Society 5.0: Optimization of Socio-Technical System in Poverty Reduction

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Abstract. The purpose of this study is to design a digital platform design as one solution to solving poverty problems that exist in the community with various causes. Poverty is a complex problem caused by multidimensionality. The cause of poverty is not only a problem of economic inequality but also caused by social problems, education, and lack of access to communicate or communication. The methodology used in this research is Sociotechnical System (STS), STS analysis used six attributes, namely goals, people, buildings/infrastructure, technology, culture, and processes/procedures. This approach (STS) analyzes approaches based on social problems and technical problems. The final results of this study created a digital platform design as a public space to capture community participation in order to care and want to share with poor communities in the form of entrepreneurship training groups (UKM). This technology becomes a tool to help in educating society, not a rival of the community in accordance with the principles of society 5.0.

1. Introduction
Poverty is a complex classical problem and almost exists in every country, especially developing countries such as Indonesia [1]. Poverty is a social problem that has a multidimensional impact [2]. So the solution to overcome poverty must be done holistically. The government has tried to hold various poverty alleviation programs [3], but unfortunately, it has not be able to answer that problem. Because programs provided by the government are temporary in the form of providing assistance without seeing the wishes and potential of the community, thus encouraging the poor to be passive [4]. Table 1 shows the poor population in Indonesia based on the census of the Central Bureau of Statistics (BPS) in 2018 for the last ten years [5]. Data from 2010 to 2018, when viewed from the reduction in poverty rates, compared to the previous year, the reduction was not significant. For example, in 2010 the poverty rate was 31,020,000 people, in 2011 the poverty rate fell to 30,010,000 people, there was a reduction of 1,010,000 people. If this number is observed until 2018, a reduction in poverty levels tends to stagnate at one million. By looking at Table 1 below, it means that poverty alleviation requires broader community assistance.
Table 1. Profile of Poverty in Indonesia in March 2018

| Year | Percentage | Total population (million) | Reduction with the previous year |
|------|------------|---------------------------|----------------------------------|
| 2010 | 13.33      | 31.02                     | 1.51                             |
| 2011 | 12.06      | 30.01                     | 1.01                             |
| 2012 | 11.66      | 28.71                     | 1.03                             |
| 2013 | 11.46      | 28.60                     | 0.11                             |
| 2014 | 10.96      | 27.73                     | 0.87                             |
| 2015 | 11.13      | 28.51                     | -0.78                            |
| 2016 | 10.70      | 27.76                     | 0.75                             |
| 2017 | 10.12      | 26.58                     | 1.18                             |
| 2018 | 9.82       | 25.95                     | 0.63                             |

The approach to eradicating poverty requires an approach from two sides, namely the technical and social side [6] because the problem of poverty will not be solved if the source of the real problem is unknown (social). [7] This method of approach is called the Social-Technical System. The Social-Technical System (STS) is a system that combines interaction between humans (social) and technology [8]. The Social-Technical System Perspective would break the problem of poverty into several parts and then in this study, realization is implemented on a digital platform [9].

The use of Communication, Information Technology (ICT), in the form of a digital platform that is used as a solution to overcome poverty, is a smart pattern of society. Technological advances are not only limited to organizations but are further used to help the welfare of human life, in accordance with the concept of society 5.0 which is driven by the Japanese state [6]. The community concept was proposed by the Cabinet’s decision in January 2016 (HTTP://Japan Business Federation) is a concept developed by the Japanese Government. ([www8.cao.go.jp/ Pstc / English / basic / 5thbasicplan.pdf]).

The concept of Society 5.0 is to create a human-centered society by combining the potential of human relations with technology [10]. In addition with the hope of achieving a high quality of life to be active and comfortable. The creation of a smart community that can meet various needs, regardless of region, age, gender, language, etc. This combination is expected to be able to create a new society capable of solving various social problems based on quality data (IoT, AI, Big Data) so that new values and solutions are created to solve life problems in society. Platform Based Poverty Alleviation is an effort made to help the government by encouraging cooperation and active role of the community through online interaction using internet media. [11] Research that examines poverty reduction with digital platform solutions, entrepreneurship, socio-technical systems and society, among others. Sutikno et al., 2010, Selection of the Poverty Alleviation Program through the Development of a Community Empowerment Model with a Systems Approach. [12] Anton Susanto, 2016, Analysis of the Condition of Digital Poverty in Indonesia, [13]. Xiao Wang, 2016, ACP-based social computing and parallel intelligence: Societies 5.0 and beyond [14].

The purpose of this study is to design a digital platform in tackling poverty through entrepreneurship training that is assisted by the active role of the community. So that the role of technology can be optimized into the needs of the community, to educate the community in accordance with the spirit of society 5.0.

2. Method

The use of STS can recognize patterns, where technology is used and produced. Identifying this pattern will help in analyzing ethical issues related to technology and social systems. The socio-technical system refers to a complex system that combines social and technical components that are interrelated and mutually influential as shown in Figure 1 below. This method of research used a deductive method [15]. Literature exploration methods with the results of data obtained from books, research results, and journals related to social entrepreneurship (SMEs) in poverty alleviation. This analysis used a socio-technical system perspective, which is used to identify the causes of poverty (Figure 1). According to the social-technical system perspective, the causes of poverty are explained in the six components of
the social-technical system. That is: Target, Process, People, Infrastructure, Culture and Technology. The six components can be seen in Figure 1, then decomposed into risk attributes.

Figure 1. Decomposition of socio-technical system perspectives

These attributes are identified through the results of the literature study. The notation in Figure 1 is used to model the causes and solutions of poverty reduction with the following attributes: GL1, GL2, GLN: Goals or objectives to be achieved in poverty reduction, PL, PL2, PLN: People or participants who attend training / workshops, BL1, BL2, BLN: Infrastructure or facilities needed in the poverty reduction process, TL1, TL2, TLN: Technology, namely equipment used, CL1, CL2, CLN: Culture, namely the behavior culture of participants to be built, PP1, PP2, PPN: Processes or procedures that affect poverty reduction.

3. Results and Discussion
Six perspectives from Socio-technical systems are analysis tools for poverty problems that are common in Indonesia. So as to facilitate parsing to help solve problems. Risk identification includes internal and external problems (beyond platform reach), such as Figure 2 below:
Figure 2. Attributes of risk causes for STS perspective poverty

Figure 2 shows an analysis of the causes of poverty outlined in six perspectives which are:

1. **Goal**: poverty is generally caused by unemployment, limited field, limited capital and natural resources.

2. **People**: individually driven also by a low level of education, lack of skill and laziness in work.

3. **Buildings / Infrastructure**: limited access to education, communication, transportation, energy and development that have not been evenly distributed to the regions.

4. **Technology**: there are still many people who are clouded about using gadgets as one of the tools for entrepreneurship, limited information and technology.

5. **Culture**: changes in social behavior, family and tend to be independent.

6. **Process/procedure**: government policy not many sides to SMEs, and new poverty reduction programs are limited to consumptive assistance, not to working capital.

With the concept of a socio-technical system approach which will later be applied in the form of a digital platform to overcome poverty, a solution is obtained. As indicated by Figure 3.
Poverty reduction by using the sociotechnical system approach with entrepreneurial solutions (SMEs) obtained optimal results without disregarding the role of regulation from the government as an external digital platform element. The solutions provided include solutions that can be handled by the platform, solutions that have to go outside the platform (external). The solution that can be answered by the platform is the Goal: the availability of community communities in public spaces that are active in creating new entrepreneurs (SMEs). People: the active role of the community consists of 2 large groups, namely training/workshop participants, namely individuals who do not have the skills and business of SMEs and community groups that have skills and business (SMEs) but have not been able to manage their UKM well. As well as groups that are all complete, they will later become resource persons. Technology: making platforms as a medium for gathering and communicating in cyberspace between potential entrepreneurs, entrepreneurs, financiers, educators and society in general. Process / Procedure: user guide how to use the platform. External factors that cannot be done by the platform are Buildings / Infrastructure: building education, communication, transportation, energy services. Culture: rebuilding public trust in local wisdom values, promoting agricultural entrepreneurship that has been largely abandoned, building a creative economy in the countryside. Process / Procedure: the central/regional governments make policies that help and involve SMEs more so that entrepreneurs can provide capital to SMEs taken from CSR funds.

4. Conclusion
The concept of the Sociotechnical system approach to tackling poverty with entrepreneurial solutions (SMEs) and technically being implemented using digital platforms is the optimal solution. Because it has answered all the elements of the problem both technically and socially. So that this digital platform becomes a tool for the community at large to be able to contribute to each other in tackling poverty. Become a smart community group in using technology in accordance with the spirit of society 5.0.

Figure 3. STS perspective poverty alleviation solution
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