Digital Village: Service, Togetherness, and SDGs

Irwansyah*

1 Faculty of Social and Political Science, Universitas Indonesia, Depok, 16421, Indonesia, ORCID ID: 0000-0002-5047-1746

1*irwansyah09@ui.ac.id

Abstract. Digital village is a development project with a digital platform. Digital transformation based on village potential is carried out to provide better services to the public. By using the capability maturity model (CMM), social contractual utilitarianism (SCU), and sustainable development goals (SDG), the research analyzes the content both quantitatively and qualitatively in public documents about digital villages in Indonesia. Public documents produced by the central, regional, media, and public governments stored on a website are extracted through the NVivo application and then categorized and analyzed with the categories of CMM, SCU, and SDG, tested for reliability via intercoder reliability and validity through trustworthiness. This study found (1) standard models related to government services to the public, (2) togetherness, and (3) the achievement of SDGs, especially the 8th goal, namely decent work, and economic growth. This study showed that the digital village enhances the government services to improve village economic growth and quality of education.

1. Introduction
Previous studies have shown the existence of smart villages to achieve sustainable development goals (SDGs)[1] [2]. However, no one has directly explored the existence of a digital village in the SDGs. Previous research explained that one of the efforts to achieve the SDGs goals is based on technological advances such as initiating a digital village [3].

The European Commission introduced a smart village in rural development due to remoteness and depopulation [4]. Smart villages occur when local communities use technology and digital innovations in their daily lives to improve their quality of life, raise public services standard, and ensure better use of local resources. In creating a smart village, a smart environment is needed to find practical solutions to the main problems faced by local communities. In finding solutions to problems experienced by local communities, support for development using technology and digital innovation is promoted [5].

Meanwhile, the digital village includes development with a digital platform by integrating existing and new technologies and adapting to the village community’s conditions [6]. Previous studies have shown digital village as a project that aims to add value to rural ecosystems through digital solutions and services. So that, a digital village is a form of digital transformation based on the village’s potential [7]. The capability maturity concept (CMM) influenced the digital village project [8]. CMM has three components, namely (1) the basic model, (2) the standard model, and (3) the advanced model [9].

Due to the digital village initiative [10] being more project rather than a concept, this study aims to explore the implementation of CMM in the Indonesian context. Previous research has also found the
concept of social contractual utilitarianism (SCU) [11]–[14] in the digital village. So, the research also aims to explore the implementation of CMM and SCU in the digital village project initiated in Indonesia.

The CMM was created to objectively assess government contractors’ capacity to manage a specific software project [15]. This model may be used to assess the maturity of organizational process capabilities in various sectors, such as information technology, including digital village [9]. In particular, the maturity model is conceptually well discussed at the levels and dimensions in the digital transformation process [16]. Previous research [9] shows the implementation of CMM in the digital village project by looking at three models: basic, standard, and advanced. The three models have also been criticized by behavioral archaeology in their implementation. So, it is recommended in the following research to build a model that can be seen frombehavioral archaeology.

Then one of the exciting findings from previous research [9] is that existing digital villages are accessible to everyone. This finding follows the concept of social contractual utilitarianism, which has been found in other studies [11] [13] [14]. So that this study uses the concept of social humanities, one of which is social contractual utilitarianism which is also from behavioral archaeology. Archaeological behavior causes digital villages to be built and developed because of the implementation of social contractual utilitarianism indicators, namely (1) togetherness, (2) agreement, and (3) interest and need [14].

Therefore, this study proposed that the implementation of CMM in a digital village can be seen from the indicators of social contractual utilitarianism. This means that the three levels (basic, standard, and advance) result from a social contract related to the use of technology in digital villages depending on togetherness, agreement, interest, and need. In the context of sustainable development goals (SDGs), digital villages are part of smart villages. Digital village is a project of the smart village program to support the achievement of sustainable development goals [2].

2. Method
Exploration of CMM and SCU implementation that occurred in the digital village project was carried out by conducting quantitative and qualitative content analysis (mixed method) [17] on related digital documents. Content analysis of digital documents is carried out on (1) official government reports; (2) indexed scientific journal articles in Science and Technology Index (SINTA); (3) coverage in the mainstream media; and (4) the website of the digital village reported by the government in official reports, journal articles, and news in the mainstream media.

Content analysis of digital documents is carried out in two ways. The first uses categories derived from the concepts of CMM, SCU, and SDG. Second, find the keywords with the same (word similarity) and that appear most often (a word frequently). The categories of CCM concepts can be seen from three models: basic, standard, and advanced [9]. Three indications show the category of the SCU concept: (1) togetherness, (2) agreement, and (3) interest and need [14]. Then the category of SDGs is seen from the 17 global goal indicators from (1) No Poverty to (17) Partnerships to achieve the Goal [18].

The coding process involves two coders who have been trained to find keywords from the indicators for each concept. Then the two coders were also trained to find agreement on keywords that were not the same in their grouping in their respective categories. Coder assisted with software program [19] for (1) pre-analysis, (2) exploration, (3) treatment and interpretation. For maintaining reliability and validity, the coding results of the two coders were tested with inter-coder reliability and trustworthiness [20].

3. Results and discussion
Through the Google search engine, this research managed to collect 124 documents originating from (1) 67 documents from government websites, (2) 36 documents from mainstream media websites, (3) 15 documents in the form of scientific articles, and (4) 6 popular written documents. In particular, there are no official reports on digital villages by the government.

Then in the SINTA, there are two reports related to digital villages, but both are not accessible to the public, and there is no link to get them. Furthermore, based on Garuda’s search engine “Digital Reference
Guide,” 115 documents in the form of scientific articles from 2013-2020 were found, but when filtered for download, there were only 26 journal articles. The results of the intercoder reliability of the documents and categories coded by the two coders showed a very high level of agreement (98.6% = 0.986). Meanwhile, trustworthiness as a form of validity was well confirmed by both coders and researchers. The findings of this study show that there are 111 pieces of information and documents available on the internet that have been successfully coded based on the concept of the CMM on digital villages in Indonesia from 2013-2021. Based on the categories of the CMM, the majority of digital villages in Indonesia are in the standard model indicators (72.07%; n=111). This basic model shows that digital villages are prepared and built to provide services provided by the government (government services). Furthermore, it was obtained from 39 documents on the Internet that were successfully coded, which had categories from the concept of Social Contractual Utilitarianism. It was found that the informed digital village contained more information about togetherness (49.72%; n = 39).

This study found around 139 documents about digital villages that could be identified as having criteria in Sustainable Development Goals (SDGs). This study found that 10 SDGs were successfully coded in seven groups in the context of a digital village. First, the majority (56.12%; n = 139) of information about digital villages can be identified that the majority have the 8th goal (decent work and economic growth) so that it can be interpreted that the development of a digital village has a goal to ensure economic growth by providing decent and productive jobs for all product groups in the village. Second, the 4th SDG on quality education is the second priority in digital village development (18.71%). The detail finding of this study could be seen at Table 1 (3) about the result of coding of SDGs.

| No. | Category                              | Indicator                     | Percentage |
|-----|---------------------------------------|-------------------------------|------------|
| 1.  | Capacity Maturity Model               | N = 111                       |            |
|     |                                        | Basic Model                   | 27.03      |
|     |                                        | Standard Model                | 72.07      |
|     |                                        | Advanced Model                | 0.90       |
| 2.  | Social contractual utilitarianism     | N = 39                        |            |
|     |                                        | Togetherness                  | 48.72      |
|     |                                        | Agreement                     | 12.82      |
|     |                                        | Interests and Needs           | 38.46      |
| 3.  | Sustainable Development Goals          | N = 139                       |            |
|     | 1: No Poverty                         |                               | 3.60       |
|     | 2: Zero Hunger                         |                               | 0.72       |
|     | 3: Good Health and Well-being         |                               | 3.60       |
|     | 4: Quality Education                  |                               | 18.71      |
|     | 5: Gender Equality                    |                               | 1.44       |
|     | 6: Clean Water and Sanitation         |                               | 0.72       |
|     | 8: Decent Work and Economic Growth    |                               | 56.12      |
|     | 9: Industry, Innovation, and Infrastructure |           | 2.88       |
|     | 10: Reduced Inequality                |                               | 3.60       |
|     | 11: Sustainable Cities and Communities |                               | 2.88       |
|     | 16: Peace and Justice Strong Institutions |                             | 5.04       |
|     | 17: Partnerships to Achieve the Goal  |                               | 1.44       |

This study confirms previous research that made the digital village a project to provide digital services from the government to the general public [7]. Digital services from the village government are also standard as revealed in previous research [9] which prioritizes internet-based services and software applications. In the CMM Model, a digital village that provides software-based standard services is used as a tool that can be measured objectively in a government job [15].
So that, the development of a digital village requires togetherness which has also been studied previously in a digital village [14]. Previous research has shown that togetherness can be a common interest in preparing the network infrastructure used [6]. The form of togetherness, which was initially seen from the internal village horizontally, then developed at the level between village governments, between stakeholders and policies, and between countries that care about the existence of digital villages. The current study results also reinforce that togetherness is not enough and the need to follow up with an agreement or agreement following the needs and interests of each party [11]–[14].

Togetherness and agreement on the importance and needs of a digital village with a standard model in government services to the public cannot be separated from the importance of achieving the SDGs. So that at the level of the Indonesian government, there is an idea of having the Village SDGs.

4. Conclusion

Digital villages in Indonesia implement a standard model of the capability maturity model oriented towards providing government services to the public or its people. The form of service provided is part of the government's way as a form of togetherness.

All stakeholders and policies agree upon this togetherness to meet their respective interests and needs. One of the government's interests is fulfilling or achieving the Sustainable Development Goals (SDGs). At least 12 of the 17 SDGs are explicit in the document on SDGs with the majority emphasizing decent work and economic growth (SDGs 8th) followed by quality of education. This research still needs to be developed with new categories outside of the three observed categories. For example, the discovery of mainstream media and government websites showing information about launching, recognition/appreciation/award, and consultation or assistance from third parties to build a digital village.

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References

[1] ITU 2020 Building smart villages: A blueprint as piloted in Niger Niamey, http://handle.itu.int/11.1002/pub/815731c0-en (Nigeria).
[2] Adamowicz M and Zwolinska-Ligaj M 2020 The ‘smart village’ as away to achieve sustainable development in Rural Areas of Poland Sustain 12 16 1–28
[3] Hidayaturrahman, M and Purwanto E, Initiate of digital village for excellence service in archipelago area, J. Community Serv. Empower 13 1 121–127
[4] Komorowski, Ł and Stanny M 2020 Smart villages: Where can they happen? Land 9 5 1-18
[5] Stojanova S, Lentini G, Niederer P, Egger T, Cvar T, Kos A and Duh E S 2021 Smart villages policies: Past, present and future Sustain 13 4 1–28
[6] Fishman R, Gosh M, Mishra A, Shomrat S, Laks M, Mayer R and Jog A, Dor E B and Shacham-Diamond Y 2020 Digital villages: A data-driven approach to precision agriculture in small farms Sensornets 2020 Proc. 9th Int. Conf. Sens. Networks 161–166
[7] Manasijević A, Milojković M and Mastilo D. 2019 Digital Village Transformation: A Model for Relativizing Regional Disparities in the Republic of Serbia Economics 7 2 125–138
[8] Paulk M C, Curtis B, Chrisis M B and Weber C V 1996 Capability maturity model for software version 1.1 (Pittsburgh:Pennsylvania)
[9] Hallberg D 2011 The Kenyan ‘Digital Villages Project’ from a behavioural perspective, Proc. Int. Conf. Adv. ICT Emerg. Reg. ICTer 71–76
[10] FAO 2021 Digital village initiative: Digital rural transformation to combat hunger, poverty and inequality, FAO Regional Office for Asia and the Pacific www.fao.org (Bangkok: Thailand)
[11] Irwansyah I and Haninda A R 2020 ICT Utility to Remote Rural Communities: a Case Study in Melung Village in The 1st Padjadjaran Communication Conference Series 1-8
[12] Safira M R and Irwansyah I 2019 The social humanism factor in digital empowerment in Indonesia in *2019 International Conference on Advanced Computer Science and information Systems (ICACSSIS)* 409–416

[13] Safira M R and Irwansyah 2020 Social contractual utilitarianism in ‘Cibeusi’ Digital Village, in *The 2nd International Conference on Social and Political Issues* 160-162

[14] Irwansyah 2020 The social contractual utilitarianism of a digital village in rural Indonesia,” *Technol. Soc.* 63 101354

[15] Humphrey W S 1988 Characterizing the software process: A maturity framework *IEEE Softw.* 5 2 73–79

[16] Gökşen H and Gökşen Y 2021 A Review of Maturity Models Perspective of Level and Dimension *Proceedings* 74 1 2

[17] Creamer E G and Ghoston M 2013 Using a Mixed Methods Content Analysis to Analyze Mission Statements From Colleges of Engineering *J. Mix. Methods Res.* 7 2 110–120 2013

[18] Zhu J, Sun X, He Z and Zhao M 2019 Are SDGs suitable for China’s sustainable development assessment? An application and amendment of the SDGs Indicators in China *Chinese J. Popul. Resour. Environ* 17 1 25–38

[19] Oliveira M, Bitencourt C C, Dos Santos A C M Z and Teixeira E. K. 2016 Thematic Content Analysis: Is There a Difference Between the Support Provided by the MAXQDA® and NVivo® Software Package? *Brazilian J. Manag. - ReA UFSM* 9 1 72–82

[20] Potter W J and Levine-Donnerstein D 1999 Rethinking validity and reliability in content analysis *J. Appl. Commun. Res.* 27 3 258–284