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DOI : 10.32734/lwsa.v8i1.2365
Electronic ISSN : 2654-7066
Print ISSN : 2654-7058

Volume 8 Issue 2 – 2025 TALENTA Conference Series: Local Wisdom, Social, and Arts (LWSA)



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Sustainable Economic Resource Utilization Based in Digital Enterprise Resource Planning (ERP) In Jember Tin Garden Agrotourism

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Abstract

Agrowisata Jember Tin Garden is a unique destination in Jember, East Java, focusing on the cultivation of tin plants. This place offers an educational tourism experience about organic farming and sustainability. However, there are still opportunities to enhance the use of information technology, particularly by implementing Enterprise Resource Planning (ERP) to improve operational efficiency and support the concept of a green economy. Through the integration of an ERP system, Jember Tin Garden can reduce the use of paper and inorganic materials while also enhancing technology-based tourism management. This will support sustainable economic growth and strengthen the agriculture-based tourism sector. The research problem formulation is to identify challenges and opportunities in managing economic resources at Agrowisata Jember Tin Garden and to formulate effective strategies to strengthen the utilization of sustainable economic resources through digital Enterprise Resource Planning (ERP) at the location. The research objectives include identifying these challenges and opportunities, designing effective strategies, and implementing and evaluating the impact of digitally implementing ERP systems on the utilization of sustainable economic resources at Agrowisata Jember Tin Garden. Agrowisata involves activities in rural areas that encompass agriculture, natural beauty, and local culture, while Enterprise Resource Planning (ERP) is a business management solution that automates organizational functions. Sustainable economic development aims to meet current needs without sacrificing future generations, while a circular economy utilizes resources sustainably. In implementation, the web platform uses a Frontend framework for display and a Backend for business logic and database. This research uses a qualitative method with a case study approach to delve into the management of economic resources at Jember Tin Garden. The research object is located in the Summersari District, Jember Regency, chosen due to the challenges of unintegrated tourism management. The digital implementation of the Enterprise Resource Planning (ERP) system is aimed at enhancing the potential of digitally based agrotourism. The types of data used are primary and secondary, collected through structured interviews, participant observation, documentation, and literature studies. Data analysis is conducted using the A.D.D.I.E. model, which involves recording the desired platform functions, design, development, and maintenance of the platform according to the research object's needs. Jember Tin Garden is a unique agrotourism destination in Jember Regency, East Java, renowned for its tin plants. Visitors can also find various other unique plants such as kiojay mangoes and Jamaican guavas, as well as breeding of klanceng bees. All plants are organically cared for without the use of chemicals, with compost fertilizer from organic waste in the surrounding area. However, the challenges faced include a lack of knowledge about technology-based tourism business information systems and suboptimal promotion. Research steps include preliminary studies and field studies with interviews with managers, local residents, and tourists, as well as literature studies to find related literature.

Keywords: Agrotourism; Enterprise Resource Planning; Jember Tin Garden; Local Residents; Jember Regency

1. Introduction

Agrotourism is a part of tourism that utilizes agricultural activities (agro) as its main attraction, aiming to expand knowledge, recreational experiences, business relations in agriculture, increase farmers' income, preserve land resources, maintain local agricultural technology, and contribute to sustainable agricultural development from ecological, social, economic, and management perspectives (Pambudi et al., 2018). The Department of Agriculture explains that agrotourism is a business activity in the agricultural sector by selling service offerings to consumers, including natural beauty, comfort, tranquility, and education (Syafira, 2017). Agrotourism can also serve as an alternative source of income for local communities, which can be developed and directed in both enclosed spaces (such as museums) and open spaces (parks or landscapes) (Marpaung et al., 2021). The

potential of agrotourism in Indonesia holds significant allure for developing the tourism and agriculture sectors, especially when supported by information technology advancements. However, the reality is that many agrotourism sites in Indonesia have yet to fully optimize digitalization.

Jember Tin Garden is an attractive agrotourism destination in the Jember Regency, East Java. The uniqueness of this place lies in its main commodity, which is the tin plant, the only one in East Java Province. The tin plant is a type of fruit-bearing plant that can be eaten and originates from West Asia. It commonly grows in tropical regions around the world and can adapt to various growing conditions, with a fairly long lifespan, making it suitable for cultivation in various agricultural lands worldwide (Ramadhanti, 2023). There are 242 tin plants consisting of 16 different species. However, the beauty of Jember Tin Garden is not limited to tin plants; visitors can also find other unique plants such as kiojay mangoes, purple sugar apples, Jamaican guavas, and diamond river longans. Additionally, Jember Tin Garden is also home to the breeding of klanceng bees. Interestingly, all plants grown in Jember Tin Garden are organically maintained without the use of chemical fertilizers or pesticides. The compost used comes from the processing of organic waste around the Jember Tin Garden area, not only nourishing the plants there but also supporting agriculture in the surrounding areas. Besides enjoying the natural beauty, visitors can also participate in various educational activities such as learning about the benefits of tin plants and other commodities, cultivation techniques, processing garden produce into products, and sustainable farming concepts. However, Jember Tin Garden agrotourism has not yet fully optimized the use of resources and the promotional strategies employed are still not as effective as expected. Therefore, it requires a problem-solving formulation in the form of an information technology system that can enhance services, effectiveness, and contribute to the concept of a green economy.

2. Literature Review

2.1. Agrotourism

Agrotourism is a collection of activities in rural areas that encompass farming, enjoying landscapes and biodiversity, learning about local culture, applying conventional or organic farming practices, and harvesting tropical fruits and vegetables. Currently, one of the options for tourists to enjoy nature-oriented vacations and agricultural experiences is agrotourism (Satriawan et al., 2021). Agrotourism has become an integrated and coordinated system of activities aimed at developing tourism and agriculture, with a focus on environmental conservation and improving community welfare (Situmorang & Suryawan, 2017).

2.2. Enterprise Resource Planning (ERP)

Enterprise Resource Planning (ERP) is a business management system solution used to manage, automate, and integrate all business functions within an organization. The ERP system is a collection of integrated software packages, including tools and business applications for product planning, cost and development, production, inventory management, supply chain, marketing and sales, shipping and payment, human resources, and customer information (Gozukara et al., 2022). ERP is software that helps organizations or companies manage and optimize the use of resources (materials, finance, human resources, etc.) by providing integrated solutions to process the information needed by the company. Additionally, ERP is needed by companies to achieve efficiency, agility, and responsiveness in succeeding in this dynamic business environment, and to help integrate companies into computerized systems for every process undertaken by the company (Angeline et al., 2022).

2.3. Sustainable Economy

Sustainable economic development is a process within the economic sector that prioritizes meeting current needs without sacrificing the fulfillment of future generations' needs. This includes efforts to increase per capita income levels in the long term, accelerate economic growth, and reduce or eradicate absolute poverty (Hasan & Azis, 2018). The National Development Planning Agency (Bappenas) (2023) states that the crucial nature of sustainable economy can be observed through two main impacts resulting from the ongoing economic growth: the deterioration of environmental quality leading to the prevalence of natural disasters, which also disrupt industrial activities and the economy on a massive scale, and economic activities focused solely on profit contributing to widening social inequality because economic growth is not accompanied by economic distribution aspects.

2.4. Circular Economy

Circular economy is an economic model that relies on the sustainable circulation of resources as its core, supporting socio-economic activities (Fadhillah, 2023). Experts provide various definitions of circular economy from different perspectives, such as the environmental perspective, which addresses sustainability issues regarding resource inputs, waste and emission outputs, and defines circular economy in terms of resource scarcity, environmental impact, and economic benefits, or resource optimization related to cleaner production, enhancing the technical and biological cycle value of materials through circular strategies (Geissdoerfer et al., 2017).

2.5. Frontend and Backend

In the implementation of this platform, a framework of thinking is applied in implementing the platform, in this case utilizing

the Frontend and Backend schemes which are two interconnected and continuous components in the development of website platforms. Frontend is responsible for arranging the display according to its underlying data structure. Meanwhile, the backend is the part that contains business logic and interacts with the database.

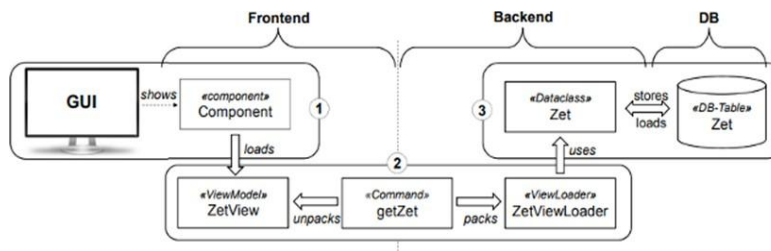


Figure 1: Frontend dan Backend InterfaceSource: Gerasimov (2020)

In front-end development, basic programming languages such as HyperText Markup Language (HTML) are used as a framework for structuring websites. Cascading Style Sheets (CSS) are used to control front-end aspects such as background, font type, and font size. JavaScript is utilized to manage interactivity and add engaging and complex animations to websites. There are several commonly used frameworks in frontend development, such as Angular.js, Vue.js, React.js, Ember.js, and Backbone (Gerasimov, A, 2020). In the backend, there are crucial tasks such as data grouping, data recognition, and security and content management. Programming languages commonly used in the backend include PHP, Python, and Ruby. In the backend, there is also a database that serves to store and manage data, as well as bridge data with user information.

3. Research Method

3.1. Type of Research

This research utilizes a qualitative method with a case study approach. According to Creswell (2013:54), qualitative method involves the exploration and analysis of individual and group behaviors with the aim of providing descriptions related to human aspects. The case study research approach aims to gain a deeper understanding of social phenomena or human behavior by analyzing data such as texts, images, sounds, or other materials that occur in real-life situations.

According to Moleong (2010:6), qualitative research is used to obtain an understanding of phenomena experienced by research subjects, explaining that qualitative research is a research method used to gain a deeper understanding of phenomena experienced by research subjects. In qualitative research, the focus is on understanding, interpretation, and in-depth description of how individuals or groups experience and understand the phenomena under study, as well as how their contexts and subjective perspectives influence those experiences.

3.2. Research Object and Research Location

The object of this research is Jember Tin Garden located in Summersari District, Jember Regency. The main reason for selecting this research object is based on the issues related to the lack of integrated tourism management and the suboptimal promotion strategies of agrotourism. However, considering the high potential of Jember Tin Garden agrotourism due to its unique feature of fig fruit, which is synonymous with Arab countries and highly favored by Muslims. The implementation will utilize a digital Enterprise Resource Planning (ERP) system to synergize the optimization of agrotourism with great potential in Jember Regency based on digital platforms.

4. Results and Discussion

4.1. Overview of Jember Tin Garden Conditions

Jember Tin Garden is an interesting agro-tourism destination in Jember Regency, East Java. The uniqueness of this place lies in its main commodity, the tin plant, which is the only one in East Java Province. Tin plant is a kind of edible fruit-producing plant originating from West Asia, commonly grown in the tropics in the world and is able to adapt to a variety of growing conditions and has a fairly long life span, so it is suitable to be developed in a wide range of agricultural land in various parts of the world (Ramadhanti, 2023). There are 242 tin plants that are able to bear fruit throughout the year. Each tin plant takes 4 months from seedling to fruiting, and from the beginning of fruiting to harvest takes 3 months. Tin plants in Jember Tin Garden Agrotourism have 10 different types and have unique shapes, colors, and flavors, such as Green Jordan, Red Palestine, Purple Jordan, Conadria, Blue Giant, Black Genoa, White Genoa, Teena, T G F Jumbo, and Hawaiian. The Tin Plant seeds are obtained from several different countries.

But the beauty of Jember Tin Garden is not only limited to tin plants, visitors can also find other unique plants such as Kiojay Mango, Purple Crickets, Jamaican Guava, and Diamond River longan. In addition, Jember Tin Garden is also home to Klanceng

Bee breeding. These bees produce prospectively pure honey that is beneficial for endurance. Interestingly, all the plants that grow in Jember Tin Garden are treated organically without the use of chemicals in fertilizers or anti-pest or anti-weed drugs. The compost fertilizer used comes from the processing of organic waste around the Jember Tin Garden area, which not only fertilizes the plants there but also supports the surrounding agriculture. In addition to enjoying the beauty of nature, visitors can also take part in various educational activities at the Jember Tin Garden workspace, such as learning about the benefits of tin plants, and other commodities, cultivation methods, processing garden products into products, and the concept of sustainable agriculture.

4.2. Interview Results

On March 9, 2024, we interviewed a visitor named Madam Neve Selena Binti Ismail who is a lecturer at Sultan Zainal Abidin University, Malaysia. She said that she often encountered tin fruit when visiting the Arab country, but the form of the fruit has been processed into sweets. While when visiting Jember Tin Garden Agrotourism, she felt happy when walking around the garden because there are many tin plants that have different types from various countries. In addition, it is given the opportunity to pick fruit directly and enjoy processed products made from tin fruit and leaves, such as the tin, tin jam, tin chocolate, tin leaf crackers, and many more. He hopes that Jember Tin Garden Agrotourism can be widely recognized by the Indonesian people and become an icon of Jember Regency, so that it can attract other foreign tourists to visit. The processed products also have the opportunity to be exported, so that more and more people can get the blessings of the benefits of the Jember Tin Garden tin plant.

There was also a visitor from Mataram named Mr. Mohammad Arifin. He expressed his happiness at having the opportunity to visit the Jember Tin Garden Agrotourism. This is the first time he has tasted tin fruit picked directly from the tree and said that it tastes sweet, unique, and has many benefits for the body. He also hopes that this agro-tourism can be known to the wider community and become a link between Lombok and Jember through business partnerships, research, and other activities related to the plantation sector. He also tasted other commodities, such as Diamond River longan which has a sweet taste different from other longan. He opined that the products produced are very extraordinary, because in the planting process they use organic fertilizer that is processed by themselves.

Researchers also interviewed the head of RT 03, Mr. Sutrisno to find out his response to the existence of Jember Tin Garden Agrotourism. Mr. Sutrisno shared his agreement with residents in RT 03 to make their village a Tin Village, with Jember Tin Garden providing the seeds, and each house will plant at least 1 tin plant in polybags or simple media. The tin plants can be brought to Jember Tin Garden to be processed into a product and marketed, or even sold independently. He will coordinate with the Summersari Sub-District Head to provide 1 stand in each neighborhood for the exhibition of processed Tin products, so that if there are tourists can taste first at the residents' stand while being directly directed to the Jember Tin Garden Agrotourism.

On April 15, 2024 we made a return visit to Jember Tin Garden and interviewed Mr. H.M. Iswinarso as one of the managers of Jember Tin Garden Agrotourism. He said that various efforts have been made by him and the team to improve the condition of the garden, by adding a variety of plantation crops that have never been found in other agro-tourism, trying to breed klanceng bees which are believed to produce honey that is beneficial for endurance, selling plantation products, trying to innovate processed products of Jember Tin Garden Agrotourism, and processing all business licenses. However, there were some obstacles experienced, especially in the field of organizational management and marketing. He and his team felt that the task load was uneven or not in accordance with the duties and functions in each field. The use of social media is also not yet optimal, still looking for strategies to introduce Jember Tin Garden Agrotourism more widely. The hope is to be able to collaborate with the Jember Regency government, marketing cooperatives, students, Jember Customs, and other supporting stakeholders. He hopes that Jember Tin Garden Agrotourism can be widely recognized by the Indonesian people.

5. Conclusion

Based on the results of research conducted on Jember Tin Garden Agrotourism, we can conclude that there are significant challenges as well as great opportunities in managing economic resources in this destination. The main challenges include a lack of understanding of technology-based tourism business information systems as well as suboptimal integration between various operational aspects. However, we also identify opportunities that can be exploited through the application of information technology, particularly through Enterprise Resource Planning (ERP) systems, to increase efficiency and support the concept of a sustainable economy. To overcome this challenge, we recommend building an ERP software that will assist in internal and external business management, as well as increase product promotion and sales. This solution includes features such as a Website Marketing Dashboard, accounting features, e-commerce products, databases, and ticketing services. In addition, we also propose implementing a structured implementation process, including the stages of design, development, testing, performance evaluation, launch, and regular system maintenance.

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