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Smart Village Implementation Concept for Community Empowerment in Tourism Villages in the Lake Toba Region

Posma Sariguna Johnson Kennedy[1], Suzanna Josephine L. Tobing[2], Rutman L. Toruan[3], Ricky Martin Manullang[4]
Universitas Kristen Indonesia, Jakarta [1,2,3,4]

Abstract: *A Smart village is an adopted or derivative concept of a smart city. Smart villages are villages that can manage their assets to provide added value by utilizing networks and technology to benefit the population. This study explains how smart villages develop tourist villages based on village traditions and local potential. The research method used is qualitative. The study was conducted through a literature review and discussions with various resource persons related to the research. The government and the people of Lake Toba have begun to improve themselves for the implementation of smart city villages with the government's guidance to ensure that the master plan can be well structured. This smart village program is still in its early stages, so the smart village model in tourism village development has not been implemented optimally. It realizes the smart village program in the Lake Toba area, and it is necessary to have an active role from all parties to support Lake Toba as a tourist destination known by national and international tourists.*

Keywords: *Smart Village, Community Empowerment, Tourism Village, Tourism Area, Lake Toba.*

Introduction

Damar in Investor (2021) stated *Information communication technology* (ICT) has an important role in the progress of tourism in Indonesia. ICT infrastructure development has become necessary to reach the frontier, remote, and underdeveloped areas. With ICT, the development of *smart cities* and smart tourism is *possible*. A place can suddenly be flooded with visitors because of uploads on Instagram, showing the importance of the role of ICT. Digitalization is also important in boosting the regional economy through smart cities. Among others, through the implementation of *QRIS* for *contactless payments, e-MSMEs, e-tourism, and e-farmers.*

Village development through innovative village programs initiates the emergence of a village development model based on the *smart village concept*. The term *smart village* has begun to be used by several villages in Indonesia. The term *smart village* is translated as a "smart" village. The term " *smart* " is used to fight the village stigma, such as the village being considered uneducated, backward, poor, outdated, and so on. Currently, villages are considered capable of intelligently developing their communities. This study on *smart villages* is a new study that enriches studies on villages, especially studies on village innovation. In

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addition, there are still many *gaps* between conceptual and theoretical studies on *smart villages* and their implementation in Indonesia. (Subekti & Damayanti, 2019)

A Smart village is an adopted or derivative concept of a *smart city*. The only difference lies in the location of its application. If the *smart city* is implemented at the city level, then the *smart village* is implemented at the village level. *A smart city* itself is defined as a smart city. *Smart City* is the development of the concept, implementation, and implementation of technology applied to an area (especially urban areas) as a complex interaction between its various systems (Wijaya, 2015). In principle, *smart cities* are present to answer various challenges in the urban environment, such as congestion problems, slum environmental problems, sanitation, global warming, environmental pollution, and other typical urban problems. So then, what can be said as a smart city is a city that has dimensions: *smart economy, smart people, smart government, smart energy, smart mobility, smart environment, and smart living* (Pratama, 2014). (Subekti & Damayanti, 2019)

In Indonesia, so far, no city has really implemented a full *smart city.* The movement towards *smart cities* in Indonesia is devoted to 70 cities/regencies in 10 KPPNs and the New State Capital area, namely Mandalika (West Nusa Tenggara), Morotai Island (North Maluku), Tanjung Kelayang (Bangka Belitung Islands), Lake Toba (North Maluku). North Sumatra), Wakatobi (Southeast Sulawesi), Borobudur (Central Java), Thousand Islands (DKI Jakarta), Tanjung Lesung (Banten), Bromo (East Java), and Labuan Bajo (East Nusa Tenggara). Lake Toba is designated by the government as one of the priority tourism areas supported by eight cities/districts, namely North Tapanuli Regency, Humbang Hasundutan Regency, Dairi Regency, Toba Regency, Pakpak Bharat Regency, Samosir Regency, Karo Regency, and Simalungun Regency. (Kemenkominfo, 2021).

The study aims to explain how *smart villages* are used to develop tourist villages. This modern smart village concept needs to be implemented in the development of a tourist village based on the local traditions and potential of the village. Many theories turn out to be difficult to apply, so mapping is needed in developing a *smart village implementation model* in tourist villages.

Literature Review

Community empowerment

The community has an important role in the context of a *smart village*. The community is not only the goal of administering government and village development but also a unit with the will and purpose to determine the direction of its life. On this basis, the community needs to have good awareness and understanding of their position and role in the village. To be the beneficiary party, the community must be an active part of the village development process. In reality, the community is faced with various limitations and problems, both from internal sources such as low levels of education and high poverty rates and external ones. This condition has implications for the low awareness of the community about the role that must be carried out in the village structure, so that the community, in many cases, becomes a passive party and does not receive the benefits of village development. (Herdiana, 2019)

It must pursue community empowerment to develop community independence and welfare by increasing knowledge, attitudes, skills, behavior, abilities, and public awareness

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(Law, 2014). According to Hadiwijoyo in Kagungan (2019), community empowerment is a continuous process that increases the community's ability and independence and improves living standards. In this process, the community together: Identify and examine the problems and potentials they have; Develops an activity plan based on the study results; Implements the plan; Continuously monitors and reviews the process and results of its activities (monitoring and evaluation). The principles of empowerment by Cahyono (2008) (Helmita, 2021) are that the development carried out must be: Local; Prioritizing social activities; Use local community or social organization strategies; There is an equal position in the working relationship; Use a participatory strategy, all group members are the subject; Social welfare efforts for justice.

One of the empowerments that can is the development of tourist villages. Nuryati (1992) in (Jafar & Resnawaty, 2017) explains a tourist village is a form of integration between attractions, accommodation, and supporting facilities that are presented in a structure of community life that blends with the prevailing tradition. The challenge in bringing the concept of a modern *smart village* is in implementing the development of a tourist village based on the traditions and local potential of the village.

According to Gumelar in Zakaria (2014), the main components of a tourist village can be seen in the uniqueness and authenticity of a tourist village. It is located side by side with extraordinary natural conditions, has a unique culture to attract visitors, and has potential that can develop in terms of facilities and infrastructure. Meanwhile, according to Prasiasa in Zakaria (2014), the main components of a tourist village there are four components, namely: 1) local community participation; 2) there is a system of norms that applies in the village; 3) local village customs and; 4) village culture that is still original. A tourist village must have tourism potential, art, and local customs. The village environment is included in the scope of the tourism development area or the travel routes sold to tourists. There are managers, coaches, and art actors who can support the sustainability of the development of the tourist village. , accessibility that can support tourist villages, ensuring security, order, and cleanliness of the tourist village environment. (Helmita, 2021)

The community must address the development and use of information technology as an opportunity to optimize their participation and contribution to village development. Information technology aims to raise public awareness and strengthen the community capacity required to contribute to village development. The implication is that the community must have an open attitude and adopt information technology as part of daily life, both in the personal and social contexts and in village government. In this way, the community will not only benefit from the existence of information technology but also, in a wider context, the community will benefit from using information technology in the social and government contexts in the village. (Herdiana, 2019)

Heap (2015) emphasizes the increasing awareness of the village community about their rights and demands community involvement in the government process and the government's responsibility to the community. The rights referred to here are the same as the explanations of other academics, which include basic rights related to health, education, food security, and other basic needs. *Smart villages* are expected to be able to provide a decent life for rural communities as obtained by urban communities but by the remaining *village*, which includes: "*Smart security, an Efficient public transportation system, Improving sanitation*

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conditions, Solid and liquid waste management, Rain harvesting/Rain water drainage system, Safe drinking water facilities, Use of renewable energy Energy conservation, Grievance redresser, Strengthening CBOs, Functional bank account, Facilities regarding the agriculture, Latest, and affordable medical facilities, E-governance, Use of modern technologies for improvement of locality, an improvement on women empowerment, Educational facilities" (Somwansi et al., 2016). (Subekti & Damayanti, 2019)

Smart Village

The development of information technology is something that cannot be avoided, especially at this time mastery of information technology is used as an indicator of the progress of a country (Ngafifi, 2014). In line with the development of *smart cities*, in a smaller context, namely villages, the concept of an information technology-based village called *a smart village has begun*. Judging from the development of information technology, we cannot separate the *smart village concept* from the development of the *smart city concept*. It is based on the reason that the village, as the lowest government unit in the Indonesian government structure, also requires renewal and adoption of information technology developments, so applying information technology will encourage the acceleration of smart city development that is being implemented (Aditama, 2018; Badri, 2016; Mayowan, 2017).

Few studies still address the development of *smart villages* in Indonesia. Several studies have been carried out, such as by Rahmawati, Sulistyarso, Ariastita, Yusuf, & Paramasatya (2018), which examine the concept of a smart village in Surabaya. Permana (2011) examines the development of *smart villages* by applying *eco architecture*; Fajrillah, Mohamad, & Novarika (2018) examine the difference between a *smart city* and *a smart village*. Supriadi, H Fadli, & Malik (2016) studied *smart cities* from the perspective of rural community economic development.

The village as a homogeneous legal community unit cannot be equated with the city adopting information technology. The *smart city concept* cannot be applied in the village by carrying the *smart village terminology* because of the homogeneity of the community and the locality of characteristics and culture. There needs to be a conceptual construction effort based on village characteristics. From this understanding, information technology in the village is aimed at strengthening community institutions, empowerment, preserving social order, and the structure of rural communities as a unique legal entity. The *smart village concept* is applied differently in villages in Indonesia, which has implications for the inconsistency of achieving *smart village implementation*. It gives rise to the impetus to construct an understanding of *smart villages* so that there is continuity between conceptual and empirical understanding. The empirical basis for constructing the smart village concept is the function of village government, rural community structure, and rural environment support (Agusta, 2007; Hatu, 2011; Sajangbati, 2015). (Herdiana, 2019)

In contrast to *smart city* development, *smart village development* must be understood as a condition that shows encouragement from below, namely from the community, to explore their potential and increase their capacity. This desire was then encouraged by the village government to provide guidance and empowerment to realize an increase in the welfare and quality of life of the community. Thus the use of information technology is used as "*tools*" to realize these desires and not as *goals*. From this understanding, the development

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of *smart villages* is based on a " *bottom-up* " approach to the initiative and desire of the community so that there is institutional strengthening to improve the welfare and quality of life of the community carried out by the village government through community development and empowerment by fully utilizing information technology. Carried out in the government's capacity as a facilitator. (Herdiana, 2019)

Table 1
Conceptual Differences between *Smart City* and *Smart Village*

Aspect	***Smart City***	***Smart Village***
Approach	*Top-Down*	*Bottom-Up*
Government Position	Regulator	Facilitator
Community Position	*End-User*	*Customers*
Development process	Collectivity and integration of the basic elements of a *smart city*	Strengthening, awareness, and participation of *smart village elements*
Target Priority	People with high mobility	The middle class, poor, and not yet empowered
Precondition Success	The technology approach is the main basis where every party is encouraged to use information technology as the basis for the success of a *smart city*.	The socio-cultural approach is the main basis. The existence of valid identification of various values, characters, norms, and problems in the community is the basis for the success of a *smart village*.
Destination	The realization of information technology can aspire to economic growth, easy access to information and basic services so that improve the quality of life of urban communities	The realization of empowerment, institutional strengthening, and improving the welfare of rural communities based on the use of information technology

Source: Herdiana, (2019)

Although there is no consensus on the *smart village concept*, in general, "a village can be said to be a smart village if the village innovatively uses information technology to improve quality of life, efficiency, and competitiveness in economic, social, and environmental aspects" (Munir, 2017; Ramesh, 2018). In practice, this understanding is interpreted in different ways. The implication is that every village declares as a smart village without being supported by the same adequate size of *smart village elements.*

Smart Governance

Associated with the context of villages in Indonesia, institutions must be understood as formal state institutions that are part of the government structure. In this case, the village government is represented as the lowest government structure (Kushandajani, 2015; Sajangbati, 2015). Institutions are attached to the authority to formulate policy instruments for *smart village development*. The government, the community, and the rural environment are the elements that make up a *smart village* that has different roles and functions. However, the three elements become an integral part that influences each other, so the application of the *smart village concept* must be based on the accommodation of the three elements, including each element's character, role, and function.

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There are two stakeholders in the context of villages in Indonesia, the village government as a state institution and rural communities. In developing *smart villages*, these two stakeholders are the main dimensions that form the basis for implementing *smart villages*. Other resources in the village, are used part to support the lives of village communities and village government (Agusta, 2007; Angkasawati, 2015; Haryanto, 2013). In this context, these resources are integrated into the rural environment. Information technology in the context of *smart villages* is used as an element that encourages the relationship between the village government, the community, and the rural environment to realize the goals of implementing rural life based on information technology.

The village government has a position as a combined form of government between *the self-governing community* and *local self-government* (UU, 2014; Eko, 2015). This fact implies that in the structure of the village, the administration of government affairs cannot be separated from the basic elements of society, and the orientation of village government policies that are carried out is fully aimed at the interests of the community. In a practical context, this is manifested in 4 (four) village government functions: governance, development implementation, community development, and empowerment (Kushandayani, 2015). The four functions aim to improve rural communities' welfare and quality of life. (Herdiana, 2019)

Government administration is a form of implementing village government functions as the lowest government organizational structure with authority to administer government independently, including public services to the community (Sulismadi, Wahyudi, & Muslimin, 2016). In the context of *smart villages*, the use of information technology can provide improved services to the community. The village government will be able to carry out government functions effectively and transparently to the community. In addition, the use of information technology, in general, can improve the performance and productivity of the village government.

The use of information technology makes the process of coaching and empowerment a process that is no longer done traditionally. Information technology has become a common medium between the village government and the community to identify each other's problems, demands, and desires. On the other hand, information technology can be used as a development plan in coaching and empowerment as part of community productivity to create community empowerment. (Herdiana, 2019)

Methodology

Methodology conducted this research with a qualitative method. The study was conducted through discussions with various resource persons related to the research, especially from experts from the Ministry of Communication and Information of the Republic of Indonesia. In addition, researchers conducted a literature review of various literature and documents that support this study.

Discussion

Smart City/Village Program in the Development of the Lake Toba Tourism Area

Simanungkalit (Coordinator for the Preparation of Smart City Masterplans) at Kemenkominfo (2021) explained that the development of *smart cities/villages* is aimed at

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attracting domestic and international tourists as attracting investors in infrastructure development and opening new businesses. With the *smart city/village movement*, city/district governments can innovate to develop every tourism potential in terms of infrastructure development and *smart branding* in promoting tourist destinations. It can promote the promotion in the form of tour packages in the Lake Toba area (*The North Sumatra tour*), including the eight surrounding districts. So, through this tour package, tourists can visit eight cities/regencies in the area. (Kemenkominfo, 2021)

However, in its implementation, regional parties certainly need to think about interesting innovations for tourism promotion that are also adapted to the 3A concept (attractions, accessibility, and amenities), which is one of the tourism management principles. Each region must know what tourists can offer when visiting the area. Not only being promoted but also accompanied by improving every facility in tourist attractions for the better. For example, if there is already a tour package like that, each city/regency must also plan. It is necessary to plan a tourist city spot that must be able and worth visiting. Submission of *storytelling* rich in culture and history can be one way of rebranding the region in the region. (Kemenkominfo, 2021)

The feasibility of amenities such as the availability of lodging, clean toilets, religious facilities, and health facilities in the Lake Toba area do not meet international standards. Even the availability of these amenities is still far from the national standard. Then a decent place to stay for international tourists should have met international standards. However, the current condition is still far below the national standard. Targeting foreign and national tourists, of course, the weakness of the feasibility of amenities needs to be a common concern, both local government and central government. The government has standardized the eligibility of amenities that must be met by cities/regencies that support National Priority Tourism Areas (KPPN). It can use the focus of the government's budget for the development of tourist destination infrastructure, including the feasibility of amenities from the ministry for cities/districts in the KPPN. (Kemenkominfo, 2021)

The government and the people of Lake Toba have begun to improve themselves by implementing *smart cities/villages* under the Ministry of Communication and Information guidance to ensure that the *smart city master plan* can be well structured. Barry (a ministry expert) in Journalis (2021) stated that the joint commitment to the super-priority area of the Lake translated the *smart city/village program* into a regional program. Given that there are many tourist attractions in the Lake Toba area, there needs to be cooperation between the district government to encourage and facilitate licensing for small businesses. It is especially since almost every district in the Lake Toba area has a tourism economic area. Collaboration and mutually beneficial cooperation are needed between eight districts in the Lake Toba area. It is necessary to create a program with eight districts to provide new hope for progress in the community.

Cahyono (assistant deputy to the ministry) in Journalis (2021) said that one aspect of a *smart city/village* is related to *smart governance*. *Smart governance* is in the context of regulating an electronic-based government system. All government agencies, both central and regional, can collaborate to realize smart governance, ensuring they can achieve public services. With the government's commitment, this *smart city/village* can run in the Lake Toba

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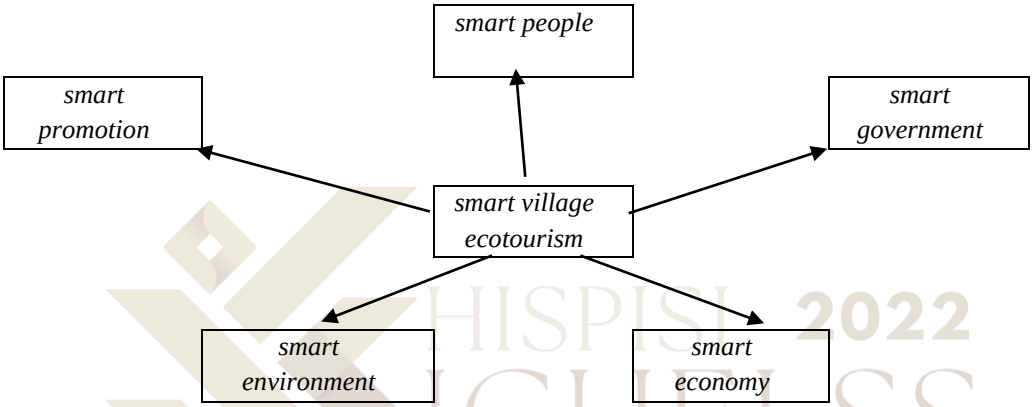
area. It is necessary to ensure that the electronic-based government system as part of the *smart city* planned by the Ministry of Communication and Information, in this case, is *smart governance*.

Smart Village Development Model

The European Network for Rural Development in Subekti & Damayanti (2019) explains that what is meant by *smart villages* are villages that can manage their assets to be able to provide added value by utilizing networks and technology for the benefit of the population. The *smart village* development model can be mapped as follows:

Figure 1
Smart Village Development in Tourism Villages



Source: Subekti & Damayant, 2019

The mapping for *Smart Village Development* for the Lake Toba tourism area is shown in the image above, and is explained below (Subekti & Damayanti, 2019)

Smart people

What is meant by smart people here is a smart society. In tourism development, the most important element is the community that can support the running of the tourist village. The community has a distinctive skill base. The community also has a high level of participation in supporting the development of tourist villages. They actively form tourism awareness groups to manage tourist villages.

Smart government

Scholl (2014) in Pereira et al. (2018) explain *smart government* is a government that is smart, open, and participatory. *Smart government* is synonymous with the implementation of *e-government*—electronic-based government management with the use of technology. A village government website is created to realize village transparency, electronic-based village services, and the use of social media to provide information and public disclosure, for example. Accommodating people's aspirations through social media networks, and so on. Using technology in government aims to increase effectiveness and efficiency, increase public participation, open public information, and reduce opportunities for corruption.

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Smart economy

An important point in realizing a *smart village* is the effort to create a ' *smart* ' economy. Several kinds of literature try to define *the smart economy* as follows: *"smart economy requires new qualitative approaches to the concept of economic growth, focused on the quality of life and the standard of living, incorporating new variables of the development model: basic needs, human capital, human rights, well being, participation in community life, fundamental freedoms of man: political, economic, social, cultural, dignity and respect progress (technological progress, scientific research)"* (Apostol, 2019). To realize a *smart economy* will refer to several indicators. Including an innovative and creative economy, the ability of the community to see economic opportunities, take advantage of opportunities that exist at the local level but are globally oriented, and the existence of good economic management starting from management, marketing, and so on. (Kumar, 2017). *The smart economy* is closely related to the first element, *smart people*. It means that smart people are needed to be able to build a smart economy. In managing tourist villages, examples of several efforts to build *smart* economic conditions are through activities: increasing the value of local community potential, seeing economic opportunities by creating a tourist destination, and using technology.

Smart environment.

It aims to overcome various environmental problems. The environmental problems in question are sanitation problems, air cleanliness, garbage, global warming, carbon emission problems, the availability of child-friendly public spaces, the availability of parks, and so on. Some regions make the environment one of the main points worked on to realize a *smart city*. Environmental problems at the rural level are slightly different from problems in cities. For example, villages do not face so many problems with waste and air pollution. Still, environmental problems in rural areas are usually synonymous with problems in environmental management and utilization of natural resources. Villages have a big role in maintaining the ecosystem on earth. Villages play a major role in balancing activities that cause pollution in urban areas. It can do several activities at the village level to support environmental balance, for example, example: protecting the environment by maintaining local wisdom, making renewable energy by utilizing livestock waste, preserving natural resources such as water, forests, rice fields, plantations, and so on.

Smart promotion

It develops a tourism village, and it is important to make marketing efforts. *Smart promotion* can be done by branding tourist areas promoted through social media. Promotion can be through social media Instagram, Facebook, website, Blogspot, and others. Branding efforts in tourist areas need to be carried out optimally. Branding is done by showing the unique side of a tourist spot that distinguishes it from other tourist villages. It is important considering that many similar tourist villages have sprung up. *Destination branding* is believed to have the power to change one's perspective on a place or destination, including seeing the differences in a place (Fianto, 2015).

The concept of a *smart village* is understood as the integration of information technology in the life of rural communities, resulting in the benefits and sustainability of information technology and rural communities. The dimensions of resources, institutions, and

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technology are fundamental for implementing *smart villages*, while digital services, service chains, and sustainability are the differentiating dimensions revealed by these experts. This common understanding is based on the understanding that the application of information technology requires the institution's capability as the authority holder and the support of resource capacity. (Herdiana, 2019)

It cannot understand the dimension of resources in human resources alone because resources in the context of villages in Indonesia consist of human resources in the form of rural communities, village government officials/institutions, and other resources. Namely natural resources, social resources, and cultural resources (Hatu, 2011; Usman & Ramadan, 2015; Sabardi, 2013). It is associated with village regulations, and the community is a legal entity placed as both the subject and object of village development (Silahuddin, 2015). On this basis, the community is a separate unit from the village government. In developing a *smart village*, the community becomes an independent dimension. (Herdiana, 2019)

Conclusion

In realizing the smart village program in the Lake Toba area, it is necessary to have an active role from all parties to support Lake Toba as a tourist destination known by national and international tourists. The smart village program is still in its early stages. Therefore, the smart village model in the development of tourist villages has not been carried out optimally, but smart cities for several district cities have begun to be carried out. Smart village is only synonymous with using social media and websites in village promotion events and using CCTV (Closed Circuit Television) in those areas which want to be monitored. Smart villages have not existed to solve various problems in the village.

The community must be more innovative, creative, and participatory to encourage the emergence of smart economic development initiatives, for example, by continuing to educate themselves to manage local potentials of global value. To realize a *smart village*, *the village* government needs to develop and take advantage of technological advances to improve services to the community. Initiatives from the government need to be carried out to encourage the development of *smart villages*. The private sector is also advised to cooperate with the government to build a community environment and help build *smart villages*. Thus, it is necessary to take serious action to build a comprehensive and integrated *smart village project to solve problems in rural areas.*

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About the Author:

Chief Researcher
Posma Sariguna Johnson Kennedy *Faculty of Economics and Business, Indonesian Christian University, Jakarta*
Researcher Member
Suzanna Josephine L.Tobing *Faculty of Economics and Business, Indonesian Christian University, Jakarta* **Rutman L.Toruan** *Faculty of Economics and Business, Indonesian Christian University, Jakarta* **Ricky Martin Manullang** *Faculty of Economics and Business, Indonesian Christian University, Jakarta*