preservation of local culture.

CONCLUSION

Both Gapurosukolilo and Giri Villages illustrate effective multi-stakeholder collaboration—among the government, community leaders, the private sector, and academics—in developing a sustainable digital-based empowerment ecosystem. The village government facilitates digital literacy programs, community leaders drive participation, the private sector contributes market access and technological innovation, and academics provide mentorship through Community Service Programs (KKN) and training. Despite these synergies, both villages face similar challenges, including low public awareness and trust in digital technology, limited use of e-commerce, digital financial services, and social media, as well as underutilized digital tools for learning. While digitalization has improved service efficiency, stakeholder communication, and UMKM development opportunities, it also poses risks such as weakened social ties, economic disparities, digital fraud, and the erosion of local culture. Overall, the findings indicate that both villages possess strong potential through stakeholder collaboration but must further strengthen digital literacy, build community trust, and enhance infrastructure to achieve an inclusive, productive, and sustainable digital transformation.

ACKNOWLEDGMENTS

We want to express our gratitude to the village heads of Giri and Gapurosukolilo, who have granted permission to the researchers to conduct research with the theme "The Role of Stakeholders in Building a Digital Literacy-Based Community Network: Analysis of the Impact of Technological Change on Village Communities in Gresik Regency" from the beginning to the end of this research. We also express our gratitude to the village stakeholders, tourism village managers, the community, and academics who were willing to serve as informants in this research.

REFERENCES

[1] IMDI, *Buku IMDI: Bab 1–5. SDM Digital*. [Online]. Available: https://imdi.sdmdigital.id/publikasi/02122024_B

uku%20IMDI_BAB%201-5_V6_compressed.pdf.
[2] Badan Pusat Statistik Kabupaten Gresik, "Pertumbuhan Ekonomi 2024," *BPS Kabupaten Gresik*, 2024. [Online]. Available: https://gresikkab.bps.go.id/id/pressrelease/2025/03/03/843/pertumbuhan-ekonomi-2024.html.
[3] BB. W. Budiarto, "Improving Digital Literacy of Village Communities in Indonesia through Information Technology-Based Community Service Programs," *Unram Journal of Community Service*, vol. 5, no. 3, pp. 267–271, 2024.
[4] SDM Digital, "Strategi Pengembangan IMD," [Online]. Available: https://imdi.sdmdigital.id/publikasi/Buku%20Strategi%20Pengembangan%20IMD_V5.pdf.
[5] S. P. Rahmadana, "Household Industry Development through the Concept of Creative Economy (Case Study of Kripsus Industry in Sidowungu Village, Gresik)," *JMM17: Jurnal Ilmu Ekonomi dan Manajemen*, vol. 10, no. 1, pp. 9–14, 2023.
[6] S. Anwar and A. N. S. Anwar, "Community-Based Education Model to Empower Communities in Utilizing Local Potential (Analysis Study on Community-Based Learning Centers in Lampung Province)," *Al-Tadzkiyyah: Jurnal Pendidikan Islam*, vol. 14, no. 2, pp. 313–337, 2023
[7] T. Harris *et al.*, "Innovation in Building Digital Literacy: Stakeholder Challenges in Growing Suburban Communities," *International Journal of Recent Educational Research (IJORER)*, vol. 5, no. 6, pp. 1448–1460, 2024.
[8] D. Iswanto and Miskan, "From Smart City to Smart Village: Akselerasi Transformasi Digital dalam Optimalisasi Pelayanan Publik di Desa Kepatihan Kabupaten Gresik," *Contemporary Public Administration Review*, vol. 2, no. 2, pp. 170–186, 2025, doi: 10.26593/copar.v2i2.8794.170-186.
[9] M. Rifqi, Z. Zami, and D. A. Utami, "Analisis Penerapan E-Catalogue di Pemerintahan Kabupaten Gresik," *Inovasi Administrasi Negara Terapan*, vol. 3, no. 4, pp. 314–330, 2024.
[10] D. Setiadi, "Youth's Digital Literacy in the Context of Community Empowerment in an Emerging Society 5.0," *Society*, vol. 11, no. 1, pp. 1–12, 2023.
[11] M. K. Fatih and N. Hakim, "PKM Pengembangan Desa Wisata Berbasis Pemberdayaan Masyarakat Menuju Kemandirian Ekonomi Desa di Kabupaten Gresik," *Guyub: Journal of Community Engagement*, vol. 4, no. 3, pp. 437–460, 2023, doi: 10.33650/guyub.v4i3.7145
[12] S. I. Astuti and J. R. Binu, "Memberdayakan Komunitas Lokal dalam Gerakan Literasi Digital," *Jurnal Riset Jurnalistik dan Media Digital*, pp. 77–90, 2022.
[13] J. M. Corbin and A. L. Strauss, "Grounded Theory Research: Procedures, Canons, and Evaluative Criteria," *Qualitative Sociology*, vol. 13, no. 1, pp. 3–21, 1990.
[14] R. E. White, "Grounded Theory," in *Qualitative Research in the Post-Modern Era*, 2022, pp. 339–385. [Online]. Available: https://link.springer.com/chapter/10.1007/978-3-030-85124-8_9
[15] B. G. Glaser and A. L. Strauss, *The Discovery of Grounded Theory: Strategies for Qualitative Research*. New York: Routledge, 2017. [Online]. Available: https://www.taylorfrancis.com/books/9781351522168/chapters/10.4324/9780203793206.
[16] R. A. W. Rhodes, "The New Governance: Governing Without Government," *Political Studies*, vol. 44, no. 4, pp. 652–667, 1996, doi: 10.1111/j.1467-9248.1996.tb01747.x.
[17] W. R. Scott, "Institutional Theory," in *Encyclopedia of Social Theory*, G. Ritzer, Ed. Thousand Oaks, CA: Sage Publications, 2004, pp. 408–414.
[18] R. D. Putnam, *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster, 2000.
[19] E. M. Rogers, *Diffusion of Innovations*, 5th ed. New York: Free Press, 2003.
[20] H. Etzkowitz and L. Leydesdorff, "The Dynamics of Innovation: From National Systems and 'Mode 2' to a Triple Helix of University–Industry–Government Relations," *Research Policy*, vol. 29, no. 2, pp. 109–123, 2000, doi: 10.1016/S0048-7333(99)00055-4..
[21] G. Hodge and C. Greve, "Public–Private Partnerships: An International Performance Review," *Public Administration Review*, vol. 67, no. 3, pp. 545–558, 2007, doi: 10.1111/j.1540-6210.2007.00736.x.
[22] I. Nonaka and H. Takeuchi, *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford: Oxford University Press, 1995.
[23] C. Ansell and A. Gash, "Collaborative Governance in Theory and Practice," *Journal of Public Administration Research and Theory*, vol. 18, no. 4, pp. 543–571, 2008, doi: 10.1093/jopart/mum032.
[24] J. Bhattacharyya, "Theorizing Community Development," *Journal of the Community Development Society*, vol. 34, no. 2, pp. 5–34, 2004, doi: 10.1080/15575330409490110..
[25] F. D. Davis, "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," *MIS Quarterly*, vol. 13, no. 3, pp. 319–340, 1989, doi: 10.2307/249008.
[26] V. Venkatesh, M. G. Morris, G. B. Davis, and F. D. Davis, "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly*, vol. 27, no. 3, pp. 425–478, 2003, doi: 10.2307/30036540
[27] R. C. Mayer, J. H. Davis, and F. D. Schoorman, "An Integrative Model of Organizational Trust," *Academy of Management Review*, vol. 20, no. 3, pp. 709–734, 1995, doi: 10.5465/amr.1995.9508080335.
[28] P. J. DiMaggio and W. W. Powell, "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields," *American Sociological Review*, vol. 48, no. 2, pp. 147–160,

1983, doi: 10.2307/2095101.
[29] H. Etzkowitz and L. Leydesdorff, "The Dynamics of Innovation: From National Systems and 'Mode 2' to a Triple Helix of University–Industry–Government Relations," *Research Policy*, vol. 29, no. 2, pp. 109–123, 2000, doi: 10.1016/S0048-7333(99)00055-4.
[30] RR. D. Putnam, *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster, 2000.
[31] R. Botsman and R. Rogers, *What's Mine Is Yours: The Rise of Collaborative Consumption*. New York: Harper Business, 2010.
[32] J. Barney, "Firm Resources and Sustained Competitive Advantage," *Journal of Management*, vol. 17, no. 1, pp. 99–120, 1991, doi: 10.1177/014920639101700108..
[33] A. Sen, *Development as Freedom*. Oxford: Oxford University Press, 1999.
[34] G. Siemens, "Connectivism: A Learning Theory for the Digital Age," *International Journal of Instructional Technology and Distance Learning*, vol. 2, no. 1, pp. 3–10, 2005.
[35] G. S. Becker, *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*, 3rd ed. Chicago: University of Chicago Press, 1993.
[36] G. H. Mead, *Mind, Self, and Society: From the Standpoint of a Social Behaviorist*. Chicago: University of Chicago Press, 1934
[37] R. Kraut, M. Patterson, V. Lundmark, S. Kiesler, T. Mukophadhyay, and W. Scherlis, "Internet Paradox: A Social Technology That Reduces Social Involvement and Psychological Well-being?," *American Psychologist*, vol. 53, no. 9, pp. 1017–1031, 1998, doi: 10.1037/0003-066X.53.9.1017.
[38] D. Tapscott, *The Digital Economy: Promise and Peril in the Age of Networked Intelligence*. New York: McGraw-Hill, 1996.
[39] E. Trist and F. Emery, *Organizational Choice: Capabilities of Groups at the Coal Face under Changing Technologies*. London: Tavistock Publications, 1951.
[40] C. Ansell and A. Gash, "Collaborative Governance in Theory and Practice," *Journal of Public Administration Research and Theory*, vol. 18, no. 4, pp. 543–571, 2008, doi: 10.1093/jopart/mum032.
[41] U. Beck, *Risk Society: Towards a New Modernity*. London: Sage Publications, 1992
[42] R. Robertson, *Globalization: Social Theory and Global Culture*. London: Sage Publications, 1992.
[43] H. I. Schiller, *Communication and Cultural Domination*. New York: International Arts and Sciences Press, 1976.