

## DOMINANT FACTORS CHANGE OF LAND FUNCTION IN RAPUAN ROAD CORRIDOR UBUD BALI DUE TO TOURISM ACTIVITIES

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### ABSTRACT

Bali is the most popular tourist destination with Ubud one of the tourist destinations with its beautiful landscapes and rice fields. Mas Village, Ubud is one of the tourist villages that has been inaugurated by the Gianyar Regency Government based on the Decree of the Gianyar Regent Number 429/E-02/HK/2017 regarding the establishment of a Tourism Village. Jalan Rapuan which is located in Tarukan Tourism Village, Mas is one of the strategic corridors in Mas Tourism Village because it is a stretch of rice fields that has a high tourism selling value. The purpose of this study is to identify changes in land use in 2013-2021 due to tourism activities seen from the aspects that have a dominant influence on land use changes. Quantitative method is the method used with primary and secondary data collection methods and stages of analysis in the form of descriptive analysis of tourism activities in Mas Village, statistical-descriptive analysis of land use change with overlay analysis on the Jalan Rapuan corridor. The results showed that there was a change in land use along the Rapuan corridor in 2013-2021 by 14% of the non-built land to be built in the form of tourist accommodation and housing. The indicators analyzed by factor analysis were able to explain important factors, namely external factors of 31.69%, internal factors of 23.821% and regulatory factors of 17.218% with a total of factors able to explain land use change of 72.73%.

**Keywords:** tourism activities; changes in land use; the dominant factor is land use change.

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### INTRODUCTION

Based on the Tripadvisor Travelers Choice Awards (2021), Bali is the most popular tourist destination in the world as well as in previous years. In line with that, tourist visits to Bali based on 2015-2019 data show that the arrival of foreign tourists to Bali has increased every year from 4,001,835 people to 6,275,210 people. Ubud is one of the tourist destinations in Bali which is a National Tourism Strategic Area and is also seen from the constellation of policies in the region, both the Bali Province Spatial Plan and the Gianyar Regency, which is a strategic area for the Province and the Regency Strategic Area based on the side of economic growth. Tourism has both positive and negative impacts on local communities themselves (Cianga, 2017; Lari Letoluo & Wangombe, 2018; Latip et al., 2020; Nguyen et al., 2020). The progress of tourism in the Balinese population has experienced a transition, changing the way of acting and the attitude of the population which was originally a ritual of communality towards individualism, economy and democracy. Although it has a negative impact, however, tourism activities bring economic benefits (Semara & Saputra, 2015; Setyadi, 2007). One of the developments of tourism in Ubud can be seen from the development of the number of amenities supporting tourism activities, recorded 1,037 accommodation units in Gianyar Regency and as many as 870 units in Ubud District (BPS, 2020b). Ubud is one of the tourist destinations in Bali with nuances of customs and culture which is the main attraction compared to other tourist attractions in Bali.

Tourism affects economic growth through several channels, one of which is tourism development which stimulates investment in infrastructure (Sakai, 2006) in (Yakup & Haryanto, 2019). In line with that, according to Cohen (1984) in Rina (2019) explains eight types of positive effects of tourism on the socio-economic conditions of the local population, one of which is the effect on development in general. The construction of hotel facilities and other tourism facilities and infrastructure will affect land use and the need for land. Land is a natural resource that is very meaningful for the sustainability of human life, becoming an important input needed for human activities (Putu Gde Ariastita, 2009). Land is an asset that is always contested by those who want to

change it through development and those who want to stabilize it through the preservation of the existing and its traditional uses. Land as an input to the production process will be considered in making it for other uses. Good land use will greatly determine how the population functions in a wider context, which will determine the growth and development of a city and its related aspects, such as the creation of political, economic, cultural, defense, security structures and ensuring a stable ecosystem.

The Indonesian government through the Ministry of Tourism and Creative Economy/Tourism and Creative Economy Agency held the 2021 Indonesian Tourism Village Award (ADWI) event. The 2021 Indonesian Tourism Village Award is an arena for giving appreciation to tourist villages that have the potential to be further developed. This event has the goal of creating an Indonesian tourist village as a prestigious and highly competitive world tourism destination. In line with the principle of sustainable development, which involves three elements of development, namely social, economic and environmental, the tourism village is one of the places to implement sustainable development. Mas Village through the Decree of the Gianyar Regent Number 429/E-02/HK/2017 is one of the tourist villages located in Ubud District, Gianyar. The development of the Mas tourist village resulted in changes in land function. According to Martin (1993) in Wahyunto (2001), land use change or transformation is an increase in one or more land uses from one side of use to another accompanied by a decrease in other types of land use from one time to the next, or a change in function. one or more lands in an area at different times. Changes in land use occur when part or all of the land from its original function becomes another function. In other words, land that was previously used for agricultural activities has changed its use into development activities, for example the construction of buildings, housing, and other infrastructure (Mustopa, 2011; Ridwan, 2016). The process of land use transformation is caused by several factors, namely external/external factors, internal/internal factors and policy/regulatory factors, besides that there is research concluding that social, economic and government policies in making a development provision can result in land use changes (Ariga Rahmad Safitra, 2014; Ridwan, 2016).

This seems to have a very clear effect on the land use in Mas Village. The Rapuan Corridor is one of the strategic corridors in Mas Village, there has been a massive change in land function from productive land to a means of supporting tourism activities (Moreno & Barquero, 2020; Ni Made Trigunasih, 2015; Verburg et al., 2004). This research was conducted to determine the changes in land use from 2013-2021 and to determine the dominant factors of land use changes. By understanding changes in land use, it can be a recommendation in formulating rules related to controlling land use with reference to sustainable development.

## RESEARCH METHODS

### Research sites

Mas Village is one of eight villages in Ubud District. Mas Village is located at coordinates 8° 36'30" South Latitude and 115° 21'05" East Longitude. Mas Village administratively consists of 12 banjars namely Banjar Tegalbingin, Banjar Bangkilesan, Banjar Pengosekan Kelod, Banjar Pengosekan Kaja, Banjar Abianseka, Banjar Tarukan, Banjar Nyuh Kuning, Banjar Kawan, Banjar Satria, Banjar Kumbuh, Banjar Juga and Banjar Batanacak (Mas Village, 2019). Mas Village is adjacent to several villages, in the west it is bordered by Londtunduh Village and Singakerta Village, Ubud Sub-district, in the north it is bordered by Ubud Village and Peliatan Village, Ubud Sub-district, in the east by Kemenuh Village, Sukawati District and in the south by Batuan Kaler Village, Sukawati District.

Research on the dominant factor of land use change in the corridor of Jalan Rapuan Ubud Bali due to tourism activities was carried out on the Jalan Rapuan corridor in a subak of Rapuan Kaja located in Banjar Tarukan, Mas Village with an area of 25.22 Ha. The research locations are as follows:

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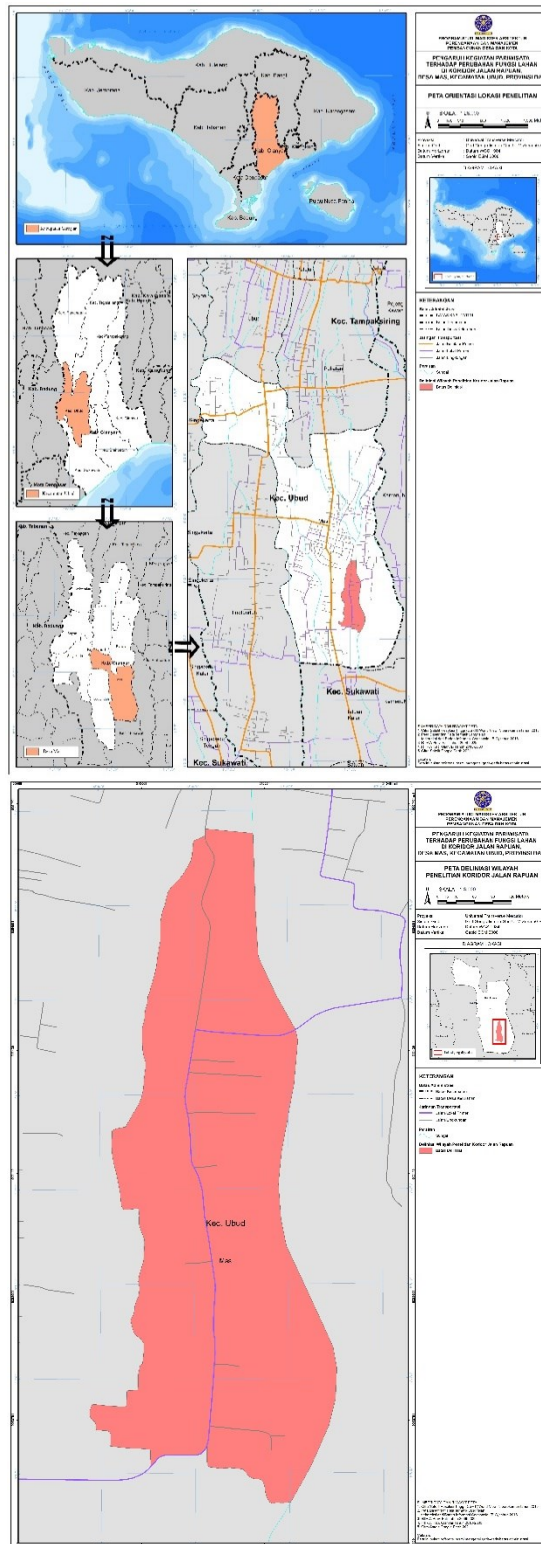


Figure 1. Rapuan Road Corridor Research Location

## Data Types and Sources

The use of data in this study is quantitative and qualitative data. Quantitative data in the form of general condition data of the area, conditions of tourism activities, land use in 2013 and 2021 as well as data from questionnaires and qualitative data obtained from interviews. The research variable is a description of the important factors that cause the conversion of paddy fields, namely external factors, internal factors and regulatory factors (Ridwan, 2016) in the presence of tourism activities. The description of these variables is as follows (1) External/external factors are translated into several indicators (a) attractions/tourism attractions (b) accessibility (c) amenities (d) infrastructure, (2) internal/internal factors with indicators (a) land ownership (b) generation in land management (c) land location (d) economy and (3) policy/regulatory factors with indicators (a) determination of Mas Village as a tourist village and the existence of Tarukan Tourism Village (b) the need for a regulation (c) existence of subak as one of the world cultural heritage.

## Research methods

Research on the dominant factors of land use change in the corridor of Jalan Rapuan Ubud Bali due to tourism activities is included in this type of research using quantitative research methods with primary and secondary data collection methods through field observations, literature studies and interviews. This research is a type of quantitative method, because this study accumulates or seeks data on the characteristics and functions of land in the Jalan Rapuan corridor (Md. Mamun Habib, Bishwajit Banik Pathik, 2014; Silalahi, 2015) as well as analyzing and presenting data and facts that have been processed, along with their interpretations (Dr. Ismael Nurdin, Dra. Sri Hartati, 2019) and interviews with related figures and analyzed to obtain the dominant factors influencing land use change using confirmatory factor analysis using SPSS.

## Analysis Stage

The stages of the analysis carried out to determine the amount of land use change in the Jalan Rapuan corridor is a descriptive analysis of the characteristics of tourism activities and land use in Wisata Mas Village. This descriptive analysis aims to produce an overview of the characteristics of tourism activities seen from the components of tourism activities, namely tourist attraction, accessibility and amenities. Followed by statistical-descriptive analysis of land use characteristics in the Jalan Rapuan corridor. After knowing the characteristics of tourism activities and land use, an Overlay analysis was carried out, namely the skill to put two different maps and display the results (Ilham Gunta, 2013). In short, the overlay overlays a digital map, namely the 2013 land use map, on another digital map, namely the 2021 land use map along with the map information and produces a map that has information on land use changes.

The next stage is the analysis of the dominant factors that affect land use changes as a result of tourism activities in the Jalan Rapuan corridor using confirmatory factor analysis from the results of interviews with respondents. Confirmatory factor analysis is a method of factor analysis in which a priori according to the theories and concepts that have been determined at the beginning, therefore several variables to be formed, as well as indicators are included in each variable that is formed and has a definite purpose (Anwar Hidayat, 2014; Sahid Raharjo, 2014; Sofyan Yamin, nd; Suseno Bimo, 2017). The description of the variables that are processed are as follows FE1: The existence of the attractiveness of the Tarukan tourist village has an influence on changes in land function in the Rapuan road corridor; FE2: Mas Village, especially the Tarukan tourist village on the Rapuan road corridor, is on a strategic tourism route and can be reached easily and has an impact on the physical development of the village; FE3: Tourist accommodation is one of the things needed in the development of the Mas tourist village, specifically in the Tarukan Tourism Village; FE4: The existence of a network of roads, electricity, telephone and other basic infrastructure networks is one of the causes of changes in land use in the Rapuan road corridor; FI1: Owners of paddy fields who are not cultivators tend to change the function of the land; FI2: Lack of future generations in managing paddy fields resulting in conversion of paddy fields; FE3: The strategic location of paddy fields tends to change functions; FE4: Making rice fields as another function can improve the economy; FR1: The designation of Mas village as a tourist village, especially Banjar Tarukan as a Tarukan Tourism Village, resulted in the conversion of land functions; FR2: There is no need for a

policy regulation to control land conversion; FR3: The existence of subak as one of the world's cultural heritage must be preserved.

### **Research Sample**

According to Soekidji (2005) in IsmaelNurdin & Sri Hartati(2019), the sample is several parts to be taken from the total object under study and is considered to represent the population. The sampling technique was carried out by purposive sampling method with a sample calculation technique using Slovin with of 10% obtained a sample of 76 people consisting of members of the Mas Village apparatus, Banjar Tarukan officials, homestay accommodation business actors and land owners in the Rapuan road corridor.

## **RESULTS AND DISCUSSION**

### **Potential Attractions, Amenities and Accessibility of Mas Tourism Village**

Mas tourist village has tourism potential both physically and non-physically in the form of cultural values that grow in Mas Village. Attractions that are better known as tourist attractions are assets that can attract domestic and foreign tourists. There are 15 art galleries, Mas Village is famous for its village of sculpture and painting artists. The existence of art galleries along Mas highway is one of the attractions for tourists to visit Mas Village. In addition, activities such as cak torch, gamelan selonding, butterfly dance, mask making, wood carving, canang sari, parwa dance, temple piodalan, traditional games, mask dance and shadow puppets are attractions in Mas Village ( Anonymous, 2019).

In addition, the potential for a comfortable and recommended homestay. The homestay in Mas Village is a resident's house, so the inn is in the architectural style of a typical Balinese house. There are 16 homestays in Mas Tourism Village. The existence of homestays that utilize traditional Balinese housing is a comprehensive place of life with a traditional pattern and an integration of abiotic, biotic and socio-cultural environments with the application of the Tri Hita Karana concept (Dwijendra, 2003; Wastika, 2005). Besides being known as a cultural village, Mas Village is an agricultural village where there are still residents who make a living as farmers. The existence of a stretch of rice fields in Mas Village is one of the tourist attractions to attract tourists to visit Mas Village.

Ease of achieving a tourist attraction must be supported by the availability of facilities, infrastructure and transportation systems that make it easier for tourists to get to and from tourist attractions. Mas Village is traversed by the primary collector road which is a strategic road for the Sukawati-Ubud-Tampaksiring/Tegalalang-Kintamani tourist route with good pavement conditions. Mas Village can be reached by using the Teman Bus route Ubung – Monkey Forest Ubud or by using a private vehicle. In addition to easy accessibility, the availability of facilities in Mas Village consists of elementary school facilities (SD) totaling 10 elementary schools. There is 1 junior high school (SMP) and 2 vocational high schools (SMK). Health facilities in Mas Village consist of 1 hospital, 4 polyclinics/medicine centers and 4 pharmacies (BPS, 2020a). In addition to the population, there are community institutions that have a role in the development of tourist villages, namely the 12 sekaa teruna who are spread throughout the banjar in Mas Village, community empowerment institutions (LPM), Trash Hero Chapter Mas which is a community forum that cares about environmental cleanliness, especially on environmental problems. plastic waste. This program was first conducted on September 17, 2017 by involving elements in the community such as elementary school children to the elderly in Mas Village.

### **Change of Land Function From Non-Built to Built in Rapuan Road Corridor**

Mas Village was designated as a tourist village referring to the Decree of the Gianyar Regent Number 429/E-02/HK/2017 concerning the Designation of a Tourism Village in Gianyar Regency, then the Mas Village Government directed Banjar Tarukan to become a Tarukan tourist village. The Tarukan tourist village is one of the banjars that is the focus of the development of the Mas tourist village. The Rapuan road corridor is one of the strategic corridors in Tarukan Tourism Village. In general, land use is dominated by the use of non-built land in the form of rice fields.

Dharma wan (2007); Sihaholo (2004) in Ridwan (2016) explains that the pattern of land tenure is divided into two broad categories, namely owners and cultivators are generally carried out by

farmers and second, namely owners who give trust to cultivators with a profit-sharing system which is a typical pattern that occurs in Indonesia. Of the 43 ownership of paddy fields, 43.56% of paddy fields are cultivated by the owners themselves and the remaining 67.44% are cultivated by people who are different from the owners of paddy fields (cultivators). Semara (2015); Losvitasari (2017) explains that the agricultural sector does not attract youth because the tourism sector is more promising than working in the agricultural sector. The more open opportunities for work outside the agricultural sector in Bali have reduced productive human resources in the agricultural sector. The land use in the Rapuan road corridor in 2013 and 2021 consists of roads, gardens, trade and services which include tourist accommodation, worship, settlements and rice fields.

**Table 1.** Changes in Land Use in Rapuan Road Corridor 2013-2021

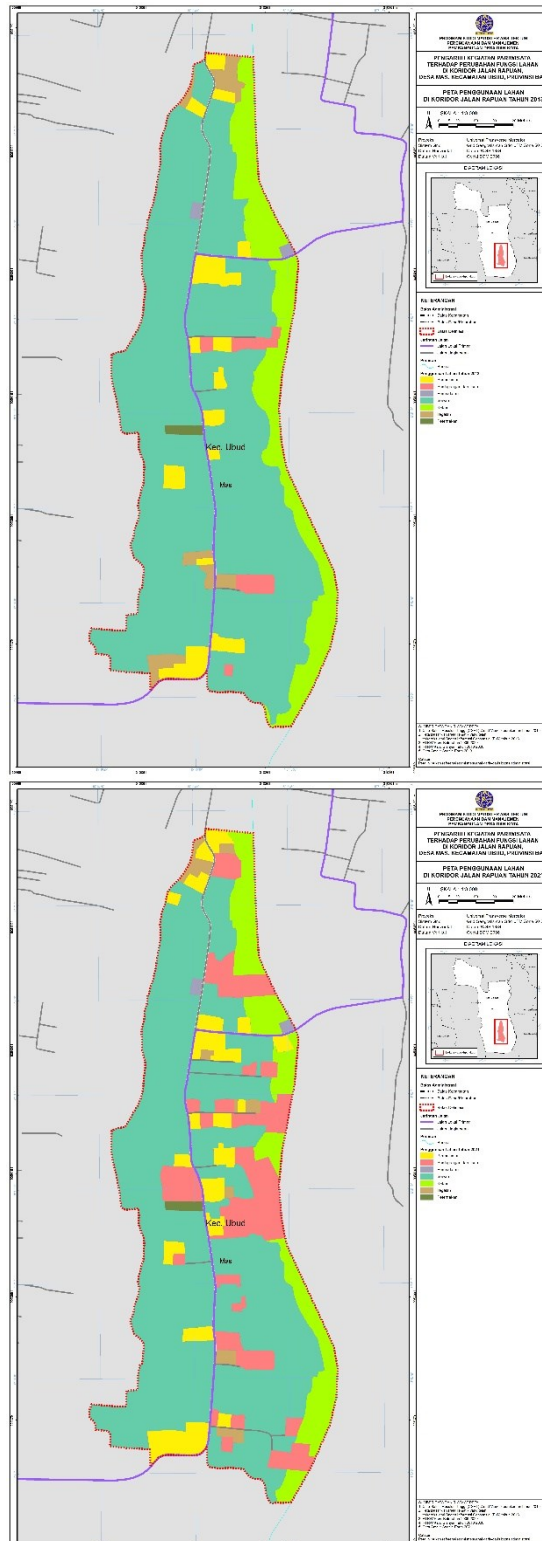
No	Land use	Area (Ha) Year				Subtraction/ Addition (Ha)	Percentage Change (%)
		2013	Percentage (%)	2021	Percentage		
1.	Road	0,42	1,65%	0,42	1,65%	Tetap	-
2.	garden	3,63	14,41%	2,90	11,49%	-0,73	2,92%
3.	Trade and services	0,44	1,73%	3,48	13,78%	3,04	11,73%
4.	Worship	0,08	0,33%	0,08	0,33%	Tetap	-
5.	Housing area	1,37	5,43%	1,94	7,69%	0,57	2,24%
6.	farm	0,10	0,38%	0,10	0,38%	Tetap	-
7.	Ricefield	18,55	73,53%	15,86	62,86%	-2,69	10,74%
8.	Moor	0,64	2,54%	0,46	1,82%	-0,18	
<b>Total</b>		<b>25,22</b>	<b>100,00%</b>	<b>25,22</b>	<b>100%</b>		

Source: GIS Calculation Results, 2021

Based on table 1, changes in land use in the Rapuan road corridor are known to have changed in land use area. There is a reduction in the area of use of garden land, rice fields and dry fields. On the one hand, the increase in area occurred in the use of commercial land (trade and services) and settlements. Changes in land use occur from changes in garden land, rice fields and dry fields to trade and services in this case are villas and tourist cottages. There is also a change of garden / rice field / dry land into housing. According to Acwin Dwijendra & Putu Sueca (2019), there has been a transformation in the provision of housing, both informal housing and traditional Balinese housing, seen from the ability of the community itself.

Spatially land change can be depicted in Figure 2 land use change maps in 2013 (left) and 2021 (right). Spatially, the land use change from non-built to built is located east of Jalan Rapuan in the form of tourist accommodation and housing. Overall, the percentage of non-built land changes from 2013-2021 is 14% to built-up land in the form of tourist accommodation or housing. The development of tourism facilities provides changes to subak land (I Ketut Suwena, Ni Putu Ratna Sari, 2012; Semara & Saputra, 2015). Land use has shifted towards the use of built-up land from wet agricultural land to buildings that support tourism activities. In line with that, Pratami (2018) and Anjas (2021) explain that land use as an environmental carrying capacity cannot maintain its area due to urgent matters of changing the function to support tourism activities.





**Figure 2.** Map of Land Use Change 2013 (left) and 2021 (right). Source: Primary Survey Results and Processed GIS, 2021



**Figure 3.** Condition of Rapuan Road Corridor in 2013 (left) and 2021 (right). Source: (Left) Village Documentation, 2013 and (Right) Primary Survey, 2021

Based on Figure 3, the condition of the Rapuan road corridor in 2013 (left) and in the same place in 2021 (right) there has been a physical change in the form of road pavement from macadam to asphalt and it can be seen that there is construction on the right side of the image. Based on the policy of the 2012-2032 Gianyar Regency Spatial Plan, Mas Village is part of the PKN urban system in the Gianyar district, which is part of the Sarbagita urban area with the direction of development as the center of activity of the Sarbagita urban KSN system (Gianyar, 2012). The position of Mas village which is part of the Sarbagita urban KSN and is part of the Ubud urban area has a physical influence on land use changes.

The strategy that can be implemented in dealing with changes in land use is to strengthen and implement a subak regulation both to support tourism activities and land use changes. The same thing is to collaborate with the government in developing the potential of subak local wisdom to produce unique agricultural products and tourist attractions and strengthen subak institutions. Subak being one of the local wisdoms of the Balinese people in the agricultural system is a manifestation of the Tri Hita Karana philosophy. The existence of local wisdom can shape urban patterns and structures and provide limitations in the use of urban space (Herawati, 2015; Made Ratna Witari & Komang Sariasih, 2020; Sumantra et al., 2020).

### **Dominant Factors of Land Use Change in Rapuan Road Corridor**

Changes in land use in the Rapuan road corridor by 14% from non-built land to built-up land. The influencing factors are described from three important factors, namely external factors, internal factors and regulatory factors. These important factors are translated into 11 indicators including tourist attractions, accessibility, amenities, infrastructure, land ownership, generation in land management, land location, economy, determination of Mas Village as a tourist village and the existence of Tarukan Tourism Village, the need for a regulation. and the existence of subak as one of the world's cultural heritage. The eleven indicators were analyzed using confirmatory factor



analysis and the results obtained on descriptive statistics that the external factor variable on the second indicator had the highest average value while the lowest indicator was on the regulatory factor variable of the second indicator. The following are the results of the interpretation of factor analysis that must be met, namely the testing of all correlation matrices as measured by the Bartlett Test of Sphericity or Measure Sampling Adequacy (MSA) and Kaiser Meyer Olkin Measure of Sampling (KMO), the KMO value is considered sufficient if more than 0.5 .

**Table 2.** KMO and Bartlett's Test

Test result	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0,772
Bartlett's Test of Sphericity	458.443
Signifikansi	0,000

Source: Results of Factor Analysis with SPSS, 2021

Based on table 2, it is known that the Kaiser Meyer Olkin Measure of Sampling value is 0.772, thus the KMO requirements have met the requirements with a value above 0.5. The next assumption is that the Barlett Test of Spehricity is worth 458,443 with a significance value of 0.000. Thus the Bartlett Test of Sphericity has met the requirements with a significance below 0.05 (5%) with a 95% correctness rate for factor analysis.

**Table 3.** Total Variance Explained – Rotation Sums Of Squared Loadings

Component	Total	% Of Variance	Cumulative %
1	3,487	31,698	31,698
2	2,620	23,821	55,519
3	1,894	17,218	72,737

Source: Results of Factor Analysis with SPSS, 2021

There are 11 components that can represent important factor variables in this case are external, internal and regulatory factors. The first factor is 31.69%, the second factor is 23.82% and the third factor is 17.22% so that the total of the three factors will be able to explain the land use change of 72.73%. In addition, if the Eigenvalues is set to 1, the number of values to be taken is a value > 1, namely components 1, 2 and 3.

**Table 4.** Rotated Component Matrix

Indicator	Component		
	1	2	3
FE1	0,163	0,809	0,053
FE2	0,229	0,819	-0,050
FE3	0,004	0,716	-0,206
FE4	0,163	0,798	0,102
FI1	0,868	0,261	0,121
FI2	0,929	0,064	0,023
FI3	0,897	0,202	-0,041
FI4	0,844	0,111	-0,022
FR1	0,473	0,107	0,696
FR2	-0,147	-0,079	0,737
FR3	0,019	-0,051	0,890

Source: Results of Factor Analysis with SPSS, 2021

The determination of the grouping of indicators is determined by looking at the largest correlation value. In table 4 of the Rotated Component Matrix, it can be seen that the largest correlation value based on the indicator row has been grouped according to its components. External factor indicators are FE1 attractions, FE2 accessibility, FE3 amenities, FE4 infrastructure. Internal factor indicators are FI1 land ownership, FI2 generation in land management, FI3 land location, FI4 economy and regulatory factors the indicator is FR1 the determination of Mas Village as a tourist village and the existence of the Tarukan tourist village, FR2 the need for a rule, FR3 the existence of subak as one of the heritages world culture. In accordance with the principle, confirmatory factor analysis is carried out to identify the relationship between variables by confirming the translation of these variables.

## CONCLUSION

Mas Village is a tourist village that has tourism potential in terms of nature and culture, nature which consists of environmental conditions with rice fields which are an attraction and cultural activities that underlie tourists to visit. The Tarukan tourism village is one of the banjars in Mas Village which is directed to become a tourist attraction, the ease of achievement can be reached easily, traversed by a primary collector road network with good road conditions. Supporting facilities for tourism activities consist of educational facilities, health facilities consisting of hospitals, polyclinics/medicine centers and pharmacies. In addition to residents, there are community institutions that have a role in the development of tourist villages, namely the 12 sekaa teruna scattered throughout the banjar in Mas Village, the community empowerment institution (LPM), Trash Hero Chapter Mas. The existence of these tourism activities has an influence on land use changes in the Jalan Rapuan corridor.

Jalan Rapuan is a strategic corridor in the tourist village of Tarukan in the last 8 years experiencing land use changes. Changes in land use in 2013-2021 from non-built land to built-up land amounted to 14%. Changes occur from productive agricultural land into housing and tourist accommodation. The indicators described from the important factors of land use change have been able to explain important factors, namely external factors in the form of tourist attractions, accessibility, amenities, infrastructure with a factor contribution of 31.69%, internal factors in the form of land ownership, generation in management land, land location, economy with a contributing factor of 23.821% and regulatory factors, namely the determination of Mas Village as a tourist village, the need for a regulation and the existence of subak as one of the world cultural heritages of 17.218% with a total factor capable of explaining land use changes of 72.73 % .

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