

Smart *Banjar*: An ICT Adoption Framework to Enhance People's Welfare

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Abstract— Economic development has slowed dramatically in several countries during the COVID-19 pandemic, like in Indonesia. Bali Province was one of the regions that was severely affected. Due to its reliance on the tourism industry, Bali had the most significant negative growth. It is time for Bali and other regions to develop the potential of a locally-based, sustainable, and resilient economy to enhance the people's welfare. Improving the community's welfare can be done with the synergy of various entities—the synergy created by integrating programs in *Banjar* with microfinance to develop microenterprises. The main objective of this research is to ascertain the framework's dimensions and components. Furthermore, the relationships between these dimensions or elements have been determined. Based on the findings, the two primary objectives were completed. This procedure has produced the Smart *Banjar* framework as a theoretical solution to enhance people's welfare. This research created the information communication technology (ICT) adoption framework that uses the TOE theory as its theoretical basis. The Advisory Board serves as the environmental context for formulating policies. The policy will regulate governance to realize the synergy between microenterprises, microfinance, and *Banjar* in the organizational context. ICT adoption, including ICT infrastructure, ICT services, and ICT literacy, will support and optimize the synergy. Further investigation is required to ascertain the Advisory Board's specific constituents. Additional studies are needed to implement ICT, obtain empirical evidence, and prove its ability to improve people's welfare.

Keywords— Smart *Banjar*; microenterprise; microfinance; ICT adoption framework; people's welfare.

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I. INTRODUCTION

Each nation around the world possesses its governmental structure. Indonesia is a democratic republic that divides its territory into several levels of government. One of the 38 provinces in Indonesia is Bali. The Bali province is unique. One of its uniqueness is its government system. Unlike other provinces, Bali uses a dual system to administer its villages. This dual system is duality, not dualism. The dual system of village government in Bali means different functions, but one goal is building a village and complementing each other [1]. The Village is the heart of every nation. The Village significantly affects the economic and social ecosystem by supporting and maintaining it and contributing to it [2]. Villages are crucial in preserving rural culture, formed via extensive interactions between individuals and their surroundings. These settlements are living testaments to the

cultural heritage developed over time [3]. Bali has maintained its culture, traditions, and ancestral heritage from the past to the present but can still adapt to the times. The Balinese continue to cherish and sustain certain valuable cultural aspects that may be mainly attributed to the religious system [4]. Another uniqueness is that Bali still maintains the implementation of *Banjar Adat* [5]. It is believed to be a system that supports the traditions of the Balinese people but continues to adapt to the times. Even today, the traditions and customs of the Balinese people are believed to be the main tourist attraction.

The tourism sector drives the economy in Bali. However, the problem of poverty still exists. Community welfare is not evenly distributed and only focuses on the tourism area. The pandemic conditions brought on by the Coronavirus Disease epidemic in 2019 (COVID-19) make this situation much worse. The phenomenon of economic "scarring" seen by

numerous nations globally, resulting in significant declines in output, is particularly noteworthy for countries heavily reliant on tourism [6]. The pandemic's effects did not lessen with time, but they had disparate consequences on trips with various intentions [7]. The Balinese economy collapsed because it depended on tourism [8]. The cessation of the tourism industry has significantly impacted economic conditions and people's purchasing power.

The Gross Regional Domestic Product (GRDP) can see the economic condition contracted very deeply. Monthly price pressures were recorded as deflation, and money trading recorded net inflows [9]. The economic condition is in line with the Central Bank of the Republic of Indonesia (Bank Indonesia) report, which stated that the economic performance of the Bali province in the third quarter of 2021 contracted by -2.91% [10]. Bali is one of the two provinces that still recorded negative growth. Another 36 provinces have emerged and recorded positive growth. It is time for Bali and other regions to develop the potential of a local-based, sustainable, and resilient people's economy to improve the community's welfare. In this research, people's economic potential is developed by synergizing microenterprise, microfinance, and the *Banjar* institution.

In Indonesia, the share of microenterprise is 98.68%. Employment absorption in the microenterprise sector reaches 89.04% [11]. Based on these data, Indonesia must pay more attention to developing microenterprises as one of the ASEAN region countries. The research [12] proves that three orientations can be applied to develop MSME Management which aims to recognize and capture market opportunities. The orientation is strategic orientation, knowledge location orientation, and innovation orientation.

In developing countries, the rural poor face problems when applying for credit from formal lending institutions [13]. The problem is a requirement that cannot be met. Formal financial institutions, such as Banks, are generally inaccessible to people living below the poverty line because loans must be supported by collateral [14]. Microfinance is a financing institution covering various financial services, including microcredit. Loans are provided to customers who have a medium-to-low business scale and do not have access to banking services [15]. The competition among microfinance institutions is unusual due to the fact that service to the poor, not profit, is their main objective [16].

Bali has two villages: Customary Villages (*Desa Adat*) and Official Villages (*Desa Dinas*). Customary Village has several smaller areas called *Banjar* [17]. Customary Village is a social entity responsible for the community group under it, which is called *Banjar Adat* (Customary *Banjar*). A new typology was introduced called *Banjar Dinas* (Official *Banjar*) since the government is responsible for administering the Customary Village [18]. In addition to knowing the two types of villages, in this regard, there are two types of *Banjar* in Bali. Two types of *Banjar* are known to the Balinese people *Banjar Adat* (Traditional or Customary *Banjar*) and *Banjar Dinas* (Official *Banjar*) [17]. Village governance in Bali has institutions in carrying out its functions. The customary *Banjar* or *Banjar Suka Duka* or other names exist under the Village [19].

Banjar is both a social organization and a governance system unique to Bali. The continuation of *Banjar* and the

empowerment of the people can be achieved by implementing a smart concept [8]. Current study focuses on developing Smart City and Smart Village. Furthermore, Smart *Banjar* has not been developed through study. Figure 1 depicts the position of the *Banjar* as the lowest structure below the Village and its level in the smart concept.

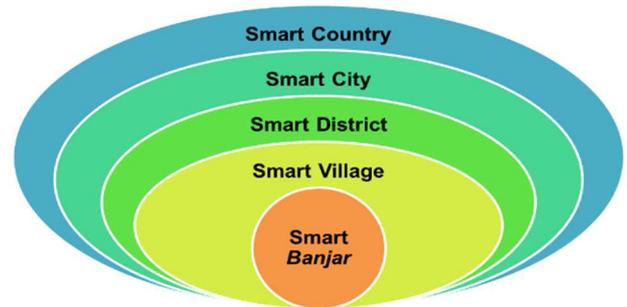


Fig. 1 Level of Smart Concept (Source: adapted from [20])

The research findings indicate that the successful implementation of technology-enabled smart cities across developing nations is contingent upon the simultaneous implementation of socioeconomic, human, legal, and regulatory reforms [21]. Therefore, realizing Smart City as a solution takes work. It takes a bottom-up approach to solve problems from the bottom structure. The Smart City concept can be implemented on a lesser or more extensive scale as long as a supported community exists [20]. A Smart Village could be the initial application of a smart concept, followed by a Smart District, a Smart City, and ultimately a Smart Country [20]. Therefore, developing a smart concept to support *Banjar*, is deemed essential. Research focusing on smaller scopes is rare compared to larger ones, such as Smart City. Although rarely mentioned in various literature, the development of rural areas has potential, and culture plays an important role [22].

This research proposes a framework that can promote people's welfare, focusing on the lowest structure called *Banjar*. Its principal advantage is the establishment of synergy between various entities with the support of technology adoption. The framework is a novel paradigm because no previous research has applied the smart concept to the *Banjar* locus. The smart concept can be realized by creating a framework. The framework created with the smart concept uses technology, specifically Information and Communication Technology (ICT). The use of ICT maximizes all entities' functions in the resulting synergies. The Smart *Banjar* synergizes and integrates the programs in the existing microenterprises, microfinance, and *Banjar*.

II. MATERIALS AND METHOD

Banjar is a structure for the community that keeps traditions alive. It is part of the village structure. Rural regions exhibit considerable heterogeneity, necessitating the integration of Smart Rural development initiatives with a localized, place-based strategy [23]. Since Smart *Banjar* is a novel concept, it must be tailored to the circumstances, desires, and needs of the community. Preliminary research needs to be carried out as a theoretical solution to answer existing problems.

Good research must do research design because this stage is crucial. According to [24], a research design is a general plan for answering established research questions. It shows the reader how researchers plan to conduct research [25]. On the other hand, [24] states that designs or strategies such as archival research, ethnography, action research, basic theory, case studies, phenomenological research, and narratives are used for qualitative studies.

This research is qualitative. A variety of research paradigms, or nested compilations of related methods, methodologies, epistemologies, and ontologies, employ qualitative research [26]. Qualitative approaches might provide support in study areas that are novel and lack significant prior work for theory development [27]. Qualitative research is a descriptive research and tends to use analysis [28]. Research strategies by compiling a library rich in innovative ideas and diverse approaches [29]. The research strategy of conducting a literature review will answer the research question: "what are the important elements and their relationship in the Smart *Banjar* concept". The main activity is to identify the dimensions or elements of the framework. Furthermore, the relationship between these dimensions or elements will be identified. The two main activities are carried out based on the literature review. This procedure will generate a Smart *Banjar* framework. The resulting framework is an ICT adoption framework. The research design that will produce structured references and guidelines for conducting research is in table 1.

TABLE I
RESEARCH DESIGN

Strategy / Method	Main Activity
Literature Review	Identifying the main elements of the framework
	Identifying the relationship between the elements

This research produces a new concept that has never existed before. The research was conducted by seeking and reviewing related research to adopt and adapt existing concepts. Data processing is done after obtaining data from the literature collection. Data processing is performed to facilitate descriptive research data analysis approaches [30]. The research results will be described and discussed in a structured manner. In the end, a Smart *Banjar* framework will be presented, which can solve the existing problems.

III. RESULTS AND DISCUSSION

Many studies have been conducted on developing micro, small and medium enterprises (MSME). Including those who specialize in microenterprise. The approach is taken from internet technology and e-business solutions, digital innovation, lean thinking, and various ICT strategies [31]–[34]. The ability of MSMEs, especially in developing nations like Indonesia, to adapt to technology significantly impacts their viability within an increasingly competitive business landscape [35]. The topic of microfinance globally has been widely discussed. However, much of what is discussed evaluates performance, development, and challenges [36]–[38]. Microfinance institutions are demonstrating increased engagement within the dual banking environment, exhibiting enhanced intermediation, liquidity, robust wholesale

financing, and a more comprehensive range of revenue options in comparison to commercial banks [39]. Research on *Banjar* has been carried out and discussed the development and financial management of *Banjar* [40], [41].

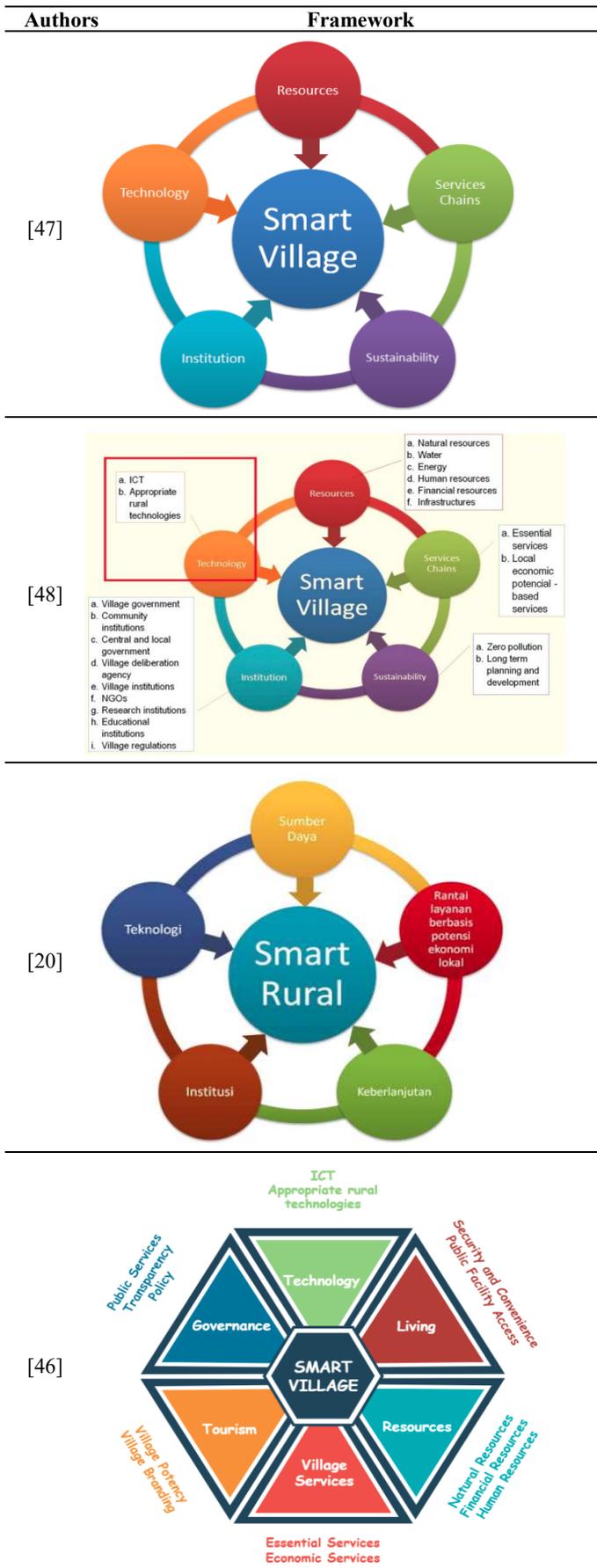
The dynamics and development of Balinese society are embodied in the social order in the form of *Banjar* through 4 stages. These stages are: the first stage *Banjar* is based on agricultural culture (Agricultural Economy); the second stage is the center of the economy (Craft Economy); the third stage is the center of the creative economy (Service Economy); the fourth stage is the center of industry 4.0 or the digital economy (Smart *Banjar*) [42]. The Smart *Banjar* development adapts the closest concept in scope or scale, namely Smart Village. Smart Village provides numerous advantages of 21st-century society to rural communities and demonstrates a degree of rural development suitable for achieving sustainable development objectives [43]. The notion of the smart village refers to the realignment of the geographical focus of a smart city towards a localized community consisting of distinct entities. The smart village seeks to improve the viability of activities and the overall quality of life in rural areas by integrating and employing cutting-edge technologies [44]. Smart villages are often regarded as the rural counterpart of smart cities or an innovative rural growth framework [45]. The implementation of the Smart Village concept in Indonesia must be tailored to the specific circumstances, ecosystem, and cultural context of the region. The following are some of the Smart Village studies deemed most suitable in table 2.

The research used is from 2018 to 2021 from reputable international journals such as IEEE and Springer. Research published at an international conference by Aziiza and Susanto [46] is also used as a reference in this research. Only one research was taken from a national journal, namely Andari and Ella [20]. However, due to the suitability of the content in substance with the research conducted, the research results are used as a reference. The framework developed in Table 3 is based on the five studies listed in Table 2, as seen below.

TABLE II
SMART VILLAGE RESEARCH REFERENCES

No.	Year	Authors	Title	Publisher
1	2018	Ella and Andari [47]	Developing a Smart Village Model for Village Development in Indonesia	IEEE
2	2019	Ella and Andari [48]	Utilization of ICT in Building a Smart Village Model for Village Development in Indonesia	IEEE
3	2019	Andari and Ella [20]	Developing A Smart Rural Model For Rural Area Development In Indonesia	Jurnal Borneo Administrator
4	2020	Aziiza and Susanto [46]	The Smart Village Model for Rural Area (Case Study: Banyuwangi Regency)	IOP Conf. Series: Materials Science and Engineering Journal of the
5	2021	Mukti et al [49]	Defining Rural Smartness and Its Impact: A Systematic Literature Review	Knowledge Economy

TABLE III
SMART VILLAGE FRAMEWORK



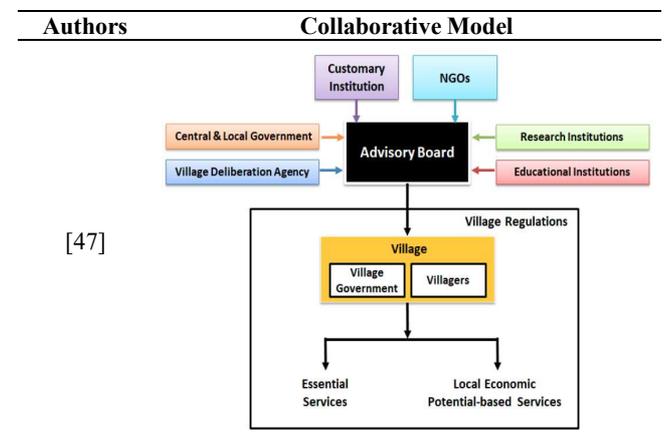
Research from [49] is a systematic literature review. So the research results are used to enrich knowledge related to Smart Village. Table 3 displays the disparities observed in the progression of the Smart Village framework. In [20], [47], [48], research is developing a Smart framework for villages and rural areas in Indonesia. They emphasize five dimensions (components): resources, technology, institutions, sustainability, and service chains. Different dimensions were developed by [46]. There are six dimensions to Smart Village: technology, living, resources, village services, tourism, and governance. The Smart Village collaborative model is further developed based on this framework, as shown in Table 4 below.

In research [46], no collaborative model for Smart Village was developed. In [47], research explained that the collaborative model required an advisory board. The advisory board can contain non-governmental organizations, research institutions, educational institutions, central and local government, village deliberation agencies, and customary institutions. The advisory board will assist the village administration and villagers in developing a smart village following applicable regulations. With this collaboration, it is hoped that the essential services and services based on the local economy can be held.

In [48], the use of ICT in the establishment of Smart Villages in Indonesia is the subject of study. The research identifies two interrelated technological dimensions: ICT and appropriate technology. Appropriate technology can be divided into ICT and non-ICT categories.

The Smart Village is derived in [20] from [47]. In this research, the Smart Rural concept was introduced. The difference is in the involvement of more than one Village in one area. It is based on the potential in each Village and strengthened by government regulations to encourage cooperation between villages. So, in this collaborative model, the advisory board will provide directions to several villages in which there are entrepreneurs at the village level and the village community. The Inter-Village Cooperation Agency will regulate the form of inter-village relations. This relationship and cooperation will result in a local economy-based service chain that provides production, processing, and marketing services following the policies.

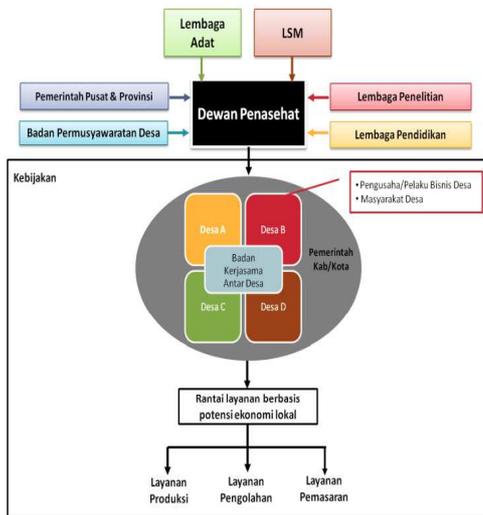
TABLE IV
SMART VILLAGE COLLABORATIVE MODEL



[48]

CT

[20]



A. The ICT Adoption Framework

The adoption of technology is Information Communication Technology (ICT). It requires a framework and a development economy [50]. Researchers in adopting these technologies have developed many theories and standards. Technology adoption is defined as first-time use or willingness (acceptance) to use a new technology or product [51], [52]. Extensive study has been conducted in the field of information systems (IS) to investigate the adoption of technology [53]. Technology research aims to understand, predict, and explain the variables that affect technological innovation at the individual and organizational levels [53]. The experts provide priceless insights into the factors that determine rural intelligence and its capacity to affect the business procedures of rural ecosystems. These factors relate to organizational, technological, and environmental preparedness [54]. In this research, the technology is a technological innovation at the organizational level: *Banjar*, Microenterprise, and Microfinance. Due to its intricate internal and external organizational structure, the Technology-Organization-Environment (TOE) framework is utilized as the ICT adoption approach in the context of Smart Banjar [8].

1) *The Technology Context*: A persistent disparity in access to digital technologies has long existed between urban and rural regions within developing nations [55]. Indonesia is a developing country. The community in Indonesia can utilize Society 5.0 technologies, which include financial technology for online lending, automated systems for the management of small and micro enterprises, and transportation technology for routine mobility [56]. The technology developed to solve the

problems in this research is information communication technology (ICT). A study has been conducted using ICT to establish a Smart Village model in Indonesia [48]. Indicators for ICT in the Smart Village paradigm in Indonesia have been compiled in Table 5 as part of this study.

TABLE V
ICT INDICATORS IN THE INDOONESIAN SMART VILLAGE MODEL

Dimension	Variable	Indicator
Appropriate Technology	ICT	1. ICT infrastructures
		a. The proportion of rural areas that have access to an internet network (2G, 3G, 4G, WiFi).
		b. The Village's average internet bandwidth
		c. The availability of village funds for the acquisition of ICT infrastructures.
		2. ICT Literacy
		a. The proportion of internet users
		b. The proportion of villagers who have internet access (Fixed (wired)-broadband, Wireless-broadband)
		c. ICT media frequently utilized by villagers (television, radio, cable phone, mobile phone, smartphone, computer)
		d. ICT use activities (communication, perusing the Internet, working, studying, and amusement)
		3. ICT Services
a. The presence of ICT-based public services (administration services, goods services, and services)		
b. The presence of a genuine village information system		

Based on the ICT indicators that have been described in table 5, there is no significant difference in implementation at the Village and *Banjar* levels. The changes were made only to the terms used. ICT indicators become ICT Entities. So that in the development of Smart *Banjar*, it can be adopted directly, as in Figure 2 below.

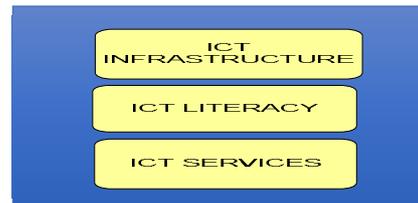


Fig. 2 ICT Entities of Smart Banjar

ICT adoption in the Smart *Banjar* framework is expected to manage basic needs and improve community welfare. Based on this, ICT services are necessary to be useful and appropriate. In the dimension of service chains in the Smart Village concept, according to [47], there are two indicators: 1. Essential services; 2. Local economic potential-based services. People's basic requirements, such as food, water, health, and education, are met by essential services. Local economic potential-based services are services that support the economic development of the community [47].

In the research [46], determined indicators on the ICT aspect are internet availability and IT infrastructure. Furthermore, in research [49], technology readiness indicators start from broadband access penetration, information

technology service suitability, digital device ownership penetration, electric reliability, and adequacy of strategic guidelines. Mapping and analysis were carried out based on those research, as shown in Table 6 below.

TABLE VI
MAPPING OF ICT ELEMENTS, ENTITIES, AND COMPONENTS [46], [49]

ELEMENTS	ENTITIES			COMPONENTS
	Infrastructure	Literacy	Services	
The percentage of village areas covered by internet network	✓			Internet Network
The average of internet bandwidth in village	✓			Internet Network
The availability of village budget for the procurement of ICT infrastructures	✓			Internet Network & Electrical Reliability
The percentage of the internet users		✓		Internet Users
The percentage of villagers that subscribe to internet		✓		Internet Users
ICT media that are often used by villagers		✓		Digital Device Ownership
ICT use activities		✓		ICT Used
The availability of ICT-based public services			✓	Essential Services
The availability of a valid village information system			✓	Local Economic Potential-Based Services
Internet availability	✓			Internet Network
IT infrastructure	✓			Internet Network & Electrical Reliability
Health services			✓	Essential Services
Education services			✓	Essential Services
Entrepreneurship			✓	Local Economic Potential-Based Services
Job availability			✓	Local Economic Potential-Based Services
Economic Institutions			✓	Local Economic Potential-Based Services
Distribution/Logistic facilities			✓	Local Economic Potential-Based Services
Broadband access penetration	✓			Internet Network
Information technology services suitability			✓	Local Economic Potential-Based Services
Digital device ownership penetration		✓		Digital Device Ownership
Electric reliability	✓			Electrical Reliability
Adequacy of strategic guidelines		✓		Strategic Guidelines

The analysis was carried out to adjust the indicators obtained into elements, entities, and components. It will be used to develop Smart *Banjar* in the technological context. Based on the mapping in table 6, the following changes have occurred, as in Figure 3. The ICT can support and optimize the synergy between Microenterprise, Microfinance, and Banjar. Based on the analysis that has been done, three ICT entities exist in the technology context. The three entities have the same level of importance and support each other. The three entities can be developed simultaneously.

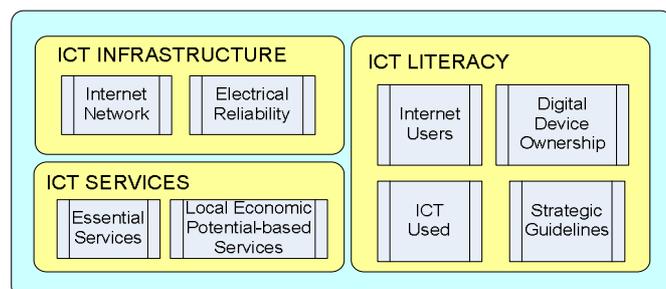


Fig. 3 Technology Context of The Smart *Banjar*

ICT infrastructure is an entity that becomes a resource requirement in order to be able to adopt ICT. Efficient and enhanced infrastructure fosters long-term inclusive economic growth and development, particularly in ICT. Implementing ICT infrastructure has a significant impact on reducing transaction costs, enhancing productivity, and increasing production. These effects, in turn, lead to positive spillover effects that contribute to economic growth at both the macroeconomic and microeconomic levels [57]. There are two components to the ICT infrastructure. The components of "Electrical Reliability" and "Internet Network" are absolute requirements in ICT adoption. Without the reliability of electrical resources, the technological devices used as tools cannot run or operate. The condition of the internet network will significantly affect the exchange of data in the Smart *Banjar* ecosystem. ICT Infrastructure allows people to access various web resources anywhere and anytime. This contributes to developing the Internet in regions and rural areas [58].

ICT services are entities that will directly benefit the community and stakeholders [59]. Integrating ICT services within private and public service institutions is innovative, as

it has substantially enhanced productivity and overall efficiency [59]. Applications and systems built as part of the service must include two components. The "Essential Services" component is related to supporting the fulfilment of the community's basic needs. Component of "Local Economic Potential-Based Services" can support community economic growth and welfare.

ICT literacy refers to the capacity to comprehend and address issues by using digital technology, communication tools, and networks in a suitable manner. It encompasses the proficiency to utilize information technological instruments to access, organize, assess, and disseminate information [60]. ICT literacy emphasizes a person's ability to find and access information effectively [61]. Additionally, digital literacy is a requirement for entry into an intellectual society. These digital literacy capabilities include the understanding, abilities, and mindsets required for the intelligent application of digital technology and smart devices [62]. The "Digital Device Ownership" component is an essential requirement. Then the components of "Internet Users" and "ICT Used" are very decisive so that all ICT-based services provided can be used. Finally, the literacy of the "Strategic Guidelines" component determines the implementation and sustainability of the Smart *Banjar*.

2) *The Organization Context:* In the Smart Village, development is focused on building a village. The potential in each Village is different and also the patterns used to build smart villages are different [63]. It is due to differences in resource availability and different environments between each Village. Likewise, the community's socio-economic condition will affect and be influenced by the existing businesses in the Village. These differences should be strengthened when a collaborative model is formed. Research has been developed by forming a Smart Rural model. The organizational context in the Smart Rural model can be seen in Figure 4 below.

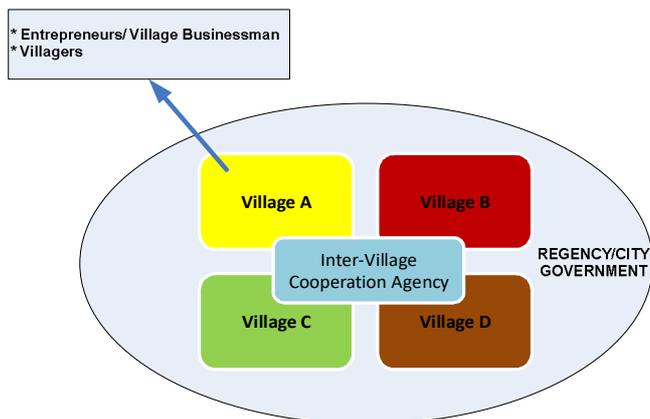


Fig. 4 Organization Context of Smart Rural

According to [20], the Inter-Village Cooperation Agency is established by an Inter-Village agreement to aid Village Heads in implementing Inter-Village collaboration. This agency will coordinate the entrepreneurs in each Village. In the meantime, the Regency / City administration facilitates the development of cooperation networks between Villages. It is anticipated that the development of rural areas in the Regency/City is consistent with and integrated with the development policies and directions of these areas.

In Bali, the government structure under the village government is the *Banjar*. There might be several *Banjars* in a single Village. Based on this, the Smart Rural concept by [20] was adapted to the Smart *Banjar* concept as follows.

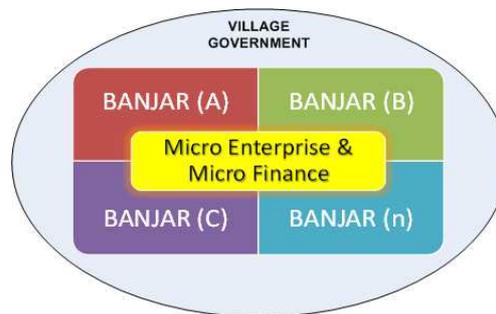


Fig. 5 Organization context of the smart *Banjar*

In the Smart Rural, an Inter-Village Cooperation Agency is needed to connect one Village to another within a Regency or City [20]. Smart *Banjar* is different. The liaisons between one *Banjar* and another are Microenterprise and Microfinance, which are domiciled in their respective *Banjar* areas. Microenterprises and Microfinance can be Village-owned, *Banjar*-owned, or community-owned. The microenterprise can meet the community's needs within the scope of *Banjar* and outside the area of *Banjar* concerned. Likewise, with existing Microfinance. Services can cover the scope of *Banjar* or connect with other *Banjars* in one Village.

3) *The Environment Context:* The Smart concept does not necessitate the employment of cutting-edge technology, but rather can rely on the intelligence of the community and the participation of diverse stakeholders. [45]. An external environment is needed to formulate transparent, credible, and sustainable governance policies. The external environment of Smart *Banjar* will be very influential, starting from the development stage to implementation. A high level of complexity requires support and collaboration with other parties. Outside parties or the external environment that affects Smart *Banjar* will be formed in an institution, namely the Advisory Board. The external environmental elements of Smart *Banjar* were derived from previous research studies [20], [47] and incorporated into the framework.

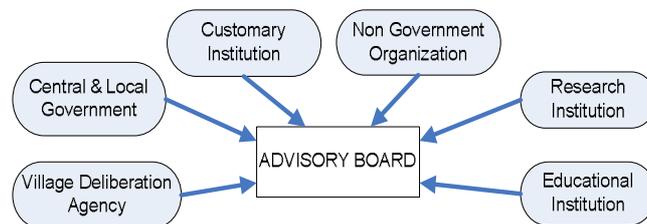


Fig. 6 The Smart *Banjar* Environment Context

External environment adopted directly from [20], [47] research because now it is in accordance with the Smart *Banjar* concept. Further research needs to be done to ascertain the elements involved specifically in the environmental context of Smart *Banjar*, who are members of the Advisory Board. Based on [8], [20], [47] The Advisory Board is comprised of:

- Village deliberation agency (VDA) is like a legislature. VDA is an independent institution with *Banjar*

representatives in one Village. VDA is tasked with channeling aspirations and democratically supervising village development. VDA will be an important element in formulating policies so that the development achieves the goal of community welfare.

- Central & local government is a related government structure. At each level, there will be policies and regulations. With this element, it is envisaged that regulations and policies will complement and not contradict.
- Customary institutions are traditional institutions that exist at the *Banjar* to Village level. The involvement of this element is related to the empowerment of local wisdom to suit the changes that will occur. In the future, it is hoped that the innovations that will be carried out will not eliminate the essence and traditional values, but on the contrary, will strengthen them so that a more prosperous society is realized.
- Non-government organization (NGO) is an independent element that will assist in community empowerment activities. NGOs will help assist in the transition to the implementation of Smart *Banjar*.
- Research institution is an institution that has experts who can conduct research related to the successful development of the Smart *Banjar* concept.
- Educational institution is the institution that can assist in preparing and developing human resources. Later, these human resources will become competent subjects in ensuring the sustainability of the Smart *Banjar* concept.

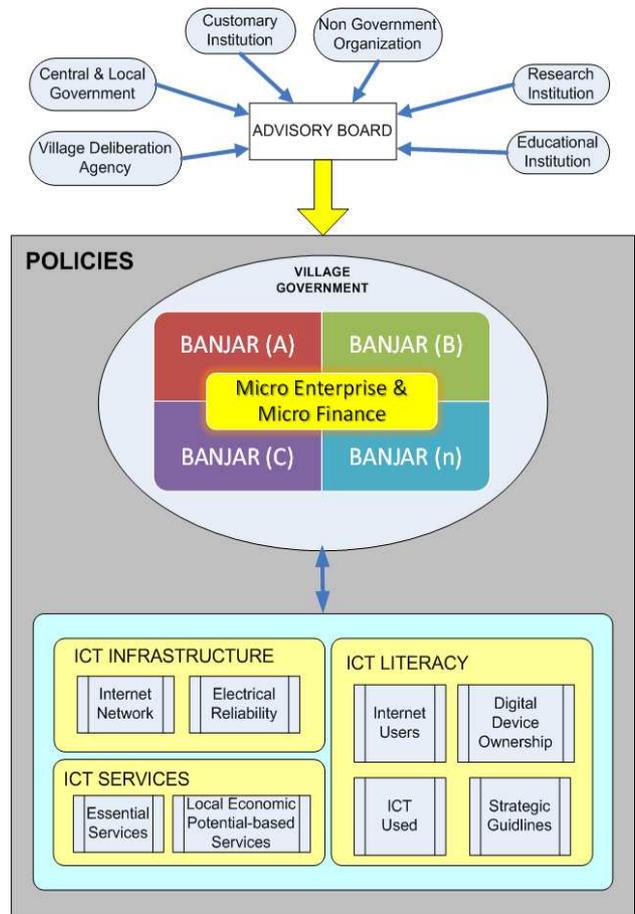


Fig. 7 The Smart Banjar

B. The Smart Banjar

A Smart concept involves a mutually beneficial relationship between people, institutions, technology, organizations, and other aspects. It attempts to preserve people's basic necessities, offer pleasant public services, and promote appropriate and sustained economic development [64]. The concepts of smart and sustainable are interrelated and will ensure an increase in the quality of life, income, equality, and various other indicators of socio-economic improvement [64], [65]. Smart *Banjar* is involved in rural smartness development. The attainment of various metrics, such as connection, participatory governance, digitally empowered citizens, and coherence of IT service provision, is crucial for the realization of rural smartness [66].

Based on the definition and explanation above, the initial concept of Smart *Banjar* was formulated. This concept was developed by adopting ICT and using TOE theory as a reference. The context of technology has three elements. The elements obtained start from ICT infrastructure, ICT literacy, and ICT services. The technological context will interact both ways with the organizational context. There is a village government in the outer environment in the organizational context. It will manage each *Banjar* in the area as well as all of the Microenterprise and Microfinance. Supporting policies will be formulated by the Advisory Board, which is in the context of the environment. Here is the Smart *Banjar* in figure 7.

In a village area, there is more than one Banjar. A village government will coordinate the *Banjar* government under it in the government structure. Each *Banjar* can have several microenterprises and microfinance. Microenterprise and microfinance aim to meet the needs while improving the welfare of the citizens [67]. The scope of microenterprise and microfinance is not only in one *Banjar*. However, it can expand the marketing of its products and services to the level of one Village, another Village, even outside the Village area.

The application of technology to activate the Smart concept was developed with ICT adoption. From the results of the analysis, there are three entities, including:

- **ICT Infrastructure:** economic growth is supported by the substantive role of ICT infrastructure for countries that have realized its importance [68]. ICT infrastructure as a supporting infrastructure for adopting ICT in the Smart *Banjar* concept. That includes the support of electrical resources and the availability of the internet network.
- **ICT Services:** a significant increase in productivity and efficiency is the impact of innovation in the adoption of ICT services [59]. ICT services are an applicative form that will directly benefit users and stakeholders. ICT services will be focused on meeting aspects of services that meet basic needs and support services that can improve people's welfare.
- **ICT Literacy:** is a concept related to a person's ability to use computer devices for investigation, creation, and communication [69]. ICT literacy is related to the condition of society in the adoption of ICT. Various

components need to be improved to optimize ICT adoption. The components include ownership of digital tools, use of ICT, internet users, and understanding of strategic guidelines.

In the technology context and organization context, there is a two-way arrow relationship. It can be interpreted that the technology context and the organization context have a mutual influence [70]. The supply and demand interactions of microenterprise and microfinance within the scope of *Banjar* can be optimized with technological support. Adopting appropriate ICT will streamline business processes and organizational goals to improve people's welfare. All of the things stated above will run optimally and sustainably with supporting policies. The Advisory Board determines these policies.

A clear arrow points from the Advisory Board to the policies. The arrow "binds" the organization and technology contexts [71]. Environmental context is provided by the Advisory Board. The Advisory Board consists of various entities as stakeholders and entities that can help the Smart *Banjar* concept run according to its objectives. The main task of the Advisory Board is to develop and formulate policies. These policies are expected to be a guideline and even a legal basis in carrying out various activities on the Smart *Banjar* concept.

IV. CONCLUSION

The *Banjar* concept is a Balinese social structure that has existed since the 10th-11th century [40], [42]. Besides having traditional values that continue to be passed on, *Banjar* has been proven to be able to survive, adapt, and develop in the face of the times. The *Banjar* development has been in the fourth stage of the revolution. *Banjar* has become the centre of industry 4.0 or the digital economy [42]. Therefore, the Smart *Banjar* concept has been developed in this research, adapted from the Smart Village concept based on [27]–[31] research. Based on the analysis results carried out, it was found that there are differences in the framework dimensions in several pieces of research. In research [20], [47], [48], there are five (5) dimensions, and in research [46], there are six (6) dimensions. Then furthermore, there is the Smart Village Collaborative Model in research [20], [47], [48], which was adapted in this study.

The framework developed in this research is an ICT adoption framework. The theory of ICT adoption used is TOE (Technology-Organization-Environment). There are three entities in the technology context: ICT infrastructure, ICT services, and ICT literacy. The development of these three entities can be carried out simultaneously because they have the same level of interest and support for each other. The organization context describes the entity and management structure of the Smart *Banjar* concept. Based on the analysis results, it was found that the village government is the outermost entity that surrounds *Banjar*. Every *Banjar*, there will be some microenterprises and microfinance that can be owned and managed by the *Banjar*, Village, and or the community. The microenterprise and microfinance will operate within the scope of *Banjar*, Village, and or outside the Village area. In the environmental context, an Advisory Board will be formed. The Advisory Board will play a role in

formulating policies and regulations that are transparent, credible, and sustainable.

The main elements have been obtained based on the technology, organization, and environmental context. The relationship between each of these elements has been identified. It might be referred to as the proposed framework's parameters. In the end, an ICT adoption framework has been produced for the Smart *Banjar* concept. In Smart *Banjar*, an Advisory Board was formed, which played a critical role in formulating policies. The policy will regulate governance to realize the synergy between microenterprise, microfinance, and *Banjar*. It is considered Smart Governance with several indicators, including: fewer in-person appointments to office to obtain services, decreasing the duration of service waiting times, decreasing administrative and financial corruption, accelerating the response to urban issues and natural disasters, increasing employment rate, and development of new business concepts [72]. The adoption of ICT will support and optimize these synergies. The resulting synergy is expected to improve the welfare of the community.

Further research needs to be done to identify elements related explicitly to and become part of the Advisory Board at Smart *Banjar*. It is one of the keys to the success and sustainability of the Smart *Banjar* concept. Appropriate ICT implementation needs to be realized to ensure Smart *Banjar* runs optimally and has a real impact. Further research is needed to develop ICT adoption, which empirically proves to improve people's welfare.

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