Smart Bumdes: Innovation of E-Collaboration and E-Commerce for Village Economic Development Solution in the New Normal Era (Case Study in Batu City)

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Abstract. The COVID-19 outbreak in Indonesia has burdened society with enormous costs, from the number of deaths, limited activities, and loss of work. The negative effect of this causes global economic crisis. Businesses feel the negative impact of the Corona COVID-19 virus pandemic which threatens the status of the continuity of the business, especially businesses that do not have sufficiently good adaptations, such as businesses owned by BUMDes (Village-owned enterprises). The purpose of this research is to find the latest innovations through Smart BUMDes based on technology (application). The research method used is the Empathy Map method with direct interview techniques with BUMDes and the efforts under them, and refined through the Experimental method to make the application. The results of this study present an online platform called Smart BUMDes which functions as e-collaboration and e-commerce. E-collaboration functions as a forum that facilitates training and business consultation, Controlling, Monitoring and Reporting by related Ministries, Local Governments, Village Governments (BUMDes and businesses under them). E-commerce has a function as a platform for selling local village products and services. From these two functions, it is hoped that they can build the village economy in the new normal era.

Keywords: BUMDes (Village-owned enterprises), Innovation, e-collaboration, e-commerce, management information systems

1. Introduction

Inequality has been a long major troubling issue for the human society, and is a core of academic inquiry in social sciences [1,2]. Differences in the level of economic development between regions will result in imbalances [3,4,5,1]. The differences population concentration between rural and urban area affected rural area become more lag [6,7]. For example, urbanization can increase income inequality because there are a lot of kind jobs with higher wage in urban than in rural [8]. Disparities in development between regions can be gaps in: (a) the capita income, (b) the quality of human resources, (c) the availability of infrastructure such as transportation, energy and telecommunications, (d) social services such as health service, education, etc, and (e) access to banking [9]. These factors that widen the urban-rural disparities resulted the imbalance between urban-rural inequality that stands out in
regional economic development [10,11,12]. This is the case in many developing countries [13,14], including Indonesia [15,16,17]. Economic inequality will increase the poverty rate in the village [18]. This figure is exacerbated again by the COVID-19 pandemic in 2020 [19,20,21]. Previously, the disease COVID-19 appeared in Wuhan-China in December 2019 [22,23,24]. COVID-19 is a disease caused by a highly contagious viral infection and caused the acute respiratory syndrome by coronavirus [25]. Coronavirus is one of the main pathogens that target the human respiratory system [26]. On March 11, 2020, COVID-19 was announced as a global pandemic by the General World Health Organization (WHO), which means that the infectious of coronavirus disease outbreak has spread throughout the world. It is driven by the speed with which we cross country and continent borders, so that it caused an economic crisis everywhere. Hence, the government needs to provide a policy especially in village rebuilding economy. The government must ensure the actions would take is sensitive to the needs of the poor and the most vulnerable people so that handling the impact of the crisis by COVID-19 outbreak is easier to overcome. The analysis of the past outbreaks such as SARS and Ebola shows that poverty has become an important factor in disease transmission [27,28].

According to Ministry of Villages, Disadvantaged Areas, and Transmigration, there is a need for strategic steps in village economic development through increasing the revitalization of Village-Owned Enterprises (BUMDes) [29]. However, the steps taken by the government are still not significant, namely providing numbers in revitalizing BUMDes. Revitalizing businesses that adaptable to the current pandemic conditions, so that the businesses can survive is a good strategy that needed. Modifying (updating) the village economic development program in the new normal era is one of the strategies to accelerate new development during COVID-19 pandemic [30]. Since this pandemic can be transmitted through direct contact [31], there is a need for work facilities that can reduce direct contact between stakeholders which easy to apply. The use of technology is very helpful in the new normal era [32,33,34,35]. In addition, the government and village communities must undertake reforms, especially in utilizing information technology and digitalization in public services [36]. So that researchers use an approach through technology, in order to maximize the role of BUMDes in village economic development. The innovation is called Smart BUMDes with services in the form of e-commerce and e-collaboration.

**Fig 1.** Flow diagram of experimental method

2. **Experimental Method**
   Experiment method is follows (Fig. 1):
   1. Preparation. This stage is the first step to make the possible survey. The location of the survey itself is located at Pesanggrahan, Batu City Government, in BUMDes's Small and Medium
Micro Units (UMKM). Types of data used are primary data (interview) and secondary data (citation). Interviews were done by adjusting the research focal using Empathy Map Theory.

2. Implementation. Problem analysis using Empathy Map Theory and also costuming requirement of BUMDes and UMKM is a first step in this stage. The requirements are divided into two parts; functional requirement and non-functional requirement. Functional requirements contain processes that can be operated by the system and non-functional requirements describe supporting features and tools that will be used for building and developing the system such as XAMPP, Notepad++, codeIgniter platform, bootstrap, and also detail of testing device. Then, the system design will be build using incremental model process. The advantages of incremental process are making development process faster, easier to know if has an addition user’s requirement, and having minimum resource to make changes in software [37]. The implementation of the system is coding in the form of programme codes according from system design. If it was implemented, there will be a Smart BUMDes websites. This application need to be test to know bugs and error in the system and to check all requirements are implemented. Then, the system can be accessed by all BUMDes, UMKM, also Indonesia’s society.

3. Evaluation. Evaluation is conducted to determine the effectiveness of Smart BUMDes application and to ensure that the application is running according to previous planning.

3. Result and Discussion

3.1. BUMDes (Village-Owned Enterprise) Innovation
BUMDes or Village-Owned Enterprises based on Permendes No. 4 of 2015 concerning BUMDes and Law No. 6 of 2014 concerning Villages. Article 87 states that BUMDes are formed based on the spirit of kinship and mutual cooperation to utilize all economic potential, economic institutions, as well as natural potential and human resources in order to improve the welfare of rural communities. BUMDes describes tourism goods and services. In addition, BUMDes collects several types of MSME below such as social business, leasing, intermediaries, trade, financial business, and holding by the kelompok sadar wisata (pokdarwis), goup of people who aware to tourism issue in village. Management of BUMDes is adjusted to local potential, for example at BUMDes in Pesanggrahan Village. Products produced are in the form of milk and hydroponic farming, financial businesses in the form of savings and loans for the community, and natural tourism like coban (waterfall trip), and climbing up the Mt.Panderman.

In 2014 there were 1,022 BUMDes units. This number increased to 18,446 units in 2015 spread across several regions in Indonesia. However, the increase in the number of BUMDes is not accompanied by good management and supervision by the government which has an impact to the product price or services from BUMDes which tend to lack consistency in quality and quantity so that these products or services are less desirable in the market. In addition, there are still many villages which do not have qualified human resources in planning, managing and marketing BUMDes product. Based on these, there are several unproductive areas, for example BUMDes in Batu City. According to Subhan, Head BUMDes Pesanggrahan Village stated that Batu city, because of the many inhibiting factors during the management prose of BUMDes, from 19 villages have BUMDes in Batu City, only few villages considered productive as BUMDes, namely Sidomulyo, Bumiaji, and few Guest Houses in there [38]. This is currently exacerbated by the occurrence of COVID-19 [36].

Smart BUMDes is an e-commerce and e-collaboration platform in building the village economy in the midst of the COVID-19 pandemic (New Normal Era). Electronic commerce is the process of buying and selling goods electronically by consumers and from company to company through computerized business transactions [39]. Businesses have decreased levels based on visits or the presence of consumers in places severely affected by the Covid-19 pandemic, such as public transportation, tourism, hotels, offline retail, shopping centre, transportation of people and goods. Businesses that can adapt to market dynamics is one that can continue to develop, one of them is online business. Interaction adjustments using online application platforms performed with
telecommunications business and online shopping (basic needs and health products) [40], so it is necessary to develop e-commerce services in Smart BUMDes which are needed during the COVID-19 pandemic. Meanwhile, electronic collaboration (e-collaboration) is operationally defined here as collaboration using electronic technologies among different individuals to accomplish a common task [42]. This is a broad definition that encompasses not only computer-mediated collaborative work, but also collaborative work supported by other types of technologies that do not fit most people's definition of a “computer” [41]. Collaboration electronically facilitate stakeholders in accessing BUMDes like BUMDes party provide a report to the Regional Government of Batu City through its Community Empowerment, Women and Family Planning, the regional Government can provide BUMDes data in Batu City, and the Central Government through the Ministry of Villages, Disadvantaged Areas and Transmigration monitoring the implementation of Smart BUMDes. Each stakeholder can monitor and control any development data from BUMDes every day without meeting in person. In addition, Smart BUMDes can serve as a training facility and provide information from the government to BUMDes. So, through this application, Information and Communication Technology (ICT) can be used to support user groups [43].

From e-commerce innovation and e-collaboration, there is interaction between stakeholders in it. Various innovations can be applied to various forms of business interaction. Interactions in the business can be in the form of a B2B (Business to Business) model where business transactions occur between business and other business people. B2C (Business to Consumer) business carried out by producers to consumers directly, C2C (Consumer to Consumer) business interactions carried out by individuals (consumers) to other individuals (consumers), C2B (Consumer to Business) is a business model where consumers (individuals) create and shape value for business processes, B2G (Business to Government) this process occurs between business people and government agencies, G2C (Government to Consumer) is an interaction between the government and the public as consumers [44]. In addition, there are G2G (Government to Government) or government with Government, the interactions are tailored to the needs [45].

3.2. Empathy Map
Anyone who studies the business model should be able to parse the profile of the intended customer segment. A good way to start is to use the empathy map, a thought tool that helps us walk beyond customer demographic characteristics and develop a better understanding of the environment, behaviour, concerns and aspirations. With this tool we can find a stronger business model because customer profiles guide the design of better value propositions, a more convenient way to reach customers, and better customer relationships. Map empathy is a visual aid developed by visual thinking company called XPLANE. This one-page visual tool consists of six boxes of questions that enable the company to better understand what customers really want [46]. Anyone who studies the business model needs to be able to parse the profile of the intended customer segment. Empathy Map could help as a thought tool that helps us walk beyond customer demographic characteristics and develop a better understanding of the environment, behaviour, concerns and aspirations. With this application we can find a stronger business model because of customer profiles guide the design of better value propositions, a more convenient way to reach customers, and better customer relationships. Map empathy is a visual aid developed by visual thinking company called XPLANE. This one-page visual tool consists of six boxes of questions that enable the company to better understand what customers really want [46].

From the results of field study using Empathy Map in table 1, it can be concluded that some of the needs of BUMDes Management are as follows:

1. Needed innovation related to e-collaboration development in the form of facilities connecting Government with BUMDes in every village in Indonesia, so that government can monitor the productivity. It is important to do collaboration within the scope of government [47,48,49,50], because BUMDes is a business sector program within the government [51,52].

Based on research conducted [53], [54], [55], it is revealed that the importance of
collaboration between the central government, local government, village government and BUMDes. To maximize this e-collaboration, it is needed to make it easier between stakeholders in one application to anticipating the possibility if the collaboration is more likely competition in the future, because it is seen as less likely, where financial constraints tend to increase rather than reduce competitive pressure [56].

2. Currently, Generations X and Y have access to buy and to sell through the marketplace (e-commerce) on smartphones because it is more reliable, effective and efficient in the use of time, effort, and price. From previous research, the majority of generation Z teenager chose the online marketplace site as their shopping choice. The online marketplace presents information on service quality, benefits, offered, and a positive reputation on the site [57]. Even consumers can easily get product quality and price feasibility according to taste and costs so as to encourage repurchase [58,59].

3. The need for business consulting facilities by experts on product training such as Packaging of product, business finance, strategic market etc. This facility is indispensable for units under BUMDes such as Micro-Small and Medium Units. In previous research [60, 61], BUMDes has certain limitations and weaknesses in its management process so that monitoring and assistance is needed for improvement. These can be obtained from academics, government, and business [62, 63], and can be pursued by the government as a business management facilitator in BUMDes.

3.3. Operation of Smart BUMDes
BUMDes located in every sub-region or village in Indonesia. The purpose of BUMDes is to facilitate the society to improve or build a business through BUMDes unit, supervise performance of BUMDes units, and provide a consultation center and training about BUMDes. The community must register to BUMDes in order to join BUMDes unit, then BUMDes will verify if its eligibility. If it is accepted then BUMDes unit can be operated. BUMDes can monitor BUMDes units progress through result of transaction history in every single BUMDes units. Requirements Analysis and System Design from BUMDes operational data can be arranged functional system requirement as follow:

1. The system provides view function of BUMDes units information for visitor
2. The system provides educative BUMDes videos function for visitor
3. The system provides register customer account function for visitor
4. The system provides register BUMDes unit account function for visitor
5. The system provides view function of transaction status for customer and BUMDes unit
6. The system provides update function of transaction status for costumer and BUMDes unit
7. The system provides update function of service or product information for BUMDes unit
8. The system provides update function to confirm registered visitor for BUMDes
9. The system provides buy function of product or service in BUMDes unit for customer
10. The system provides update information function of BUMDes unit for BUMDes
11. The system provides delete function of BUMDes unit for BUMDes
12. The system provides add function of BUMDes unit for BUMDes
13. The system provides add function of educative BUMDes video collection for BUMDes
14. The system provides delete function of educative BUMDes video collection for BUMDes
15. The system provides detail profit result function of BUMDes unit for BUMDes
16. The system provides update function of profile for customer
17. The system provides list of view BUMDes unit BUMDes based on categories (product or service, city, sub-region or village)
18. The system provides detail order function for customer
19. The system provides view function of transaction history for BUMDes, BUMDes unit and customer
20. The system provides login function for visitor
21. The system provides logout function for costumer, BUMDes, dan BUMDes unit
| Questions | The needs of BUMDes |
|-----------|---------------------|
| What did he see? See Describe what customers see in the environment. | 1. Competition of products from domestic and abroad in large scale. |
| - What does it look like? | 2. Products from small and medium micro units of BUMDes are still constrained on the consistency of quality and quantity. |
| - Who surrounds it? | 3. The community is less actively participating |
| - Who are his friends? | 4. The problems faced by BUMDes are generally the same in the management of human resources and marketing and the lack of government and media participation. |
| - What's the problem? | |
| What did he hear? Hear Describe how the environment affects customers | 1. Products produced less able to compete with medium and large industrial products. |
| - What did his friends say? The couple? | 2. Lack of local and national media participation in "Branding" products produced by BUMDes units. |
| - Which media channels have an effect? | 3. Platforms such as Tokobagus.com, OLX.com, etc. as a product marketplace cannot be entered by the micro small unit product of BUMDes |
| - Who influenced him and how? | 4. Influential media in Indonesia is a medium that is managed privately and is currently being intensively-incessant marketing through social media such as Instagram, Line, Youtube etc. |
| What does it say and do? Say and Do | 5. Generations X and Y already use smartphones and supported internet channels to the village by the government. |
| - What's his biggest frustration? | 6. Marketplace has been widely used by the public society. |
| - What are the risks he fears? | |
| What kind of hurt does the customer feel? Pain | 1. Reporting the results of BUMDes to the village authorities completed reporting on accountability for a month. |
| - What does he really want to achieve? | 2. Central Government (Ministry of Village) get data BUMDes results for a year due to the length of process of bottom-up procedural. |
| - How does he measure success? | 3. Limited human resources professionals in managing units under BUMDes |
| | 4. Inadequate planning in taking into account organizational strategy. |
| | 5. Productivity every year is reduced. |
| | 6. People are less interested in Tourism Services provided. |
| What are customer acquisitions? Gain | 1. Lack of government expenses because the government does not have media / facilities to accommodate or collect BUMDes so that the Government does not have data related to the development of BUMDes. |
| | 2. Potential Villages like in Pesanggrahan as an example; milk, has been taken over by large companies that result in the inclusion of a few breeders. This potential will be taken over and managed by BUMDes to increase revenue |
| | 3. Products and services can be recognized locally or nationally. |
| | 4. Increased productivity in the management and marketing of Products and services produced by Units of BUMDes. |
Fig 2. Use case diagram of Smart BUMDes System workflow

Here is the steps of management information system on Smart BUMDes in general (Fig. 2):

1. Requirements:
   a. Customer, BUMDes Unit Administrator, BUMDes Administrator and visitor must have a mobile device or computer and have good internet connection
   b. Customer, BUMDes Unit Administrator, BUMDes Administrator and visitor must have a good internet connection.

2. Case 1:
   a. Visitor chooses a city and/or sub-region of BUMDes Unit place
   b. Visitor picks up a product or service
   c. Visitor becomes a costumer by register as costumer and login to system
   d. Costumer fills details of order and payment option and click submit
   e. BUMDes Unit gets notification about new order from costumer
   f. BUMDes Unit confirm an acceptance of costumer order
   g. Costumer gets notification and pay of billing order and update payment status in system
   h. BUMDes Unit gets notification and check the costumer payment, if it has paid then BUMDes Unit update status of order as in progress
   i. BUMDes Unit sends costumer order (in case it is product) or give an invoice (in case it is service)
j. Customer gets a product or an invoice
k. BUMDes Unit changes order status as complete and it becomes a transaction history

3. Case 2:
   a. Customer come directly to BUMDes Unit
   b. BUMDes Unit inputs customer information and order data into database on the computer

3.4. Advantages and long-term benefits

Table 2 shows the advantages and long term benefits of Smart BUMDes and figure 3 shows the basic view of Smart BUMDes homepage. In the figure 4, we notice several things:

(a). Initial logo display of Smart BUMDes
(b). Display selects login or list menu
(c). Display of Log in for digital access
(d). Display of Sign up with email or phone number (complete your registration)
(e). The first home page of Smart BUMDes
(f). Product selection list view
(g). Selection of product and product quantity
(h). The total price of the product purchased
(i). The total price of the product purchased + Shipping Charges

| Objects     | Advantages of Smart BUMDes                                                                 | Long Term Benefits                                                                 |
|-------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| BUMDes      | Can review progress of each BUMDes unit based on transaction history through application of management system | Each BUMDes unit can be controlled, so it can continue to evaluate                   |
| BUMDes Units| Can register with paperless document process                                                | Time efficiency related to information delivery and administration                  |
|             | Can receive a customer order information faster and provide customer order information progress directly through the system | Time efficiency related to information delivery and flexibility over time             |
| Customer    | Choose a product or service and can order directly through the system                      | Save cost, time and effort in ordering product or service                            |
|             | Can receive reporting information of order through the website system                      | Time efficiency related to information delivery and flexibility over time             |
| Visitor     | Can know any information accessed through the website system                               | Time efficiency related to information delivery                                    |
| Government  | Be able to know the BUMDes development (good / bad) at any time by only through the application and provide immediate action when BUMDes is seen that is not growing properly. | Easier for the Government to monitor and control the BUMDes situation at any time. Efektive and efficient in the use of budget, time and energy. |
|             | Can provide training online.                                                               | More knowledge to develop BUMDes.                                                  |
Fig 3. Basic View of Smart BUMDes Homepage

Fig 4. Display of Smart BUMDes in Smartphone
3.5. Village Economic Development in New Normal Era

The main problems of rural communities are poverty and underdevelopment [64,65,66,67,68]. On this basis, village economic development is needed which is hoped to be able to overcome various problems that occur in rural areas. The objective of the implementation of village economic development is to create an area where people can enjoy a creative, healthy life, and have a high life expectancy[69]. In order to achieve this, there will be several principles for village economic development that must be implemented [69], namely: 1) Transparency. Opennes is needed in Smart BUMDes. The Government and BUMDes must have information disclosure so that both parties can know each other whether or not the business processes that are taking in BUMDes are running; 2) Participation. The active participation of BUMDes (include BUMDes unit) and the people community (visitor dan customer) to run the Smart BUMDes program, so that the desired business goals can be achieved inside and outside the village [70] so that e-commerce can really be useful in maximizing sales of local products [71]; 3) Accountkuntabel. The planning, implementation, and evaluation processes that are carried out must be minimized so that business processes can run optimally; 4) Can be enjoyed by all people. Smart BUMDes facilitates the sale of BUMDes Unit products in the village that can be accessed by every community so as to create a broad trade market.; and 5) Sustainable. The contribution of the BUMDes existence in strengthening the village economy includes sources of funds for increasing village income, meeting community needs, and developing village independently [72, 73]. Smart BUMDes is designed to run continuously and sustainably with the inclusion of Information Communication and Technology (ICT) principles in the form of applications which is a way for BUMDes to adapt well to the times so that, the improvement of the welfare of rural communities can be permanent. In addition, the application of information technology can also make it easier for BUMDes user to manage their business [74]. One of the ways to develop rural economy in the new normal era can be done through Smart BUMDes wich allows everyone to make transactions without face to face. Through e-collaboration and e-commerce, the Smart BUMDes application can support the strengthening of village economy during and after the new normal era.

4. Conclusion

Smart BUMDes (Village-owned enterprises) is one of the opportunities to village economic development solution in New Normal Era, based on Permendes no 4 of 2015 on BUMDes and Law No. 6 of 2014 on villages. Broadly speaking, BUMDes produces tourism goods and services. Starting in 2017, Village Owned Enterprises (BUM Desa / BUMDes) become one of the priority programs of the Ministry of Village, Disadvantaged Area Development and Transmigration (Kemendes). Through BUMDes, villagers are encouraged to manage the economy autonomously. However, BUMDes products tend to lack the consistency of quality and quantity so that the products or services are less desirable in the market than there are still many villages that do not have the qualified human resources in planning, managing and marketing the products in managing BUMDes. Smart BUMDes which is a marketplace (e-commerce) platform in BUMDes products and e-collaboration services is also aimed at facilitating product design and consultation training to determine BUMDes business by expert teams and other potential village promotion. In other words, Smart BUMDes can create BUMDes Holding to integrate data to the Ministry of Village so that the government can control the development of BUMDes. In developing this system, this idea requires advanced refinement so that the results are as expected.

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References
[1] Liao F H and Wei Y D 2016 Sixty years of regional inequality in China: trends, scales and mechanisms working Paper Series N 202 (Santiago, Chile: Rimisp)
[2] Stiglitz J 2009 The global crisis, social protection and jobs Int. Labor Review 148 pp 1–2
[3] UNESCO 1980 *Regional Disparities in Educational Development: A Controversial Issue* (Paris: United Nation Press)

[4] Kutscherauer A 2010 *Regional Disparities in Regional Development of The Czech Republic: Their Occurrence, Identification and Elimination* (Ostrava: VŠB-Technical University of Ostrava)

[5] Wang Z 2015 The imbalance in regional economic development in China and its reasons *Private Sector Development and Urbanization in China* (New York: Palgrave Macmillan) DOI: 10.1007/978-1-137-47327-1_4

[6] Avtar R, Tripathi S, Aggarwal A K and Kumar P 2019 Population – urbanization – energy *Nexus: A Review J. of Resources* **8**(3) 136

[7] Zhou Y, Kong Y, Wang H and Luo F 2020 The impact of population urbanization lag on eco-efficiency: A panel quantile approach *J. of Cleaner Production* vol **244** DOI: 10.1016/j.jclepro.2019.118664

[8] Ha N M, Le N D, and Trung-Kien P 2019 The Impact of urbanization on income inequality: a study in Vietnam *J. of Risk and Financial Management* vol **12** 146 DOI: 10.3390/jrfm12030146

[9] Daryanto A 2004 Competitiveness advantages and superior commodity identification techniques in developing regional economic potential *Agrimedia* vol **9** no 2

[10] Wilonoyudho S, Rijanta R, Keban Y T and Setiawan B 2017 Urbanization and regional imbalances in Indonesia *Indonesian J. of Geography* vol **49** no 2

[11] Imai K S and Malae B 2018 Asia's rural-urban disparity in the context of growing inequality 27 *IFAD Research series*

[12] Cao T C V and Akita T 2008 Urban and rural dimensions of income inequality in Vietnam *GSIR Working Papers: Economic Development and Policy Series*

[13] Ran M, Chen L and Li W 2020 Financial deepening, spatial spillover, and urban – rural income disparity: evidence from China *Sustainability J.* vol **12** 1450 DOI: 10.3390/su12041450

[14] Anríquez G and Stamoulis K 2007 Rural development and poverty reduction: is agriculture still the key? *electronic J. of Agricultural and Development Economics* vol **4** no 1 pp 5–46

[15] Siswanto V K, Rotra 2019 Rural urban disparity in and around Surabaya Region, Indonesia *Sci. and Technol., The J. for Technol. and Sci.* vol **25** no 2

[16] Laksono A D, Wulandari R D and Soedirham O 2019 Urban and rural disparities in hospital utilization among Indonesian adults *Iran J. Public Health* vol **48** no 2 pp 247–25

[17] Akita T and Pirmansah A 2011 Urban Inequality in Indonesia *IUJ Research Institute: Economics and Management Series*

[18] Syawie M 2011 Poverty and Social Inequality *J. of Information* vol **16** no 03

[19] Daryanto A 2004 Competitiveness advantages and superior commodity identification techniques in developing regional economic potential *Agrimedia* vol **9** no 2

[20] Wilonoyudho S, Rijanta R, Keban Y T and Setiawan B 2017 Urbanization and regional imbalances in Indonesia *Indonesian J. of Geography* vol **49** no 2

[21] Imai K S and Malae B 2018 Asia's rural-urban disparity in the context of growing inequality 27 *IFAD Research series*

[22] Cao T C V and Akita T 2008 Urban and rural dimensions of income inequality in Vietnam *GSIR Working Papers: Economic Development and Policy Series*

[23] Han J H, Meyer B D and Sullivan J X 2020 Income and poverty in the COVID-19 pandemic *BPEA Conf. Drafts*

[24] Epidemiology Working Group 2020 The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China *Chin. J. Epidemiol.* vol **2** pp 145–51

[25] Huang W H et al 2019 novel coronavirus disease (COVID-19) in Taiwan: reports of two cases from Wuhan, China *J. of Microbiology, Immunology and Infection* vol **83** issue 3 pp 217–20

[26] Rothan H A and Byrareddy S N 2020 The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak *J. of Autoimmune* **109** Doi: 10.1016/j.jaut.2020.102433
[27] Fallah M P et al 2015 Quantifying poverty as a driver of ebola transmission PLoS Neglected Tropical Diseases 9(12) e0004260
[28] Bucchianeri G W 2010 Is SARS a poor man's disease? Socioeconomic status and risk factors for SARS transmission Forum for Health Economics & Policy 13(2) DOI: http://dx.doi.org/10.2202/1558-9544.9544.1209
[29] Ministry of Villages. Disadvantaged Regions, and Transmigration 2020 Revitalization of BUMDes Ministry of Health Provides Registration Number Retrieved on 28 March 2020 from https://kemendesa.go.id/berita/view/detil/3339/revitalization-bumdes-kemendes
[30] Muhiddin 2020 Covid-19, new normal and development planning in Indonesia The Indonesian J. of Development Planning vol IV no 2
[31] WHO 2020 Clinical Management of Severe Acute Respiratory Infection When Novel Coronavirus (2019-nCoV) Infection is Suspected: Interim Guidance 2020 Retrieved on 28 March 2020 from https://apps.who.int/iris/bitstream/handle/10665/330854/WHO-nCoV-Clinical-2020
[32] Azzahra N F 2020 Assessing barriers to distance learning in Indonesia during the Covid-19 pandemic Policy Brief no 2 (Jakarta: CIPS)
[33] Herliandry L D, Nurhasanah, Suban M E and Kuswanto H 2020 Lessons during the Covid-19 pandemic J. of Educational Technol. vol 22 no 1
[34] Pakpahan R and Fitriani Y 2020 Analysis of the use of information technology in distance learning amid the corona COVID-19 virus pandemic J. of Information Systems, Applied, Management, Accounting and Research vol 4 no 2 pp 30–6
[35] Sampurno M B, Kusumandyoko T C and Islam M A 2020 Social media culture, public education and the COVID-19 pandemic J. of Syar'i Social & Culture (Jakarta: FSH UIN Syarif Hidayatullah) vol 7 no 6 pp 529–42 DOI: 10.15408/sjsbs.v7i3.15210
[36] FES Indonesia 2020 Village Resilience during the Covid-19 Pandemic: Overcoming Problems and Seeking Opportunities Retrieved on from March 2020 from https://www.fes-indonesia.org/id/news-events-publications-detail/ketahanan-desa-dalam-masa-pandemi-covid-19-menglasi-masalah-dan-mencari-peluang/
[37] Sommerville I 2011 Rekayasa Perangkat Lunak (Jakarta: Erlangga)
[38] Laudon K C and Laudon J P 1998 Management Information Systems: New Approaches to Organization & Technology 5th edition (New Jersey: Prentice Hall)
[39] Osterwalder A dan Yves P 2012 Business Model (Jakarta : Elex Media Komputindo)
[40] Wanna J 2008 Collaborative Government: Meanings, Dimensions, Drives and Outcomes (Australia: ANU Press)
[41] Zadek S 2006 The Logic of Collaborative Governance: Corporate Responsibility, Accountability, and the Social Contract Working Paper No 14 Harvard University
Miles E and Trott W 2011 Collaborative Working (London: Institute for Government Press)

Sorensen E and Torfing J 2012 Introduction Collaborative Innovation in the Public Sector The Innovation J.: The Public Sector Innovation J. vol 17 no 1 pp 1–14

Prasetyo R A 2016 Peranan Bumdes dalam pembangunan dan pemberdayaan masyarakat di Desa Pejambon Kecamatan Sumberrejo Kabupaten Bojonegoro Jurnal Dialetikta vol 11 no 1

Chintary V Q and Lestari A W 2016 The Role of village government in managing village-owned enterprises Jurnal Ilmu Sosial dan Ilmu Politik vol 5 no 2

Efendi A 2019 The Role of Village Governments in Community Empowerment through the Village-Owned Enterprise Program (BUMDes) in Bandar Sono Village Nibung Hangus, Batu Bara Regency Thesis (Medan: Fakultas Dakwah dan Komunikasi, Universitas Islam Negeri of North Sumatera)

Suman A P, Ronny E N, Amalia S K, Hardanto H, Rusmalina K, Candra A and Amir F 2019 Local Economic: Empowerment and Collaboration (Malang: UB Press)

Suryati A and Nazaki 2019 Collaborative Governance in Management of Bumdes in South Toapaya Village, Toapaya, Bintan Regency in 2018 Thesis (Tanjung Pinang: Universitas Maritim Raja Ali Haji) Retrieved from http://repository.umrah.ac.id/3715/

Lacomba J A, Lagos F and Neugebauer T 2011 Who makes the pie bigger? An experimental study on co-opetition New Zealand Economic Papers vol 45 no 1–2 pp 59–68

Prayekti A R 2018 Perceptions of Generation Z Youth in Surabaya on Brand Preference on Bukalapak's Online Marketplace Site Thesis (Surabaya: Universitas Airlangga)

Palma M A and Andjarwati A L 2016 The Influence of Product Quality, Convenience, and Price on Repurchase Intention with Satisfaction as an Intervening Variable (Study on Customers of Fashion Products through Online Stores in Surabaya) J. of Research in Economics And Management vol 16 no 1 pp 84–104

Tanwijaya P M 2017 Comparison of the Effect of Perceptions of the Attributes of the Online Shop Tokopedia and Bukalapak on Repurchase Intention Among Millennials Thesis (Bandung: Universitas Katolik Parahyangan)

Zulkarnaen R M 2016 Development of village economic potential through village-owned enterprises (Bumdes) Pondok Salam, Purwakarta Regency Dharmakarya: Jurnal Aplikasi Ipteks untuk Masyarakat vol 5 no 1 pp 1-4

Junaidi 2020 Assistance in the management and compilation of financial statements at Ladongi Village-Owned enterprises (Bumdes), Malangke, North Luwu Regency RESONA: Jurnal Ilmiah Pengabdian Masyarakat vol 4 no 1 DOI: 10.35906/resona.v4i1.286

Hidayat A T, Pujianti L, Hidyati N, Hendrawan S A, Suprapto S and Nurali 2018 Assistance in the preparation of financial Statements at Village-Owned enterprises (Bumdes) Lestari in Bandung Village, Diwek, Jombang Comvice: J. of Community Service vol 2 no 1 pp 16–20

Triaryanti I M 2019 Collaborative Governance in the Management of Bumdes in the Tourism Village of Pujon Kidul, Pujon, Malang Regency Thesis (Surabaya: Universitas Airlangga)

Suryahadi A, Isdijoso W, Nurbani R I, Yumna A, Izzati R A and Warda N 2018 Dynamics of Inequality in Rural Indonesia Retrieved on 11 September 2020 from https://smeru.or.id/id/content/dinamika-ketimpangan-di-perdesaan-indonesia

Abidin E E and Amruddin A 2020 Inequality of development in West Sulawesi Jurnal Arajang 3(1) pp 1–17 DOI: 10.31605/arajang.v3i1.582

Agusta I 2014 Regional Inequality and Prevention Policies in Indonesia: A Study of Strategic, Historical, and Paradigmatic Issues since Pre-Colonial (Jakarta: Yayasan Obor Indonesia)

Djese T S 2016 Looking at East Nusa Tenggara measuring problems, offering solutions Masyarakat Indonesia 4(2) pp 277–88

Fauzi M R, Rustiadi E and Mutalib S 2019 Inequality, spatial patterns, and regional development performance in East Java Province Jurnal Perencanaan Pembangunan Wilayah
Suleman A R et al 2020 BUMDES Towards Optimization of Village Economy (Medan: Yayasan Kita Menulis)

Sanjaya P K A, Hartati N P S and Premayani N W W 2020 Empowerment of village owned enterprise managers (BUMDes) berdikari through digital marketing system implementation CARADDE: Jurnal Pengabdian Kepada Masyarakat vol 3 no 1

Setioningtyas W P, Dwiarta I M B and Waryanto R B D 2020 Utilization of multimedia as a media for promoting tourism destinations and souvenir products for tourism villages in Kebonunggul Village, Gondang, Mojokerto Regency Ekobis Abdimas vol 1 no 1

Agunggunanto E Y, Arianti F, Kushartono E W and Darwanto D 2016 Development of independent village through management of Village-Owned Enterprises (BUMDES) Jurnal Dinamika Ekonomi dan Bisnis vol 13 no 1

Ramadana C B 2013 The existence of Village-Owned Enterprises (Bumdes) to strengthen the village economy Jurnal Administrasi Publik vol 1 no 6

Hasanah U 2018 Applications for Borrowing Bumdes, Poto Village, Moyo Hilir Sub-district based on WEB Thesis (Sumbawa: Universitas Teknologi Sumbawa)