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Informational Capability and the Development of Village Information System and Village Owned-Enterprises in Four Villages in Java[1]

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Abstraksi

Undang-Undang Desa Indonesia No. 6 tahun 2014 mengamanatkan negara untuk memperlakukan desa sebagai subjek pembangunan melalui fasilitasi oleh pemerintah pusat. Fasilitasi semacam itu dicontohkan oleh pengembangan infrastruktur komunikasi dan teknologi informasi (TIK) yang berkenaan dengan prinsip-prinsip transparansi, akuntabilitas, dan partisipasi demokratis. Studi ini meneliti tiga isu utama tentang TIK untuk pembangunan pedesaan. Pertama, penerapan sistem informasi desa (SID) untuk mendukung layanan publik. Kedua, ekonomi kreatif penduduk desa dicontohkan dengan mendirikan 'perusahaan milik desa' (Bumdesa). Ketiga, memetakan potensi keunggulan serta kerentanan dalam implementasi SID dan Bumdesa. Studi etnografi melibatkan empat wilayah pedesaan di Jawa yang terdiri dari tiga desa di Provinsi Daerah Istimewa Yogyakarta, dan satu desa di Provinsi Jawa Timur untuk studi banding. Hasil penelitian ini menyimpulkan bahwa meskipun keempat desa telah menerapkan SID sehingga mampu menunjukkan profil lengkap desa di situs web mereka, orientasi TIK untuk pembangunan pedesaan hampir tidak ada. Masih ada perbedaan orientasi dalam memanfaatkan data desa antara penduduk desa, relawan desa, dan pemerintah desa. Ini terjadi karena kurangnya kapabilitas informasi. Kapabilitas informasi sangat berpengaruh dalam distribusi informasi dan partisipasi penduduk desa yang terlibat dalam pembangunan pedesaan khususnya dalam mengembangkan ekonomi kreatif berdasarkan sumber daya desa dan pengetahuan serta praktik yang secara khusus dimiliki penduduk desa.

Kata kunci: TIK pembangunan desa, sistem informasi desa (SID), ekonomi kreatif pedesaan, Badan usaha milik desa (Bumdesaa), kapabilitas informasi

Abstract

The enactment of the Law of Indonesian Villages No. 6 of 2014 mandates the the state to treat villages as the subject of development through facilitation by the central government. Such facilitation is exemplified by the development of the infrastructure of communication and information technology (ICT) with regard to conduct the principles of transparency, accountability, and democratic participation. The study examines three main issues concerning ICT for rural development. First, the application of the village information system (SID) for supporting public services. Second, the villagers' creative economy exemplified by establishing 'village-owned enterprises' (Bumdesaa). Third, mapping the potentials of excellences as well as vulnerabilities in the implementation of SID and Bumdesaa. The ethnography study involved four rural areas in Java which consists of three villages in the Yogyakarta special Province, and one village in the East Java Province for comparative study. The result of the study concludes that despite the fact that all villages have already established SID and thus are able to show the villages' complete profiles on their websites, the orientation of ICT for rural development is almost absent. There is still a discrepancy of utilizing the villages data between the villagers, the village volunteers, and the village government in relation to their orientations. It occurs due to lacking informational capability. The development of informational capability is influential in assessing the distribution of information and the participation of villagers involved in rural

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development particularly in developing creative economy based on the villages' resources and specific knowledge and practices owned by the villagers.

Keywords: ICT for rural development, village information system (SID), rural creative economy, the village owned enterprise(s) (Bumdesa), informational capability

A. Introduction

The mandate of the Law of the Villages No. 6 of 2014 requires the principle of equitable distribution of development to be conducted for rural and disadvantaged areas in Indonesia. This mandate emphasizes a subsidiary system for rural development through a recognition by the state to treat villages not only as unitary units of government but also as cultural institutions. State recognition of villages as units of government and cultural institutions is actually a mandate of the 1945 Constitution in which the state provides recognition of cultural diversity and the existence of villages on the framework of distribution of social welfare, respect for cultural diversity, and economic potentials for village development. In other words, the Law of the Villages No. 6 of 2014 necessitates the state to recognize villages as 'the subjects' of development, not merely the objects. It also means that public services should be carried out by the government by engaging participation of villagers for their socio economic improvement which also means efforts to overcome socio-economic gap between rural and urban developments.

The enactment of the Law of Villages consequently initiates mobilization of village resources where facilitation is undertaken by central government and local governments to endorse local communities' involvement for village empowerment. One of the empowerment efforts is conducted by the infrastructure development of information and communication technology (ICT) so that the goals of rural development can be achieved through the principles of transparency, accountability, democratic and involving citizen participation. In this sense, the implementation of ICT for rural development through the establishment of digital villages is aimed at improving citizen participation. However, to achieve citizens' participation in rural development, the major task is not only resides on the role of the central and local governments, nor solely on the ability of local residents, but also involve other social agencies such as the role of NGO (Non-Government Organizations) and other agencies such as Corporate Social Responsibility (CSR). In this context, the utilization of ICT (Information Communication Technology) which involves various socio-cultural agencies should be

aimed at social transformation towards a better social transformation for prospering the citizens (the villagers). Therefore, a social transformation supported by ICT acceleration concerns with the distribution of information and access to information in order to enable social participation on a wider scale.

In this sense, every village that seeks development through ICT utilization also needs to recognize the potentials that it owns within each community. At this point, the development of digital villages through the utilization of ICT also involves the nodes of the civil society movement. My interpretation of the enactment of the Law No 6 /2014 in ICT for rural development by engaging civil society movement can be illustrated below:

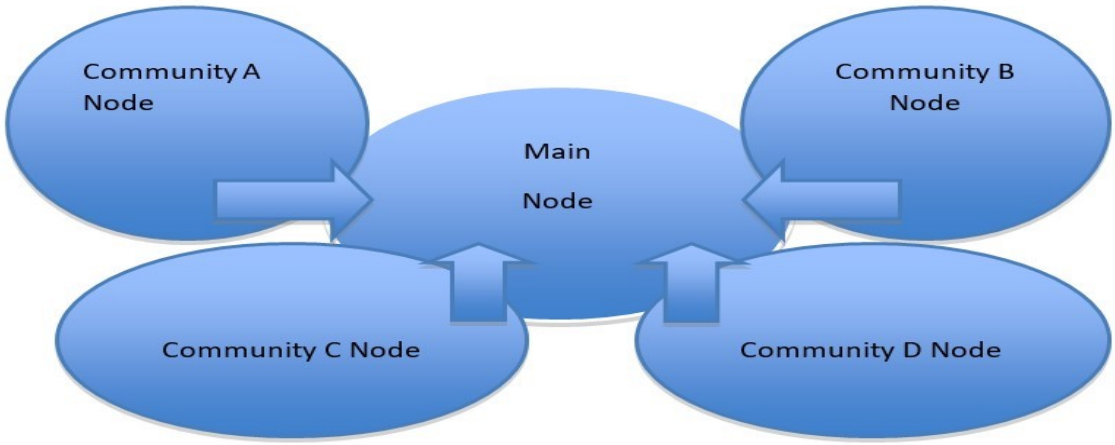

Figure 01. The nodes of the communities for civil society movement in rural development through the utilization of ICT (Source: Primary Data)

The above figure describes the involvement of the communities involved in ICT for rural development. Their involvements are characterized based on two distinctive roles of the main node (government-related agencies and the local governments) and the communities' nodes (the village officials, the village communities and NGOs) in order to increase social participation. Within the logic of the nodes of the communities for civil society movement in rural development through the utilization of ICT, the main nodes (government related agencies and the local governments, e. g; at the provincial, regency and district levels) tasks are described as follows:

(1) Distributing resources (hardware and software)
(2) Running the leading role through internet-based portal and mobile technology platform
(3) Managing sustainability (sustainability).

Meanwhile the community nodes (the village government, local communities, and NGOs) involved are responsible for:

(1) Socializing the program for rural development
(2) Conducting shared practices through collective movements within the cultural network as follows:
    (a) DIY (do-it-yourself);
    (b) DIWO (do-it-with others);
    (c) The use of open source;
    (d) Documenting the program/activities;
    (e) Reporting.

The whole process can be developed by utilizing a facilitation model that passes between subjects focused on the potential of each village's area and by managing 'a mutual forum'. This facilitation is expected to facilitate the subjects (people who will be involved in the community) with their various accesses to ICT. In practice, such a digital mutual forum is developed through the application of 'Sistem Informasi Desa' (SID) – or the village information system. In Indonesia, several NGOs are active to be the driver of community nodes by developing the application of village information system (SID), they for instance are:

(1) Combine Research Institute which owns the Lumbung Komunitas site, and initiates the establishment of the village information system. This NGO focuses on building SID infrastructure and its applications in cooperation with the Kemendesa PDTT (the Ministry of Village, Disadvantaged Regions and Transmigration);
(2) BP2DK (Badan Pengdayaan Desa dan Kawasan) and Rumah Suluh that develop 'SIDEKA – Sistem Informasi Desa dan Kawasan' (the digital application for Rural Information System and Regional Development) in cooperation with the Kominfo (the Ministry of Information and Communication);
(3) Infest that specifically conducts educational training for the implementation of SID, especially by developing a digital platform of the village financial system or 'Siskeudes' (Sistem Keuangan Desa) in cooperation with the Kemendesa PDTT (the Ministry of Village, Disadvantaged Regions and Transmigration)

Meanwhile, NGOs that involve in developing political education and local economic empowerment for rural development are for example:

(1) Institute for Research and Empowerment (IRE), which has initiated the birth of the Village Law, and establish village cultural networks throughout Indonesia called 'Forum Rembug Desa' and facilitating assistances for the

establishment of the village owned enterprises (Badan Usaha Milik Desa/BUMDESA)

(2) FPPD (Forum Pengembangan Pembangunan Desa) or the Village Development Forum which conducts training and providing assistance in forming BUMDESA and village financial reporting training.

The village information system (sistem informasi desa - SID) was originally created to respond to provide accurate data for disaster recovery and rehabilitation programs of the 2006 earthquake and the 2010 mount Merapi eruption in Yogyakarta. The Combine Resource Institute (CRI) is one of the NGOs that initially designed the SID applications supported by the assistance from the local residents affected by the disaster especially which was aimed at updating demographic data of the affected villages. After accomplishing post-disaster recovery project, the application of SID is then developed for much broader functions to specify the needs of the villages including to develop economic potentials. In other words, it can be said that the use of the village information systems (SID) provides information on rural development planning at the grass root level which involves all relevant stakeholders and communities working to develop village potentials by expanding local participation of villagers. In practice, the use of SID can also be functioned to promote the village owned enterprises (Bumdesa) so that the village products might have an access to the market system. The Institute for Research and Empowerment (IRE) is one of the long-established NGOs that works on advocacy for rural development by providing a facilitation to organize village participation. The assessment of the implementation of village digitalization is thus fundamentally addresses at how the management of the village information systems (SID) have been conducted and how the village potentials are institutionalized through the village owned enterprises (Badan Usaha Milik Desa - Bumdesa). These two major issues on the utilization of ICT for rural development intends to examine the extent to which village development planning are practiced and what impacts are generated through the management of village information systems and the institutionalization of the village enterprises. The government endorsement to improve Bumdesa for the well-being of the villagers are also important to be assessed as the program also provides opportunities for citizen participation. This is important to be observed, given the fact that rural elites still dominates access to major information, for example information related to the inventory of citizen assets. At this point, the economic potentials of the smallest unit in the village to gain a wider marketing scope can be easily manipulated

to attract investment. This issue needs to be ethically discussed especially because the discourse of BUMDESA becomes one of the prerequisites for withdrawing (liquidfying) the village funds (dana desa) from the central government. This policy of constituting the establishment of Bumdesa is considered as an implementation of the Village Law No. 6 of 2014 which in fact the allocation budget funds is starting in 2017.

With regard to the ICT utilization for rural development this research is designed to identify major impacts on the implementation of the village information system (SID) for good governance and its significance to promote the village economic potentials by including the citizen (villagers) participation. Moreover, the research also seeks to identify the potentials of advantages and vulnerabilities of the implementation of SID and Bumdesa in order to further recommend an appropriate policy for the ICT for rural development. The central government through the Ministry of Villages, Disadvantaged Regions and Transmigration (the Kemendesa PDTT) has encouraged the efforts to maximize ICT function especially for developing the village information system (Sistem Informasi Desa) whilst at the same time developing alternative rural development to promote the villages' economic potentials, sustainability development and increasing village productivity. So it can be said that ideally the government runs a major knot in the effort to distribute resources and efforts to maintain sustainability of development in the villages by involving community nodes at the grassroots level as well as with other civil society organizations. Efforts ideally could also be made with a 'platform' or blueprint for village development by optimizing the distribution of information and utilization of technology involving the participation of villagers. However, such a platform of ICT for rural development is not yet fully achieved (or comprehended) by the government due to other priorities in utilizing the village funds (dana desa) especially for completing basic infrastructure development in rural areas.

B. Research Questions, Method and Theoretical Framework.

The ideal expectation of ICT for rural development is actually aimed to transform social relations between citizens from old cultural patterns to a new pattern in order to support good governance and economic sustainability or economic improvement. Nevertheless, the transformation of village data and information management through the application of the SID still experience many obstacles. In general, the discrepancy of knowledge from the practice of the SID can be evaluate from how the governments and the villagers utilize the SID itself.

Therefore, this research seeks to deploy three main research questions, as follows:

(1) With regard to the application of SID for good governance, is the SID used as a tool to develop the village sustainability that ultimately has implications for social change and the improvement of citizens' well-being? Or is the village itself (the village government) just developing SID because it is one of the main tasks required by the Village Law?
(2) With regard to the utilization of SID for alternative rural economy, is it true that Bumdesa can provide a uniform and equitable economic impact, or simply transfer the outside capital (large capital / modern) to enter the village without considering the sustainability of the village as a cultural institution or cultural entity?
(3) With regard to the ICT utilization for good governance and increasing people well-being, what would be the advantages as well as vulnerabilities in the implementation of SID and Bumdesa?

Those above questions have not yet been raised in many studies on ICT for rural development in Indonesia. This is because several researches on rural development in Indonesia are still attracted to study the impact of the Village Law especially on the infrastructure issues, including the construction of hardware or ICT devices through the application of village information systems (SIDs) rather than to evaluate its socio-cultural impacts. With regard to study the socio-cultural impacts of ICT for rural development therefore, this research aimed to map out at least two main issues concerning the utilization aspect of ICT in the development of 'digital villages' that can be identified as follows:

(1) the implementation of village information system (SID) and its application for good gorvernance of providing transparency and public accountability and involving citizen participation for rural development;
(2) the evaluation of the rural economic development, especially in the practice of establishing 'village-owned enterprises' (Badan Usaha Milik Desa or commonly abbreviated as BUMDESA).

In order to gain the data, this research employed a mixed method which basically prioritizes an ethnography method in which the observation is also conducted by a participatory observation. Based on the recommendation both from the CRI and the IRE – that have experiences in empowering rural development, this research was conducted in four field sites:

1. Murtigading Village, Sanden District, Bantul Regency, DIY Province;
2. Panggungharjo Village, Sewon District, Bantul Regency, DIY Province;

3. Nglegi Village, Patuk District, Gunung Kidul Regency, DIY Province;
4. Pejambon Village, Sumberrejo Sub-District, Bojonegoro District, East Java Province.

The four villages were selected because they have implemented the village information system (SID) and initiated the formation of a village-owned enterprise (Bumdesa). The selection of the four sites was also based on the importance of gaining a comparative study of the practices of the SID and Bumdesa by considering differences in geographic and demographic conditions, as well as the influence of urbanization in their respective regions. Two villages in Yogyakarta region were selected as the case study, e.g.; Nglegi and Murtigading villages because they are villages with less influence of urbanization than those in Panggungharjo Village which seems to be a buffering zone for the urban expansion of Yogyakarta City, so this village also experiences a rapid urbanization process and has a likely urban life despite the fact that it is administratively recognized as a village administration area. While the selection of the village outside the province of Yogyakarta, Pejambon Village, in Bojonegoro, East Java, was selected due to the fact that the village has become a pilot project for the development of a good village information system (SID), despite its obstacles in developing alternative economic potentials through Bumdesa.

Theoretical framework applies in this research is mainly based on the concept of the informational capability, a concept that supports the idea of sustainable development through an empowerment of community based development and the practice of democracy at the grassroots level. In many cases in developing countries, rural poor and underdeveloped areas often define themselves as 'poor and disadvantaged' for the achievement of quality of life in material terms, although they also always put forward the idea of possessing 'richness of traditions and cultural values'. Therefore, the development of rural areas is aimed at sustainability of well-being with efforts for respecting cultural diversity. The utilization of ICT in such context is then carried out by directing the development paradigm from simply improving 'digital literacy' to intensifying 'informational capabilities '(moving from digital literacy to informational capabilities). According to Paul Zurkowsky (1974), in Gigler (2015: 26-27), 'information literacy' is the ability to acquire, evaluate, and use various sources of information. This capability includes several aspects, e.g.:

(1) knowing what kind of information is helpful (knowing what kind of information can be helpful)
(2) knowing where to get that information
(3) knowing how to inspect information (knowing how to investigate the source of such information)

(4) evaluating and organizing information
(5) immediately transmitting the information

So the concept of information literacy emphasizes only the ability of individuals to respond and to recognize the information needed and how to effectively utilize information especially for problem solving. Meanwhile, the concept of digital literacy is the ability of information literacy based on knowledge and practice of digital medium for problem solving.

In developing sustainable development by emphasizing cultural aspect especially for improving the well-being condition of poor villagers in the era of digital technology, the paradigm in seeing ICT utilization suggests to emphasize informational capability that combines ICT medium utilization approach and individual capability in processing and utilizing information based on the individuals roles within their social agencies based on their connections at community bases. This paradigm emphasizes the importance of ICT cultural implications in rural development by measuring utilization capacity of ICT devices, information literacy capabilities and social participation. Bjorn-Soren Gigler (2015) mentions that the informational capability paradigm helps to explain how ecological changes in information communication systems take place whereas the ecology is not just a matter of individual or group adaptation on ICT devices alone but also on how to integrate 'information literacy' as a 'shared capability within the community'.

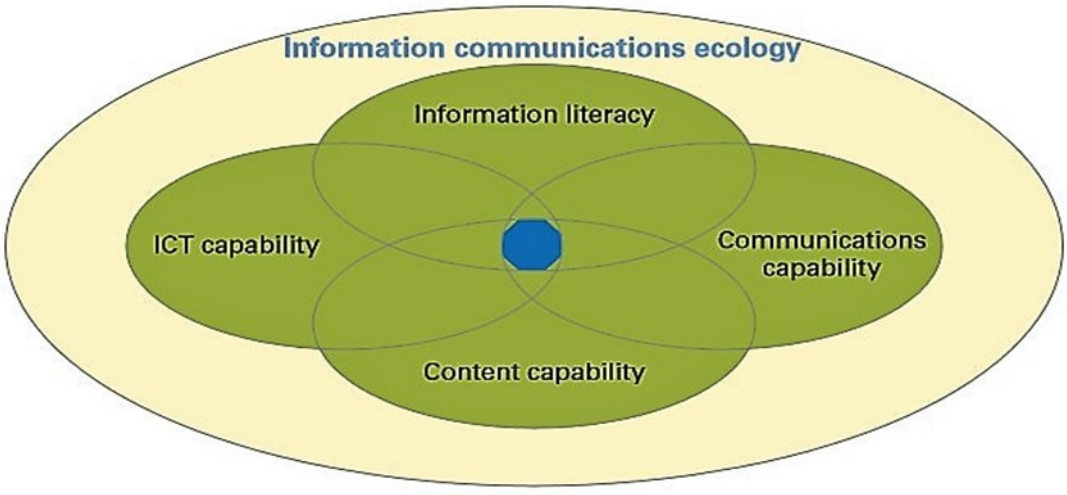

Figure 02. The Concept of Informational Capabilities (Gigler, Bjorn-Soren. 2015: 28)

Accordingly (Gigler, 2015.ibid) the concept of informational capability has four components that refer to the development of an individual's ability in:

(1) using and utilizing ICT effectively (ICT capabilities)
(2) obtain, process, evaluate in using information (information literacy)
(3) communicate effectively to family members, relatives, friends, or colleagues (communication capability)
(4) produce and share content in the internet to other people or groups through network (content capability)

The idea of informational capability developed by Bjorn-Soren Gigler (2015) is an extension of Amartya Sen's idea (2000) of 'Development as Freedom', which emphasizes the improvement of human capabilities or the ability of human beings to be the agents of social change. In the development paradigm, Sen (2000: 6-13) emphasizes the importance of three basic elements of independence for sustainable development:

(1) political freedoms (promoting speech and elections) which promote economic security: political independence (in opinion and elections) to promote a safe economy (a stable economy)
(2) social opportunities (through education and health facilities) that can help facilitate economic participation
(3) economic facilities (opportunities for participation in trade and production) that can generate personal abundance, and public resources for the construction of social facilities.

According to Amrtya Sen (2000) development which emphasizes only material development, physical and economic without considering cultural aspect will endanger the future of a nation, because such development may contribute to the destruction of local tradition, and other cultural heritage possessed by a nation state. To say this means that the people especially in the rural areas who are well equipped with the knowledge of 'informational capabilities' are therefore be able to decide independently what traditions should they continue to maintain, in what context they must abide by secular authorities such as the state, and in whatever context they are influenced by cultural authorities such as religious leaders or customary authorities that affect the decision-making for communities for a long-term impact on their well-being both materially and spiritually in the future.

C. Research Findings: Comparative Practices of Informational Capability in Four Digital Villages in Rural Java

There are two main indicators of 'informational capability' in the utilization of ICT for rural development applied in this study, as follows:

(1) ICT utilization access which is undertaken and facilitated by the village governments and communities involved in rural development to include citizen participation for rural development
(2) The institutionalization of participation in organizing communities through the application of the SID (the village information system) particularly for rural economic development.

These indicators help to explain the quality of cultural implications of utilizing village information system for rural development where the application of digital technology is expected to increase the development capability more rapidly without injuring the democratic processes and participation at the local level which in turn has also a significant impact on the tradition and specificity of the village community in general. Both indicators of informational capability help to explain the quality of cultural implications in utilizing the village information system for rural development as can be explained through the following figure:

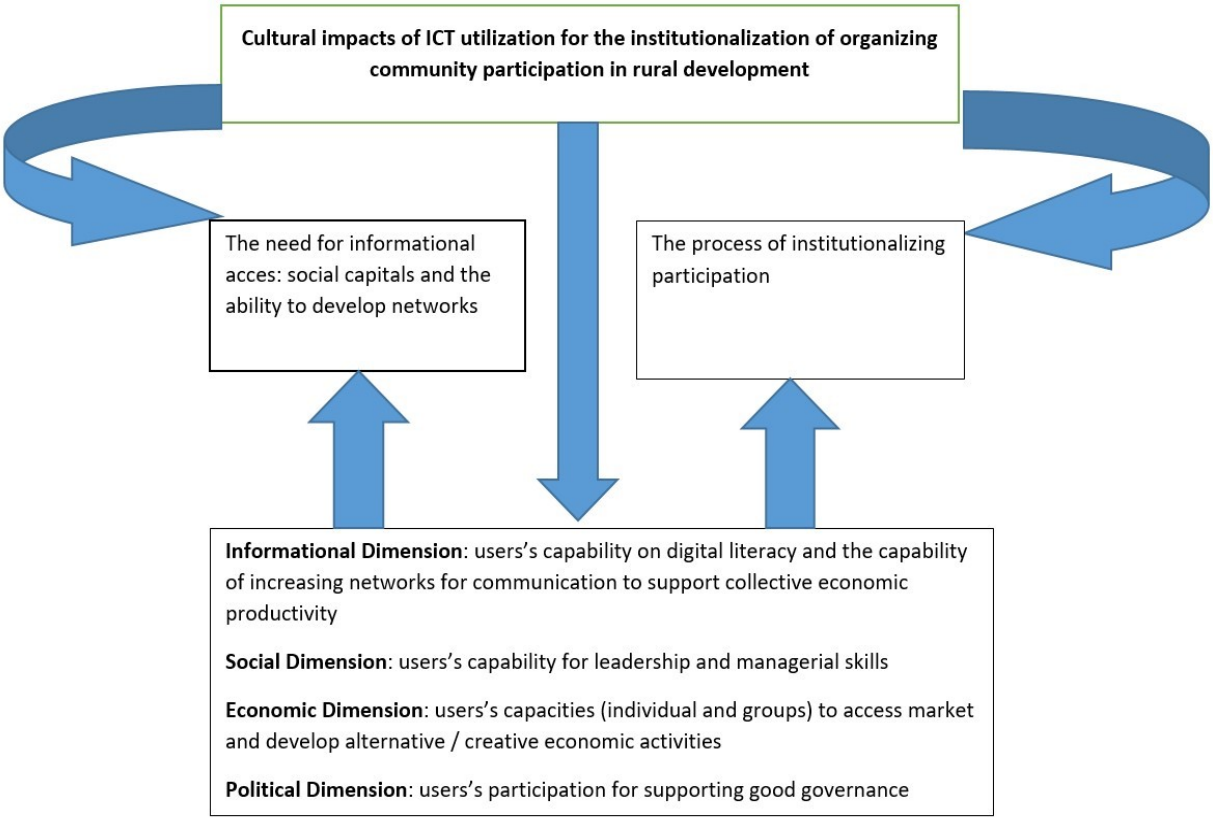

Figure. 03. Cultural Impacts of ICT utilization for rural development based on informational capability indicators (Logical scheme designed based on the interpretation of Gigler's analysis on the informational capability paradigm by Pamungkas 2017)

The four villages selected as the case studies in this research according to the development index in Indonesia are considered as the representatives of the autonomous and the developing villages. Panggungharjo village and Mutigading village in Yogyakarta are autonomous villages (desa mandiri) which means the villages have autonomous economic income and thus potentially become developed villages (desa maju) in the near future. Meanwhile, Nglegi village in Yogyakarta and Pejambon village in East Java are considered as developing villages (desa berkembang) that still need more governmental supports for infrastructure development, but have potentials or advantages to be economically autonomous in providing alternative employment for their citizens. The potential opportunities for the advantages and vulnerabilities in the SID practices and the development of Bumdesa in these four villages are presented in the following tables of comparative informational capabilities:

Finding #1

Nglegi Village / Dimensions	**Acess to Information**	**Institutionalized Participation**
Informational Dimension	1) SID infrastructure and internet access in particular points/ areas are available (website, online data input). ICT tools for communication is available including social media application (i.e Whatsapp in smartphone) that is a familiar use for government officials and particular village elites. 2) SMS Gateaway 3) Face to face medium (traditional forum) 4) Community Radio run by the government officials	1) Utilization of SID is more widely used by village officials than citizens 2) participation is mobilized still more by applying conventional or traditional media and limited SMS 3) The village officials are the main actors of facillitating and distributing information through ICT tools and traditional medium 4) Women (PKK and Posyandu) as the main subjects for manually collecting data input in social and economic condition of the villagers
Social Dimension	The village institutions established and facilitated by the village government/officials (PKK, Posyandu, PAUD, Kelompok Tani, Karangtaruna) Informational community is not existed	1) Village development is still aimed at improving village infrastructure and human resource development (PAUD-early education for children) 2) The traditional forum are held regularly by each community, both at the village level and at the sub-village level
Economic Dimension	Residents occupation relying more on agriculture and livestock (traditional economy) `Poverty is still a serious problem among villagers whose occupations are farm workers because land productivity has to be limited relying on the climate and due to geographical conditions of the village that lacking of water supply for agriculture	1) continuing the village development plan to improve the quality of life of the people 2) continuing the village development plan to increase agricultural production 3) other economic potentials outside of the agricultural and livestock sectors have not yet developed 4) an initial establishment of Bumdesa from Gaduh Sapi – cattle breeding, but it has not received any citizen's response due to the fact that such economic activity is also a traditional economic practice owned individually by the villagers, therefore it can be viewed as a 'competitor' for the established livestock breeding practice.
Political Dimension	1) a minimum standard of SID practice for public service mechanism (only the government officials that can access the ICT tools) 2) a selection of ideas, inputs, and complaints from residents	1) Village government runs the procedures of the village government system 2) Village government runs a social service function 3) Villagers and communities become partners in infrastructure and human

	for the formulation of RPJMDesa (elitist bias) 3) Accountability of village financial management is online but internally managed by the village officials and publicly announced to citizens through traditional medium (villagers cannot access the online data therefore cannot compare the differences between the traditional display and the online data, thus they cannot easily update information)	resources development, but the relationship is more likely a client pattern. 4) Villagers more likely posit themselves to be the 'recipients' (beneficiaries) of the village funds

Table 01. Informational Capability Development in the Ngelegi Village, Pathuk, Gunung Kidul Yogyakarta (Source: Primary Data)

Finding #2

Murtigading Village/ Dimensions	**Acess to Information**	**Institutionalized Participation**
Informational Dimension	1) SID infrastructure and internet access (including social media applications in smartphones) are available 2) SMS Gateaway is available 3) Face to face medium (traditional forum) 4) Community Radio managed by the village volunteers by establishing the informational community service	1) The utilization of SID is benefitted by village officials and citizens 2) Institutionalization of participation using ICT medium (internet and community radio) and conventional traditional media 3) The driving actors are the village officials and key figures in the community 4) Women (PKK and Posyandu) as the main subjects for manually collecting data input in social and economic condition of the villagers
Social Dimension	1) The village institutions are established and facilitated by the village government (PKK, Posyandu, PAUD, Kelompok Tani, Karangtaruna) 2) Existing communities for driving the village economy 3) Not yet established an official village information community even though there is already a community radio managed by villagers (the village volunteers)	1) Village development aimed at human resource development and alternative outside the agricultural sector 2) Regular meetings are held by each community, both at the village level and at the sub-village level 3) A discussion forum has been also conducted through ICT medium
Economic Dimension	1) Residents occupations are still in dominant agriculture 2) Small and medium micro enterprises (UMKM) for alternative employment	1) To continue the village development plan to improve the quality of life of the people 2) Continue the village development plan to increase agricultural production

	3) Institutionalization of Bumdesa though not yet optimal	3) Increase exploring other potential outside the agricultural sector, especially for MSMEs (micro and medium enterprises) 4) Bumdesa has been formed but not yet functioning optimally because priority has not been directed to Bumdesa and confusion to identify the regulation of Bumdesa for building a bussiness that not competes established local bussiness and calculate the risk for the legal practice of financial accountability of Bumdesa.
Political Dimension	1) Minimum standards in public service mechanism due to dispute in accessing information between the village officials and the village elites 2) A selection of ideas, inputs, and complaints from residents for the formulation of RPJMDesa (the village development planning for medium term) 3) Accountability of village financial management is internal managed by village officials to be individually submitted to citizens	1) Village government runs the procedures of the village government system 2) Village government runs a social service function 3) Villagers and communities become partners in infrastructure and human resources development but sometimes the relationship are not always harmonius due to different views of utilizing the village data (whether the data should be accessible publicly or not) 4) Villagers have critical positions in the utilization of village funds

Table 02. Informational Capability Development in the Murtigading Village, Sanden, Bantul, Yogyakarta (Source: Primary Data)

Finding #3

Panggungharjo Village/ Dimensions	**Acess to Information**	**Institutionalized Participation**
Informational Dimension	1) SID infrastructure and internet access (including social media applications in smartphones) are available 2) Optimization of the village website 3) Optimization of social media 4) Utilization of IOT (internet of things) through the development of village applications 5) SMS Gateaway is available 6) Traditional medium (Face-to-face forum) is scheduled at a certain moment with	1) The utilization of SID is used both by village officials and citizens 2) Institutionalization of participation using medium of ICT through optimization of village website and social media medium 3) The traditional face-to-face medium is limited to village routine activities 4) The village driving actors are key figures in the community, NGOs and corporations through CSR 5) Data input is performed by government officials, professional village officials, and village volunteers both manually and digitally

	representatives of village and community institutions	
Social Dimension	1) The village institutions established and facilitated by the village government (PKK, Posyandu, PAUD, Kelompok Tani, Karangtaruna) 2) Existing communities driving the village economy 3) An existing village volunteer community that serves as an active community for information literacy especially through social media	1) Village development is aimed at human resource development and alternative outside the agricultural sector 2) The meetings are held regularly by each community, both at the village level and at the sub-village level 3) Discussion forum optimized through ICT medium especially by IOT optimization (internet of things)
Economic Dimension	1) The residents occupations combine activities of the sub-urban communities of agricultural sector and micro small and medium enterprises (MSMEs) 2) Existing MSMEs units 3) Institutionalization of Bumdesa independently	1) To the village development plan to improve the quality of life of citizens 2) To continue the village development plan to increase the production of creative economy 3) To increase potentials outside the agricultural sector, especially for MSMEs 4) Bumdesa's business expansion is designed to meet the achievement of an 'advanced' village target according to the village development index
Political Dimension	1) Optimal standard in public service mechanism 2) A selection of ideas, inputs, and complaints from citizens for the formulation of RPJMDesa 3) Accountability of village financial management is internal managed by village officials to be individually submitted to citizens	1) Village government runs the procedures of the village government system 2) Village government runs a social service function 3) Villagers and communities become partners in infrastructure and human resources development 4) Villagers have critical positions in the utilization of village funds

Table 03. Informational Capability Development in the Panggungharjo Village, Yogyakarta (Source: Primary Data)

Finding #4

Pejambon Village/ Dimensions	**Acess to Information**	**Institutionalized Participation**
Informational Dimension	1) SID infrastructure and internet access (including social media applications in smartphones) are available 2) Optimization the village website 3) Optimization of social media 4) Utilization of IOT (internet of things) through the development of village applications 5) SMS Gateaway is available 6) Traditional medium face-to face meeting (Jandom Desa) is, regularly maintained with representatives of village and community institutions	1) The utilization of SID is used by village officials and citizens 2) Institutionalization of participation using medium of ICT through optimization of village website and social media 3) Traditional face-to-face mediums continue to be maintained at the community level on a regular basis 4) The driving actors are village officials and key figures in the community 5) Women (PKK and Posyandu) as the main subjects for manually collecting data input in social and economic condition of the villagers
Social Dimension	1) The institutions established and facilitated by the village government (PKK, Posyandu, PAUD, Kelompok Tani, Karangtaruna) 2) Existing communities for driving the village economy 3) An existing village volunteer community that serves as an active agent for village information literacy especially through social media	1) Village development is aimed at infrastructure and human resource development 2) The meetings are held regularly by each community, both at the village level and at the sub-village level 3) Discussion forum optimized through ICT media especially by the optimization of IOT (internet of things) and social media
Economic Dimension	1) Residents occupations are still in dominant agriculture 2) Existing small and medium micro enterprises (UMKM/MsMEs) 3) the institutionalization of Bumdesa though not yet optimal	1) To continue the village development plan to improve the quality of life of the citizens 2) To continue the village development plan to increase agricultural production 3) To increase exploring other potential outside the agricultural sector, especially for MSMEs 4) Bumdesa has been formed but not yet functioning optimally because priority has not been directed to Bumdesa and confusion to identify the

		regulation of Bumdesa and calculate the risk.
Political Dimension	1) An optimal standard in public service mechanism 2) A selection of ideas, inputs, and complaints from citizens for the formulation of RPJMDesa 3) Accountability of village financial management is internal and external (publicly accessible)	1) Village government runs the village government system procedures 2) Village government runs a social service function 3) Villagers and communities become partners in infrastructure and human resources development 4) Villagers have critical positions in the utilization of village funds

Table 04. Informational Capability Development in the Pejambon Village, Bojonegoro, East Java (Source: Primary Data)

The above comparative tables describe how the 'convergence' or merging of two different mediums in viewing how informational capabilities are taking place between the actors involved in rural development. The peculiarities occur in the practices of digital information technology and the traditional medium as a means of streamlining forms and communicating patterns that often lead to information gaps

between villagers. Only through the development of informational capabilities, the villages that have been well equipped with ICT infrastructure are enable to be familiar with the SID application for instance in the cases of the Panggungharjo village and and the Pejambon village where existing 'informational communities' provide assistances for both digital and information literacies based on various access of each actor in utilizing digital technology tools. Panggungharjo and Pejambon are the best example of optimizing the SID functions for good governance, meanwhile in Ngelegi and Murtigading disputes of functioning the SID are still visible due to elitist bias in viewing the availability of the village data. Moreover, Panggungharjo is succeeded in establishing Bumdesa, because the village is also very well equipped with a high quality of human resources than other villages observed in this study. From the fieldworks it can be said that in general the development of informational capability in each village observed is not yet fully achieved due to two main problems located on:

(1) the interpretation of utilizing the SID and the village data management which means authority of utilizing the village data and data privacy of the village assets including monograph data and demographic data whether they should be publicly accessible or not

(2) the interpretation of building or forming Bumdesa due to the fear of facing legal risks and the resistance of citizens (villagers) who are afraid of being threatened because of competition in almost the similar business.

Those two main problems of the implementation of ICT for rural development can be commonly found in most villages because the central government itself has not yet formulated a general platform of the village information system (SID) that determines standards of public services and the pre-requisite for building Bumdesa seems to be comprehended only by some village elites in most cases in order to meet the requirements of gaining the village funds (dana desa) from the central government.

D. Critical Assessment on the Practice of ICT for Rural Development through SID and Bumdesa (Evatuation of the Advantages and Vulnerabilities from the practices)

One of the main problems of the implementation of ICT for rural development that underlies this research is the fact that can be found in determining priorities for rural development. This is exemplified for instance in the Decree of the Ministry of Village, Disadvantaged Regions and Transmigration which is called 'PERMENDESA' whereas the PERMENDESA No 22 of 2016 on 'Determination of Priority of Village Fund Usage Year 2017' is changed to PERMENDESA No 4 of 2017 on 'Changes on PERMENDESA NO.22 Year 2016 on Stipulation Priority of Village Fund Usage 2017.' In the first year after the ratification of the Village Law, the vision of the Village Law is implemented through the priority of village funding allocations to apply to establish the village information systems (SID) in almost all villages throughout Indonesia. In the subsequent years, the priority was also given as much as 30% of village funds for the construction of rural or physical infrastructure. In 2017 the vision of village development is also aimed at strengthening the village economy and developing the village's creative economy by forming the village-owned enterprise (Bumdesa). This has implications for the village governments' responses and how to organize the village communities at the grassroots level.

In practice since the implementation of the Village Law, two other issues have arisen regarding the management and distribution of village information systems. The first is the matter of village autonomy, and the second is the distribution of information through the ICT practices that tend to be elitist. The issue of village autonomy concerns on how to manage data and information owned by villages that are accessible for wider public, not just by the villagers. Village monograph data for

instance is not only administrative data that can be utilized by the government alone, but also opens up other opportunities or loopholes that can be utilized by other parties who seek benefits from rural development by excluding the involvement of local residents. On the other hand, there are still village elites who control information unilaterally so that the data is very likely to be misused. For example, with regard to the inventory of citizen assets (such as land ownership), the economic potential of the smallest unit in the village (Micro Small Medium Enterprises - MSMEs) to the wider scope can be easily used to attract investment. While it may open up rural economic opportunities creatively outside the traditional village economic sector (such as agriculture), this needs to be addressed more deeply when the discourse of developing the village's creative economy through village-owned enterprises (Bumdesa) is strengthened. In fact, Bumdesa cannot always provide a uniform and equitable economic impact because the development of the economic institution is not always include the villagers' participation due to pragmatic reasons. For instance the village governments seem to view the establishment of Bumdesa as a requirement imposed by the central government therefore they have to manage a limited time and energy – in order to achieve a quick profitmaking rather than considering social benefits of the Bumdesa for the villagers. In some cases, the establishment of Bumdesa, seem simply transfer the outside capital (large capital / modern) to enter the village without considering the sustainability of the village as a cultural institution or cultural entity and at the same time threatens the solidarity of the villagers have traditionally had a mechanism of defense in keeping their communities from the threat of social conflict due to economic disparities among citizens.

Figure 04. An example of Bumdesa in Panggungharjo, Yogyakarta that runs a micro-small enterprise of recycling palm oil production (Source: Pamungkas 2017).

In general, there are two important aspects that need to be critically reviewed in assessing the village information system

(SID), e. g.: (1) Appropriate approach model that will be used in the village information system; (2) Appropriate content that should be filled into the village website that is publicly accessible. In the first aspect there are two models of approaches implemented in the village information systems (SID) relating to the distribution of village authorities. First is the SID model that is *top down*. In this model, village top-down management makes the bureaucracy central, either as an initiator or organizer, or a facilitator in the implementation of government programs. Second is the *bottom-up* SID model which in this approach runs from the community's initiative in the village development plan. In this context, the informational community independently supports building the required facilities such as the development of the village website, and other supports for enlarging networks. For example, in Pejambon Village Bojonegoro has an online site with a very detailed administration of village administrative data such as salaries of village government officials, to data on school conditions in the village. The existence of complete data such as shown by Pejambon Village is possible to be presented due to a strong initiative from the informational community who empower the villagers for ICT literacy.

Figure 05. The display of the Pejambon Village Website https://pejambon-bjn.desa.id/. First acces on 7th May 2017 (Source: Pamungkas 2017)

The second aspect concerns how the village builds the website content that can be incorporated into the SID and supports village management. It delineates the ideal outputs generated by the SID that the data originating from the people used as a database in village development planning should be benefitted the people, so it is not limited to display village profiles that have many loopholes to be misused. In other words, the SID implementation should not be limited to the supporting system of the village-wide system, but as an entry point for

discussing authority issues. In other words, the SID is only a tool, but it can be useful otherwise it can be risky as well, because at this point SID (the village information system) can be functioned to encourage a better governance and thus optimizing the SID is directed at measuring the village government's commitment to democratic values that underlie SID's implementation of transparency, accountability and community participation. Therefore, the discourse of practicing SID should be extended from the issues of technology tools only (both hardware and software), but moves forward to socializing the function of the SID into community or villagers so that they can participate optimally as well. In many cases, the SID implementation in villages involving government synergy (central and local), community, and village institutions, where all three should be able to control each other.

Another major obstacle is the unavailability of internet access where not all villages have internet connection. Despite the fact that infrastructure for internet network is already facilitated by the central government, discrepancy of knowledge in digital literacy may occur due to limited human resources, for instance in the case of a gap in updating the data because the officials have been more accustomed to input data manually. In addition there is a problem of data centralization with the level of density if the village data is collected centrally into one server. There is an imbalance knowledge gained by the system managers (officials who run the SID) and citizens. This inequality can be clearly seen in the village where the village bureaucracy controls all citizens' data to be displayed on the village site, but the villagers themselves as part of the data owner do not know (realize) that their data has been used by the village bureaucracy. The disparities in the implementation of the SID has enabled the tendency of increasingly less citizen participation in the planning processes of village development. In other words, the use of SID applications without a clear platform can also threaten the existing traditional citizen forums.

With regard to authority and data privacy, another obstacle is how to manage and process what information that can be publicly displayed. In the SID there are three key figures involved to run the system management, consisting of village officials, the operators, and the village volunteers (the informational community). These three key figures play the roles to encourage the involvement of all citizens-including building synergies for system management and minimizing the risk of particular group or elites that want to take advantage of situation where dispute of data management is present. With regard to the SID practice and the formation of Bumdesa for instance, when the data is incomplete, while the village funds from the central government will continue to be liquefied then a program

that is perfunctory will be found. From the observations and interviews conducted with village activists, the most important aspect in managing village data is the planning of the existing data in the village so that anyone who will enter the village development roles, whether NGOs, the government or academia, must adjust to the potentials of each village. Currently Bumdesa opens up opportunities for all businesses run by the people, but at the same time the village government should also provide protection on the business people with small capital.

E. Conclusion

In general, it can be summed up that the SID cannot be simply interpreted as a practice of a digital application for data input, indeed not even just a village website. The village system information (SID) and websites are only a small part of the expected goals of ICT for rural development. Since the SID contains village data including village development data, village areas and other important information, it can be functioned as media to convey data or public information so that people (citizen) can easily gain public services. On the other hand, the application of digital technology should prioritize the consideration of community access to technology. Technology that is too forced to be rushed built into particular community will create another problem of lacking social participation. The availability of data that is not accompanied by community access to the data itself also impedes community participation. The application of SID should consider how the community can utilize or benefit the information contained in the information system. Access to information is a basic prerequisite to ensure it. In general, the principles of the implementation of ICT for rural development are participation and accountability of being transparent, inclusive and sustainable. These aspects of utilization and engagement will make a measurable development milestone.

Bumdesa's main goal is to improve the well-being of the villagers, therefore the benefits cannot be only enjoyed by a handful of village elites. In fact, the problems are still emerging in the development of Bumdesa. In this sense the establishment of Bumdesa needs to be reoriented. Bumdesa has not been positioned as a business entity devoted to generating benefits and tends to be oriented only to immediately create profits. In the development of Bumdesa, many villages have directed Bumdesa programs just to create profits immediately without considering the other significant benefits such as the preservation of nature, and the balance of social harmony among citizens. On the other hand, the village has no clear authority in the management of village assets, especially for management by and through Bumdesa. The potentials and assets of the villages have not been optimally

utilized to overcome economic and social problems that exist in the rural areas. Another obstacle of establishing Bumdesa is due to the fact that there is no clarity and certainty in the mechanism and procedures of participation of village capital funds and the participation of funds from other parties. Since Bumdesa is not a cooperative, but rather a business entity that is specifically owned legally by the village, it also does not mean a village-owned limited company (in Indonesian sense is CV). This means that the legal status of an entity Bumdesa also still does not have a specific clarity that is affirmed in the state regulation. It still opens up vulnerable conflicts and disputes that occasionally may arise in rural communities. With regard to Bumdesa' reorientation through the application of SID, it should be directed to developing aspects of' economic business' and 'social business' in maintaining a balance of benefits and potential economic benefits in the village with inclusive participation of its citizens through the mechanism of the informational capabilities building.

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