The TIGER society framework in the scope of information technology infrastructure

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Abstract. The TIGER society focuses its economic development on tourism industries, which is supported by the government and stand on the development of competency and character based on local wisdom through education and religion. The TIGER society seeks to increase tourist satisfaction by optimizing relations between the five TIGER fields (tourism, industry, government, education, and religious) with information technology support. The purpose of this research is to create a TIGER society framework for the preliminary investigation of IT infrastructure needs in all TIGER fields. This study uses the literature survey method to find the theoretical basis for framework construction and follows the System Development Life Cycle method in determining its stages and activities. The framework is carried out through four stages, including 1) Preliminary analysis that determines strategic plans and service limits; 2) Submission of information technology infrastructure that describes services, actors and information technology components; 3) Explain the factors of production for each service; and 4) Delivering the initial plan to the executive who made the decision.

1. Introduction

Garut is the name of one of the districts in Indonesia located in the province of West Java. Garut is known as a tourist destination in the Priangan region since Indonesia's pre-independence era. The map of Garut tourism has been created and distributed since 1920 by the Official Tourism Bureau of the Java Tourism Association [1]. In 1934, the Travelers Official Information Bureau of Netherland India wrote testimony that East Priangan is famous for its natural and human beauty as evidenced by tourism in Garut at that time [2]. The tourism industry in Garut is still ongoing. The number of hotels in Garut is increasing every year; domestic tourist visits to Garut have increased, while foreign tourist visits have decreased [3]. The government must build and manage tourism very well to increase people's trust and produce a good political impact [4]. An important effort that needs to be done by the government includes conducting a preliminary investigation of tourism needs, such as information technology infrastructure which include technology, personnel, and service.

The application of information technology greatly influences the quality of service in the tourism service business process [5]. Information technology is changing tourism experiences significantly from conventional experience to technology-assisted, enhanced, and empowered experiences [6]. Some countries build smart tourism so that tourists always get the information services they need during the tour process [7]. Information technology devices in smart tourism provide easy access to tourist information services and tours guide services [8].
These services are not only delivered by humans but also by information technology devices. For example, a recommender system that mimics a travel agent in providing advice on vacation destinations for its users [9]. Another example is a tour guide system, which is the earliest application of a context-aware system [10]. The system produces information about the identity of the user, the location of the user, and the resources (device, services, etc.) available at that location [11]. The quality of tour guide services has an impact on tourist satisfaction [12].

The competence of professional tour guides also influences tourists satisfaction [13]. Education builds the competency of tourism actors. Character education builds moral knowledge, moral feelings, and moral actions that make a person work on good values [14] derived from local wisdom (religion and other values and norms) [15]. The moral feelings that must be present in tourism include empathy, which is an important element in human relationality and spirituality [16]. Integration between religion and spirituality in the workspace has a positive effect on commitment, work comfort, performance, and productivity [17]. Company empathy and other positive attitudes strongly affect customer satisfaction [18].

TIGER stands for five fields, which include tourism, industry, government, education, and religion. The review of the studies in the previous paragraph has shown the relationship between the five TIGER fields with tourists satisfaction supported by information technology. The TIGER society is a society centred on the tourism industry and its supporting industries, where the government contributes to its development and management by paying attention to education and religion that build competency and character of tourism actors. The TIGER society seeks to increase tourist satisfaction by optimizing the relationships among the five TIGER fields with information technology support. The purpose of this study is to create a TIGER society framework for the preliminary investigation of information technology infrastructure needs in all TIGER fields.

2. Method
This study uses a literature study method, in which data from the literature become the theoretical basis for the development of a framework. Stages and activities to achieve research objectives, as shown in figure 1.

![Work breakdown structure](image)

A literature search is an activity of collecting relevant literature, including books, journals, conference proceedings, and the internet [19]. The literature review produces an understanding of TIGER society's information technology infrastructure. The construction of a framework related to infrastructure needs follows the flow of preliminary investigation activities from the System Development Life Cycle method [20].
3. Results and discussion

3.1. TIGER society's information technology infrastructure
TIGER society's information technology infrastructure must include resources supporting tourism ecosystems. These resources within the iTour framework include human, non-human, and service. Non-human resources include information technology devices [21]. TIGER society's information technology infrastructure includes the use of information technology-based TIGER (IT-TIGER) services by tourism actors. Information technology components include hardware, software, and networks [22]. Tourism actors that use IT-TIGER services include [23]:

- Travelers: consumers of tourism products and services;
- Tourism industry: businesses that offer products and services to tourists;
- Supporting industries: businesses outside the tourism industry that tourists need;
- Government: policymakers and regulators that influence tourism;
- Local communities: important actors in tourism who live in tourist areas; and
- Non-governmental organizations (NGOs) that pay attention to social and community issues.

Character education uses religion as a source of local wisdom. Religion is an important factor in determining the flow of global tourism [24]. Therefore, religion is related to education and tourism. Religion is also related to the industry, as in industries that provide religious products and services. The government also administers religion in some countries like Indonesia. Not only in the religious field, but other TIGER fields are also related to each other. TIGER's society information technology infrastructure which covers the layers of services, actors, and information technology, as shown in Figure 2. The central part of information technology infrastructure is TIGER services that consider forms of computing/information technology-based services in its application [25].

| Information Technology based TIGER Services | Services | Tourism | Industries | Government | Education | Religious |
|--------------------------------------------|----------|---------|------------|------------|-----------|-----------|
| Tourism                                   | T,T      | I,T     | G,T        | E,T        | R,T       |
| Supporting                                | T,I      | I,I     | G,I        | E,I        | R,I       |
| Government                                | T,G      | I,G     | G,G        | E,G        | R,G       |
| Education                                 | T,E      | I,E     | G,E        | E,E        | R,E       |
| Religion                                  | T,R      | I,R     | G,R        | E,R        | R,R       |

| Tourism Actors | Tourist | Tourism Industries | Supporting Industries | Government | Local Community | NGO |
|----------------|---------|--------------------|-----------------------|------------|-----------------|-----|

| Information Technology | Software | Hardware | Network |
|------------------------|----------|----------|---------|

**Figure 2.** TIGER society's information technology infrastructure.
The matrix on the top layer of the TIGER community information technology infrastructure illustrates the relationship between IT-TIGER services. For example, the description of Service (T, T) is other tourism services, and Service (R, R) is other religion services. The description of Service (T, I) is tourism services related to industries, and Service (R, E) is religious services related to educations. Every IT-TIGER service has its production factor, which includes methods, people, machinery, materials, and money [22]. The relationship between production factor and IT-TIGER services is presented in the 25x4 matrix, as shown in figure 3. Number 25 represents the number of IT-TIGER services on the matrix from (T, T) to (R, R).

| No | Method      | Man          | Machine            | Material | Money |
|----|-------------|--------------|--------------------|----------|-------|
| 01 | Service (T,T) | Tourism Actors | Information Technology | Data     | Currency |
| 02 | Service (T,I) | Tourism Actors | Information Technology | Data     | Currency |
| 03 | Service (T,E) | Tourism Actors | Information Technology | Data     | Currency |
| ...| ...         | ...          | ...                | ...      | ...   |
| 25 | Service (R,R) | Tourism Actors | Information Technology | Data     | Currency |

**Figure 3.** Production factor of IT-TIGER services.

3.2. **TIGER society framework**

The formulation of the TIGER society framework considers the activities of the first phase (preliminary investigation) of the System Development Life Cycle [20]. TIGER society framework, as shown in figure 4.

**Figure 4.** TIGER society framework.

3.2.1. **Conduct preliminary analysis**

- **Establish a strategic plan.** In this step the analyst makes or ensures the availability of the TIGER society strategic plan;
- **Determine the scope of services.** In this step the analyst determines which IT-TIGER services (from the 25 services available on the matrix) that will fill the IT-TIGER layer based on the strategic plan, resource capacity, and available development time;
3.2.2. Propose information technology infrastructure

- **Identifying Services.** In this step, the analyst identifies IT-TIGER services that already exist or do not yet exist. One IT-TIGER service can include more than one service in a related field;
- **Identifying Actors.** In this step the analyst identifies tourism actors specifically that interact with IT-TIGER services;
- **Identifying IT Components.** In this step the analyst identifies specific information technology components that support IT-TIGER services;

3.2.3. Describe production factors. In this phase, the analyst determines the production factor for each IT-TIGER service. The production factor determines IT-TIGER service development costs and the data flow between IT-TIGER services and tourism actors. The developer must explain the benefits;

3.2.4. Submit preliminary plan. In this phase, the analyst writes all the results of the previous phase in the report and submits it to executives who can make decisions.

4. Conclusion

This study proposes a TIGER society framework that can be used by analysts for the initial investigation of TIGER society's information technology infrastructure needs. TIGER society's infrastructure is not only limited to information technology. For example, in ecological tourism, environmental infrastructure determines the carrying capacity of the environment and influences the sustainability of development [26]. The next phase after the preliminary investigation is designing TIGER society architecture. Further research can develop its framework based on enterprise architecture. TIGER society architecture is expected to describe data architecture, application architecture, technology architecture, and the direction of its implementation plan [27].

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