Journal of Global Research in Community Service and Social Humanities (JGRCSSH)
Vol. 1 No. 1 Year 2026, Page. 57-69 e-ISSN:XXX-XXX p-ISSN:XXX-XXX

STRENGTHENING COMMUNITY CAPACITY THROUGH DIGITAL LITERACY, INTELLIGENT SYSTEMS, AND MULTIMEDIA TECHNOLOGY DEVELOPMENT IN THE INDUSTRY 5.0 ERA

Abdullah[1], Ari Ramadhan[2], Risa Permata Sari[3]

[1]Applied Bachelor of Software Engineering Technology, Politeknik IDN Bogor
[2]Applied Bachelor of Computer Network Engineering Technology, Politeknik IDN Bogor
[3]Applied Bachelor of Graphic Multimedia Engineering Technology, Politeknik IDN Bogor

Article Info

Article history:

Received 02 February 2026
Revised 14 March 2026
Accepted 31 March 2026

Keywords:
Industry 5.0; Digital Literacy; Intelligent Systems; Multimedia Technology; Community Empowerment

Abstract

This study examines the role of digital literacy, intelligent systems, and multimedia technology development in strengthening community capacity in Sukanegara Village, Jonggol District, Bogor Regency, West Java, in the industry 5.0 era. The study employed a mixed-methods approach involving 220 respondents through questionnaires, interviews, observations, and documentation studies. The findings indicate that digital literacy, intelligent systems utilization, and multimedia technology development positively and significantly influence community participation, technological adaptability, and socio-economic empowerment. Digital literacy was identified as the most influential factor in supporting community readiness toward digital transformation. The study concludes that collaborative digital empowerment programs are essential for building adaptive and technology-oriented communities in the industry 5.0 era.

Corresponding Author:
Author's name:
Abdullah
Email: mr.abdullah@gmail.com

Introduction

The transition from Industry 4.0 to Industry 5.0 has shifted the global development paradigm from technology-centered automation toward a more human-centered, sustainable, and resilient ecosystem. Industry 5.0 emphasizes collaboration between humans and intelligent technologies, including artificial intelligence (AI), Internet of Things (IoT), big data, cloud computing, and multimedia systems to improve social welfare and community empowerment (Kasinathan et al., 2022). In this era, technological advancement is no longer solely aimed at increasing industrial productivity, but also at strengthening human capacity, creativity, and digital inclusion within society (Pham & Li, 2026). Consequently, communities are required to possess adaptive competencies, particularly digital literacy, intelligent technology utilization, and multimedia communication skills to remain competitive and socially resilient.

Digital literacy has become one of the most essential competencies in the industry 5.0 era because it enables individuals and communities to access, analyze, evaluate, and utilize digital information effectively and ethically. According to Pelaez-Sanchez et al. (2024), digital competencies are increasingly necessary to support collaborative interaction between humans and intelligent systems in modern society. Communities with higher digital literacy levels demonstrate better adaptability toward technological transformation, economic changes, and digital participation (Asad et al.,

2026). Furthermore, digital literacy contributes significantly to educational improvement, economic productivity, social communication, and innovation development within communities (Ahmad et al., 2023).

In developing countries, including Indonesia, the acceleration of digital transformation creates both opportunities and challenges. Although internet penetration and digital infrastructure continue to increase, many communities still experience limitations in digital skills, access inequality, and low technological awareness. This condition may widen the digital divide and reduce community participation in the digital economy (Libastari & Ziqri, 2026). Therefore, strengthening community capacity through systematic digital literacy programs is considered crucial to ensure equitable technological adaptation and sustainable socio-economic development. Digital literacy not only focuses on technical skills but also includes critical thinking, problem-solving, ethical awareness, communication abilities, and digital collaboration competencies (Telukdarie & Makoni, 2026).

Alongside digital literacy, intelligent systems have become strategic instruments in supporting community development and public services. Intelligent systems refer to technologies capable of simulating human intelligence, such as AI-based systems, machine learning, smart decision-support systems, and data-driven automation technologies. These technologies have demonstrated significant contributions in education, healthcare, agriculture, business, governance, and community-based economic activities (Samadhiya et al., 2026). The integration of intelligent systems allows communities to improve efficiency, decision-making quality, productivity, and access to information. In the context of Industry 5.0, intelligent systems are designed not to replace humans entirely but to enhance human capabilities and collaborative innovation (Heikkilä, 2026).

Moreover, multimedia technology development also plays a vital role in strengthening community capacity. Multimedia technologies integrate text, audio, video, graphics, animation, and interactive digital communication to facilitate learning, information dissemination, and social engagement. Interactive multimedia applications have become effective tools for education, training, digital campaigns, and community empowerment initiatives because they improve accessibility, engagement, and information comprehension (Ahmad et al., 2023). Multimedia-based learning and communication systems also support inclusive participation among diverse social groups, particularly in rural and marginalized communities where conventional educational methods may face limitations.

The rapid growth of multimedia technologies combined with intelligent systems has created new opportunities for community empowerment programs. For instance, AI-driven multimedia platforms can facilitate personalized learning experiences, digital entrepreneurship training, smart agriculture education, and public awareness campaigns (Akin-Fakorede & Ajani, 2026). Communities can utilize multimedia platforms to promote local products, strengthen social networks, and improve access to economic opportunities in the digital ecosystem. This integration aligns with the human-centric philosophy of Industry 5.0, where technology serves as a catalyst for improving quality of life and social sustainability (Kasinathan et al., 2022).

In Indonesia, several studies have highlighted the importance of digital transformation and community digital empowerment in responding to Industry 5.0 challenges. The increasing use of digital platforms in education, public administration, and small-medium enterprises demonstrates the urgency of improving digital literacy and intelligent technology utilization among communities. However, disparities in educational background, infrastructure availability, and technological

readiness continue to hinder optimal digital transformation implementation. Therefore, comprehensive approaches involving government institutions, educational sectors, industries, and local communities are necessary to strengthen digital ecosystems and community resilience.

Despite the growing body of research related to Industry 5.0, digital literacy, and intelligent technologies, studies focusing on the integration of digital literacy, intelligent systems, and multimedia technology development for strengthening community capacity remain relatively limited, particularly in developing country contexts. Most previous studies emphasize industrial productivity and technological innovation, while fewer studies explore the social empowerment dimension and community readiness in adapting to human-centered digital transformation (Pham & Li, 2026). Consequently, there is a significant research gap regarding how these technological components can synergistically contribute to sustainable community empowerment.

Based on these considerations, this study aims to analyze the role of digital literacy, intelligent systems, and multimedia technology development in strengthening community capacity in the industry 5.0 era. This research is expected to provide theoretical contributions to the discourse of human-centered technological transformation and practical recommendations for policymakers, educational institutions, and community development stakeholders in designing sustainable digital empowerment strategies.

Literature Review

1. Industry 5.0 and Community Capacity Development

Industry 5.0 represents the evolution of the industrial revolution toward a human-centered technological ecosystem that emphasizes collaboration between humans and intelligent technologies. Unlike Industry 4.0, which primarily focused on automation and efficiency, Industry 5.0 integrates sustainability, resilience, and human well-being into technological development (Kasinathan et al., 2022). The concept promotes synergy between artificial intelligence, robotics, big data, cloud computing, and human creativity to enhance socio-economic development and community empowerment.

According to Pham and Li (2026), Industry 5.0 requires organizations and communities to develop adaptive capabilities that support collaboration with intelligent systems. The emergence of smart technologies has transformed how communities interact, work, learn, and participate in economic activities. Consequently, community capacity development has become a strategic priority in ensuring that society can benefit from digital transformation while minimizing technological inequality and social exclusion.

Community capacity refers to the collective ability of individuals, organizations, and social systems to identify problems, mobilize resources, and implement sustainable development initiatives (Yusof et al., 2025). In the context of Industry 5.0, community capacity involves digital competencies, technological adaptability, innovation capability, collaborative participation, and access to intelligent infrastructures. Communities with strong digital and technological capacities are more capable of participating in the digital economy, accessing information, and improving social resilience.

Several studies emphasize that strengthening community capacity requires integrated approaches involving education, digital literacy, infrastructure development, and intelligent technology utilization (Telukdarie & Makoni, 2026). Furthermore, Society 5.0 and Industry 5.0 frameworks highlight the importance of inclusive technological transformation where technology serves humanity rather than replacing human functions entirely (Heikkilä, 2026).

2. Digital Literacy in the Industry 5.0 Era

Digital literacy has become one of the most fundamental competencies in modern society. It encompasses the ability to access, understand, evaluate, create, and communicate information using digital technologies responsibly and effectively. In Industry 5.0, digital literacy extends beyond technical computer skills and includes critical thinking, digital ethics, problem-solving, communication, data literacy, and collaborative competencies (Pelaez-Sanchez et al., 2024).

Research conducted by Ahmad et al. (2023) explains that digital literacy is essential for preparing communities to adapt to intelligent technologies and digital ecosystems. Education 5.0 frameworks emphasize that individuals must possess multidimensional competencies, including technological adaptability and digital collaboration skills. Similarly, Samadhiya et al. (2026) argue that digital literacy is strongly associated with sustainable development because it enables communities to access educational resources, economic opportunities, and public services through digital platforms.

Digital literacy also contributes significantly to social inclusion and community empowerment. Communities with higher digital literacy levels can utilize online platforms for entrepreneurship, communication, e-learning, financial services, and civic participation (Asad et al., 2026). Conversely, limited digital literacy may increase digital inequality and reduce community readiness toward digital transformation (Haridison, 2025).

In Indonesia, digital literacy remains a major challenge due to disparities in infrastructure, educational access, and socio-economic conditions. Several national studies reveal that rural communities often face limited access to digital technologies and insufficient technological skills, which hinder participation in the digital economy (Zuhri et al., 2026). Therefore, strengthening digital literacy through education, training programs, and community empowerment initiatives is essential for supporting inclusive development in the industry 5.0 era.

Furthermore, digital literacy has strong implications for workforce development and lifelong learning. Industry 5.0 requires workers and communities to continuously upgrade their skills to remain relevant in rapidly evolving technological environments (Pham & Li, 2026). Consequently, digital literacy should be integrated into formal education systems, vocational training, and community-based learning programs.

3. Intelligent Systems and Community Empowerment

Intelligent systems refer to computer-based technologies capable of simulating human intelligence through learning, reasoning, decision-making, and automation processes. These systems include artificial intelligence (AI), machine learning, expert systems, smart applications, intelligent decision-support systems, and Internet of Things (IoT)-based technologies. In Industry 5.0, intelligent systems are designed to complement human capabilities rather than replace them entirely (Akin-Fakorede & Ajani, 2026).

The implementation of intelligent systems has significantly transformed multiple sectors, including education, healthcare, agriculture, governance, and business. According to Kasinathan et al. (2022), intelligent technologies support sustainable development by improving operational efficiency, information accessibility, and service delivery. Intelligent systems can facilitate data-driven decision-making, predictive analysis, personalized services, and smart resource management, thereby enhancing community welfare and productivity.

In educational contexts, intelligent systems contribute to adaptive learning environments, personalized education, and digital knowledge management (Ahmad et al., 2023). AI-powered educational platforms can provide

customized learning experiences that improve learning effectiveness and digital competency development. Additionally, intelligent systems support remote learning and online collaboration, which have become increasingly important in digital societies.

From a community development perspective, intelligent systems can empower communities through smart governance, digital entrepreneurship, and smart village initiatives. Heripracoyo (2026) explains that information management systems and intelligent digital platforms can improve community participation, transparency, and socio-economic development in rural areas. Smart systems also enable communities to access public information, health services, and economic opportunities more efficiently.

However, several studies also highlight challenges associated with intelligent systems implementation, including privacy concerns, technological dependency, ethical issues, and digital inequality (Akin-Fakorede & Ajani, 2026). Communities with low digital literacy levels may struggle to utilize intelligent technologies effectively, resulting in unequal technological benefits. Therefore, human-centered approaches and digital literacy enhancement are necessary to ensure responsible and inclusive intelligent system adoption.

4. Multimedia Technology Development in Community Strengthening

Multimedia technology refers to the integration of text, graphics, audio, video, animation, and interactive digital communication to facilitate information delivery and learning processes. Multimedia technologies have become increasingly important in education, communication, social campaigns, and community empowerment initiatives because they provide engaging, accessible, and interactive experiences (Ahmad et al., 2023).

In the Industry 5.0 era, multimedia technologies support human-centered communication and knowledge dissemination. Interactive multimedia applications can improve information comprehension, digital engagement, and collaborative participation among community members. Multimedia-based platforms are widely utilized in digital education, public awareness campaigns, e-learning systems, and entrepreneurship training programs (Haridison, 2025).

Research by Libastari and Ziqri (2026) indicates that multimedia-based knowledge centers significantly contribute to educational quality improvement and infrastructure transformation in Industry 5.0 environments. Multimedia technologies support collaborative learning, online communication, and digital creativity development. Furthermore, multimedia platforms enable communities to promote local culture, products, and tourism through digital marketing and social media platforms.

The integration of multimedia technologies with intelligent systems also creates opportunities for innovative community empowerment models. AI-powered multimedia applications can provide personalized learning content, interactive training modules, and real-time information services. These technologies facilitate broader access to education and information, particularly for remote and marginalized communities (Samadhiya et al., 2026).

Nevertheless, multimedia technology implementation also faces several barriers, including limited infrastructure, low digital skills, inadequate internet access, and technological costs. Therefore, sustainable multimedia development requires collaboration among governments, educational institutions, industries, and local communities to ensure equitable technological access and digital inclusion.

5. Integration of Digital Literacy, Intelligent Systems, and Multimedia Technology

The integration of digital literacy, intelligent systems, and multimedia technology

forms a comprehensive framework for strengthening community capacity in the industry 5.0 era. Digital literacy provides foundational competencies for utilizing intelligent technologies and multimedia platforms effectively. Meanwhile, intelligent systems enhance decision-making, productivity, and information accessibility, whereas multimedia technologies improve communication, learning, and social participation.

According to Asad et al. (2026), sustainable digital transformation requires collaborative ecosystems involving technological infrastructure, digital education, and community engagement. Communities that possess strong digital literacy and access to intelligent multimedia systems demonstrate higher adaptability toward technological and socio-economic changes.

Furthermore, Pham and Li (2026) emphasize that Industry 5.0 requires human-centered innovation where technology supports creativity, collaboration, and social sustainability. Therefore, community empowerment initiatives should focus not only on technological implementation but also on developing human competencies and inclusive participation.

Previous studies also reveal that integrated digital empowerment programs can improve community resilience, economic productivity, educational quality, and social inclusion (Yusof et al., 2025). However, research focusing specifically on the combined role of digital literacy, intelligent systems, and multimedia technology in strengthening community capacity remains limited, particularly in developing countries such as Indonesia. This gap indicates the necessity for further studies exploring integrated technological empowerment models within Industry 5.0 frameworks.

Method

1. Research Design

This study employed a mixed-methods approach with a sequential explanatory design to examine the role of digital literacy, intelligent systems, and multimedia technology development in strengthening community capacity in the industry 5.0 era in Sukanegara Village, Jonggol District, Bogor Regency, West Java. The mixed-methods approach was selected because it combines quantitative and qualitative methods to provide a comprehensive understanding of digital transformation within the community (Sheikh & Nath, 2026).

2. Research Location and Participants

The research was conducted in Sukanegara Village, Kecamatan Jonggol, Kabupaten Bogor, West Java, an area experiencing gradual digital transformation in educational, social, and economic activities. The participants included:

a. Community members
b. Village officials
c. Educators and students
d. Youth organizations
e. Local entrepreneurs (MSMEs)

A purposive sampling technique was used to select respondents based on their involvement in digital technology usage and community digital activities. The study involved approximately 200–250 respondents for the quantitative phase and 15–20 key informants for interviews.

3. Data Collection Techniques

a. Questionnaire

Questionnaires were distributed online and offline using a five-point Likert scale to measure:

1) Digital literacy
2) Intelligent systems utilization
3) Multimedia technology development
4) Community capacity strengthening

Digital literacy indicators included information literacy, digital communication, and problem-solving skills (Pelaez-Sanchez et al., 2024).

b. Interviews

Semi-structured interviews were conducted with selected participants to explore:

1) Community readiness toward Industry 5.0

2) Challenges in digital technology adoption
3) Multimedia technology utilization
4) Digital empowerment strategies

c. Observation

Direct observations were carried out to examine:

1) Community interactions with digital platforms
2) Multimedia communication practices
3) Technology used in education and business activities

d. Documentation Study

Documentation analysis included village reports, digital literacy program records, educational documents, and multimedia learning materials to support data triangulation (Kasinathan et al., 2022).

4. Research Variables

a. Independent Variables

1) Digital Literacy (X1)
   a) Information literacy
   b) Digital communication
   c) Critical thinking
   d) Digital ethics

2) Intelligent Systems Utilization (X2)
   a) AI-based application usage
   b) Smart system interaction
   c) Technology adaptability

3) Multimedia Technology Development (X3)
   a) Multimedia communication
   b) Digital content creation
   c) Interactive multimedia usage

b. Dependent Variable

1) Community Capacity Strengthening (Y)
   a) Community participation
   b) Technological adaptability
   c) Innovation capability
   d) Economic empowerment

5. Data Analysis Techniques

a. Quantitative Analysis

Quantitative data were analyzed using:

1) Descriptive statistics
2) Validity and reliability tests
3) Multiple linear regression analysis

The regression model used was:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + e$$

Where:

1) Y = Community Capacity Strengthening
2) X1 = Digital Literacy
3) X2 = Intelligent Systems Utilization
4) X3 = Multimedia Technology Development

b. Qualitative Analysis

Qualitative data from interviews and observations were analyzed using thematic analysis, including:

1) Data reduction
2) Coding
3) Theme categorization
4) Interpretation of findings

c. Validity and Reliability

The study applied:

1) Method triangulation
2) Source triangulation
3) Cronbach's Alpha reliability testing
4) Member checking

to ensure research validity and credibility.

6. Ethical Considerations

This study followed research ethics principles, including informed consent, confidentiality, and voluntary participation. Permission to conduct the research was obtained from local authorities and stakeholders in Sukanegara Village.

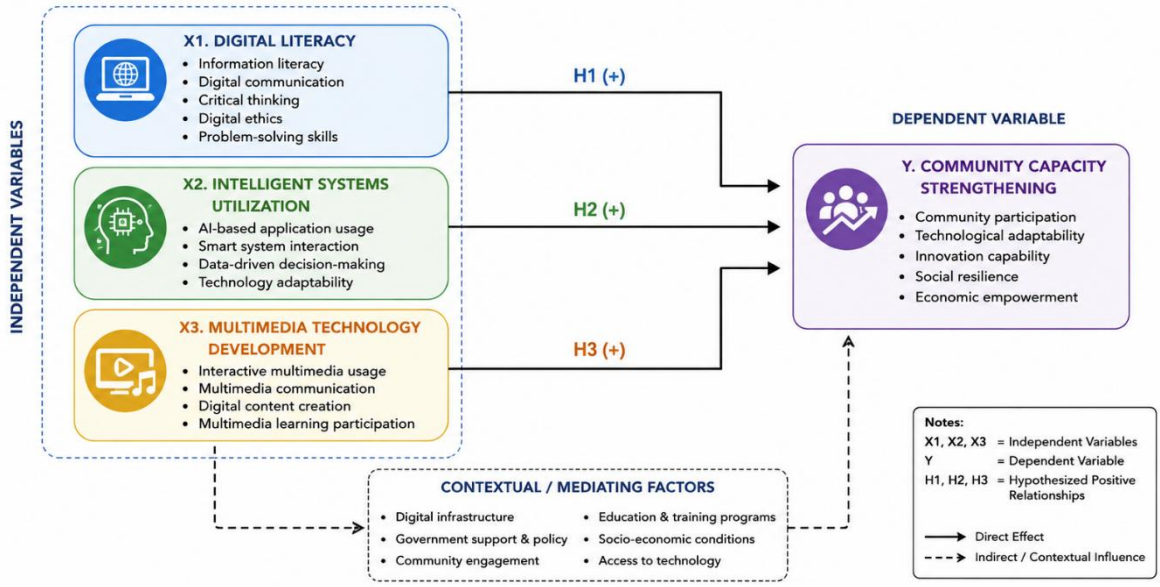

Figure 1. Research Model

Result

1. Respondent Characteristics

This study involved 220 respondents from Sukanegara Village, Jonggol District, Bogor Regency, West Java. The respondents consisted of community members, village officials, students, educators, youth organizations, and local entrepreneurs actively involved in digital activities and technology utilization.

Table 1. Respondent Characteristics

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	118	53.6
	Female	102	46.4
Age	17–25 years	72	32.7
	26–35 years	68	30.9
	36–45 years	45	20.5
	>45 years	35	15.9
Occupation	Student	58	26.4
	Entrepreneur	52	23.6
	Farmer	37	16.8
	Government Employee	29	13.2
	Others	44	20.0

The findings indicate that most respondents were within productive age groups and actively engaged in digital technology usage. This demonstrates the growing importance of digital literacy and intelligent systems utilization in supporting community activities in rural areas.

According to Pelaez-Sanchez et al. (2024), younger and productive-age populations generally demonstrate higher adaptability toward digital transformation and Industry 5.0 technologies. The increasing use of smartphones and internet-based applications among rural communities also supports digital participation and socio-economic empowerment.

2. Descriptive Statistical Analysis

a. Digital Literacy (X1)

The results indicate that the digital literacy level of the Sukanegara community is categorized as high. Information literacy and digital communication showed the highest scores because most respondents actively use

smartphones, social media, and online communication platforms in daily activities.

Table 2. Descriptive Statistics of Digital Literacy

Indicator	Mean	Category
Information literacy	4.12	High
Digital communication	4.08	High
Critical thinking	3.89	Moderate
Digital ethics	3.95	High
Problem-solving skills	3.87	Moderate
Average	**3.98**	**High**

However, critical thinking and digital problem-solving skills remain relatively moderate. This suggests that although the community can access digital information, analytical and evaluative digital competencies still need improvement. Similar findings were reported by Ahmad et al. (2023), who emphasized that digital literacy development in Industry 5.0 should focus not only on technical skills but also on critical thinking and digital ethics.

b. Intelligent Systems Utilization (X2)

The utilization of intelligent systems among respondents was categorized as moderate. Most respondents were familiar with intelligent applications such as digital payment systems, online marketplaces, and AI-based recommendation platforms. However, the use of advanced intelligent technologies remains limited.

Table 3. Descriptive Statistics of Intelligent Systems Utilization

Indicator	Mean	Category
AI-based application usage	3.65	Moderate
Smart system interaction	3.71	Moderate
Data-driven decision-making	3.52	Moderate
Technology adaptability	3.94	High
Average	**3.71**	**Moderate**

This finding reflects the technological transition occurring in rural communities. According to Kasinathan et al. (2022), intelligent systems adoption in developing communities often depends on digital infrastructure, educational background, and technological accessibility.

c. Multimedia Technology Development (X3)

The findings reveal that multimedia technology utilization among the Sukanegara community is relatively high. Multimedia communication platforms such as WhatsApp, YouTube, Facebook, and TikTok are widely used for education, communication, and business promotion.

Table 4. Descriptive Statistics of Multimedia Technology Development

Indicator	Mean	Category
Interactive multimedia usage	4.02	High
Multimedia communication	4.15	High
Digital content creation	3.76	Moderate
Multimedia learning participation	4.08	High
Average	**4.00**	**High**

This result aligns with Haridison (2025), who stated that multimedia technologies significantly improve community participation, digital learning, and information dissemination in rural communities.

3. Validity and Reliability Test

a. Validity Test

All questionnaire items showed r-count values higher than r-table values, indicating that all research instruments were valid.

Table 5. Validity Test Results

Variable	r-count	r-table	Result
Digital Literacy	0.742	0.361	Valid
Intelligent Systems	0.718	0.361	Valid
Multimedia Technology	0.756	0.361	Valid
Community Capacity	0.781	0.361	Valid

b. Reliability Test

Table 6. Reliability Test Results

Variable	Cronbach's Alpha	Result
Digital Literacy	0.861	Reliable
Intelligent Systems	0.834	Reliable
Multimedia Technology	0.879	Reliable
Community Capacity	0.887	Reliable

Cronbach's Alpha values exceeded 0.70, indicating that the research instruments were reliable and internally consistent.

4. Multiple Linear Regression Analysis

The regression analysis demonstrates that digital literacy, intelligent systems utilization, and multimedia technology development significantly influence community capacity strengthening.

Regression Equation

$$Y = 5.214 + 0.421X_1 + 0.286X_2 + 0.337X_3 + e$$

Digital literacy showed the strongest influence on community capacity strengthening (β = 0.421). This indicates that improving digital competencies significantly enhances community participation, technological adaptability, and socio-economic empowerment.

Table 7. Multiple Linear Regression Results

Variable	Regression Coefficient (β)	t-value	Sig.
Constant	5.214	2.874	0.005
Digital Literacy (X1)	0.421	5.882	0.000
Intelligent Systems (X2)	0.286	4.194	0.000
Multimedia Technology (X3)	0.337	4.925	0.000

These findings support the study by Shatila and Hernández-Lara (2026), which emphasized that digital literacy is a key factor in improving innovation capability and community resilience in Industry 5.0 environments.

Meanwhile, intelligent systems utilization also significantly influenced community capacity. Communities that actively utilize intelligent digital applications demonstrate better access to information, economic opportunities, and digital services. This result aligns with Tsipis et al. (2026), who highlighted the importance of intelligent technologies in supporting sustainable smart communities.

Multimedia technology development also had a significant positive effect on community capacity strengthening. Multimedia platforms facilitate communication, digital learning, and online entrepreneurship activities within the community. According to Samadhiya et al. (2026), multimedia technologies improve digital engagement and collaborative learning in Education and Society 5.0 ecosystems.

5. Coefficient of Determination (R^2)

The R Square value of 0.659 indicates that 65.9% of community capacity strengthening is explained by digital literacy, intelligent systems utilization, and multimedia technology development. The remaining 34.1% is influenced by other factors outside the research model.

Table 8. Coefficient of Determination

R	R Square	Adjusted R Square
0.812	0.659	0.651

This result indicates that digital transformation variables significantly contribute to community empowerment and socio-technological adaptation in Sukanegara Village.

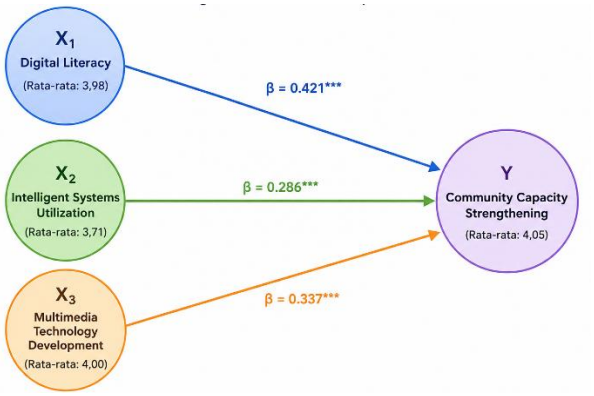

Figure 2. Research Model Testing Results

Discussion

The findings demonstrate that digital literacy plays a central role in strengthening community capacity in the industry 5.0 era. Communities with stronger digital competencies are more capable of adapting to technological changes, utilizing digital platforms, and participating in socio-economic activities. This finding is consistent with Pelaez-Sanchez et al. (2024), who emphasized that digital literacy is a fundamental competency for human-centered technological transformation.

The moderate level of intelligent systems utilization indicates that rural communities are gradually adapting to AI-based technologies and smart systems. However, limitations in infrastructure, technological knowledge, and digital training remain major challenges. According to Pham and Li (2026), successful Industry 5.0 implementation requires inclusive technological education and community-based digital empowerment strategies.

Furthermore, multimedia technology development significantly supports communication, education, and digital entrepreneurship activities in Sukanegara Village. Social media platforms and multimedia applications have become important tools for information dissemination, online business promotion, and community interaction. Similar findings were reported by Haridison (2025), who stated that multimedia technologies improve digital participation and educational accessibility in local communities.

The results also indicate that strengthening community capacity in rural areas requires collaboration among local governments, educational institutions, and community organizations. Sustainable digital literacy programs, intelligent systems training, and multimedia-based learning initiatives are essential to support inclusive digital transformation in Industry 5.0.

Overall, this study confirms that digital literacy, intelligent systems utilization, and multimedia technology development are strategic factors in strengthening community capacity and improving socio-economic resilience in rural communities such as Sukanegara Village.

Conclusion

This study concludes that digital literacy, intelligent systems utilization, and multimedia technology development significantly contribute to strengthening community capacity in Sukanegara Village, Jonggol District, Bogor Regency, West Java, in the industry 5.0 era. The findings indicate that digital literacy has the strongest influence on community empowerment, particularly in improving technological adaptability, communication, participation, and socio-economic resilience. Communities with better digital competencies are more capable of utilizing digital platforms and adapting to technological transformation (Pelaez-Sanchez et al., 2024).

Furthermore, intelligent systems utilization positively supports community development through improved access to information, digital services, and technology-based economic activities. Although the level of intelligent systems adoption remains moderate, the community demonstrates increasing readiness toward digital transformation and Industry 5.0 implementation (Kasinathan et al., 2022).

Multimedia technology development also plays an important role in enhancing communication, digital learning, and online entrepreneurship within the community. Multimedia platforms facilitate information dissemination and encourage broader community participation in digital activities (Haridison, 2025).

Overall, this study highlights that strengthening community capacity in the industry 5.0 era requires integrated collaboration among local governments, educational institutions, and community stakeholders through sustainable digital literacy programs, intelligent technology training, and multimedia-based empowerment initiatives. These efforts are essential to create inclusive, adaptive, and technology-oriented communities capable of facing future digital challenges (Telukdarie et al., 2026).

References

Ahmad, S., Umirzakova, S., Mujtaba, G., Amin, M. S., & others. (2023). *Education 5.0: Requirements, enabling technologies, and future directions*. arXiv. https://arxiv.org/abs/2307.15846

Akin-Fakorede, O. O., & Ajani, Y. A. (2026). Agentic AI solution and the promise of Industry 5.0 in the library sector: Policy implications and strategic considerations. *Business Information Review*. https://doi.org/10.1177/02663821261427234

Asad, M. M., Rind, A. A., & Almusharraf, N. M. (2026). Challenges and mitigating strategies for sustainable development of digitally transformed community 5.0: Insights from the higher education leadership. *Asian Education and Development Studies*. https://doi.org/10.1108/AEDS-04-2025-0167

Haridison, A. (2025). Harnessing digital technology for contextual learning of local social issues: A systematic literature review. *Jurnal Pendidikan Progresif, 15*(2).

Heikkilä, H. (2026). Industry 5.0: A human-centric technology paradigm and the role of education. *LAB RDI Journal*. https://www.labopen.fi/lab-rdi-journal/industry-5-0-a-human-centric-technology-paradigm-and-the-role-of-education/

Heripracoyo, S. (2026). Information management as a catalyst for smart village transformation. *Architecture Image Studies*. https://journals.ap2.pt/index.php/ais/article/view/1051

Kasinathan, P., Pugazhendhi, R., Elavarasan, R. M., et al. (2022). Realization of sustainable development goals with disruptive technologies by integrating Industry 5.0, Society 5.0, smart cities and villages. *Sustainability, 14*(22), 15258. https://doi.org/10.3390/su142215258

Libastari, H., & Ziqri, A. (2026). U-NeedKC: Development of a knowledge center in the building engineering education environment to support infrastructure transformation in the Industry 5.0 era. *Asian Journal Collaboration of Social Environment and Education*. https://journal-iasssf.com/index.php/AJCSEE/article/view/2460

Pelaez-Sanchez, I. C., Glasserman-Morales, L. D., et al. (2024). Exploring digital competencies in higher education: Design and validation of instruments for the era of Industry 5.0. *Frontiers in Education, 9*. https://doi.org/10.3389/feduc.2024.1415800

Pham, H. S. T., & Li, S. B. (2026). Towards Industry 5.0: A conceptual model for leading organisational change in digital age. *Journal of Organizational Change Management, 39*(1), 125–145.

Poltronieri, C. F., Leite, L. R., Xavier, Y. S. M., et al. (2025). Toward Industry 5.0: Mapping technologies, competencies, and research opportunities. *Journal of Entrepreneurship and Management Innovation*. https://jemi.edu.pl/vol-21-issue-4-2025/toward-industry-5-0-mapping-technologies-competencies-and-research-opportunities

Samadhiya, A., Kumar, A., Mulat-Weldemeskel, E., et al. (2026). Next-gen quality learning: How can AI technologies shape Education 4.0 and 5.0 towards the SDGs from multiple stakeholders' perspective? *The TQM Journal, 38*(4), 806–828.

Shatila, K., & Hernández-Lara, A. B. (2026). From digital literacy to Innovation 5.0: The strategic role of agility in enhancing entrepreneurial success. *Journal of Entrepreneurship in Emerging Economies*. https://doi.org/10.1108/JEEE-06-2025-0361

Sheikh, T., & Nath, K. (2026). Transformation of education through digitalization in India to achieve SDGs: A mixed-methods analysis of its impact on access, quality, and inclusivity. *Discover Education*. https://doi.org/10.1007/s44217-026-01242-1

Tarumingi, D. A., Suhartono, B., & Melumpi, M. H. (2025). Integration of technology ethics in

Society 5.0 in Indonesia: A collaborative approach and multi-method analysis. In *Digital Society and Technology*. Springer. https://doi.org/10.1007/978-3-032-00329-4_12

Telukdarie, A., Makoni, L., Munsamy, M., & Nyathi, M. H. L. (2026). Bridging the digital divide: A Society 5.0 super application for inclusive socio-economic development. In *Human-Centered Technologies for Sustainable Community Development*. Springer. https://doi.org/10.1007/978-3-032-12614-6_8

Tsipis, A., Komianos, V., & Tsoumanis, G. (2026). Human-centric, sustainable and resilient smart cities in Industry 5.0. *Encyclopedia, 6*(4), 87. https://www.mdpi.com/2673-8392/6/4/87

Yusof, Y., Amirah, N. A., Haron, N. F., et al. (2025). Community readiness towards digitalization: A comprehensive review. *Journal of Information Technology Studies*.

Zuhri, A., Alnashr, M. S., & Nihayah, H. (2026). How madrasahs build students' character in Indonesia's Society 5.0 era: Emerging challenges. *Nazhruna: Jurnal Pendidikan Islam*. https://nazhruna.uacmjk.ac.id/index.php/nzh/article/view/412