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Measuring Economic Resilience of Tourist Villages Overtime: An Analysis of Temporal Variations of Pre and Post the Covid-19 Pandemic

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Abstract

Tourist village plays an important role in rural development in Indonesia. Nevertheless, tourist village is also prone to external shocks such as national and global economic volatilities and recent public health events of the Covid-19 pandemic. This study attempts to analyze a temporal variations of tourist village economic resilience from pandemic shock in 24 tourist village destinations covering the period of 2019-2022 in Indonesia. A synthetic composite index of the Adjusted Mazziotta-Pareto Index (AMPI) was used to measure resilience, followed by clustering analysis to determine the typology of the resilience. The resilience index was composed of capacity and performance dimension related to resilience. The results show that most villages were severely affected in the first year of Covid-19, yet they recovered afterward, as indicated by positive differences in the AMPI index before and after Covid-19. This result shows that tourist villages in Indonesia have a tendency of strong capacity and performance to recover from the pandemic shock. The economic components of the capacity and performance were able to readjust after the pandemic indicating that these components are relatively adaptable to the shocks. The indicator that has the most significant influence on the typology of resilience in the performance dimension is the number of visitors. Meanwhile, the Development Village Index (DVI) indicator is the most significant influence on the capacity dimension.

Keywords: tourist village; economic resilience; Adjusted Mazziotta-Pareto Index (AMPI); temporal variations; pandemic Covid-19

JEL classification: Z320, R580

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1. INTRODUCTION

Rural tourism is becoming a worldwide trend due to its ability to encourage and provide economic, social, and environmental benefits. Amghani M. et al. (2016); Bayrak (2022); Jamini & Dehghani (2022); Shi et al. (2022); Liu et al. (2023); Huang et al. (2023); Stepanova et al. (2023), stated rural tourism is a critical dimension and new kinetic energy in revitalizing the development of rural regions. Rural tourism is a vector of sustainable

development capable of generating employment and income creation, combating rural exodus, becoming a socio-economic networking proposal, saving and enhancing cultural and natural heritage, and improving the quality of life for residents (Rodrigues et al., 2021). Shin et al., (2017) stated rural tourism is one of the most paramount factors in driving economic growth in rural areas and provides many direct benefits to residents. Rural tourism is considered a breakthrough in overcoming numerous problems in rural areas and encouraging the sustainable development of rural communities (Neumeier & Pollermann, 2014; Lv et al., 2021).

In Indonesia, rural tourism plays an essential role in providing employment, community empowerment, and strengthening entrepreneurship for local workers (Herawati, 2014) while helping preserve culture (Fatimah, 2015; Latif, 2018). From time to time, rural tourism in Indonesia has grown steadily, marked by the emergence of rural tourism destinations spread across various regions. Since 2021 by the Coordinating Ministry for Economic Affairs, rural tourism has been institutionalized as tourist villages and has been determined to be the direction for rural tourism development. This provision aims to encourage increased economic growth and people's welfare, eradicate poverty, overcome unemployment, preserve nature and the environment, and promote rural culture (Ariyani et al., 2022) The number of tourist villages until 2019 has reached 1,831 (Ariyani & Fauzi, 2023).

However, the Covid-19 outbreak, which was first detected in Wuhan, China, at the end of December 2019 (Rahmayani et al., 2021), has had a significant impact on rural tourism and tourist villages in Indonesia. The Covid-19 pandemic is the largest in history and its impact is evenly distributed throughout the world, both developing and developed countries, none of which were immune from the shock (Retnasih & Herdianti, 2023). However, from mid-2019 to the end of 2021, rural tourism experienced a drastic decline as a result of the Covid-19 pandemic (Sasongko et al., 2022). Tourist numbers dropped, several tourist villages closed, managers' income decreased, traders around tourist destinations lost their livelihoods, and rising unemployment occurred in tourist villages (Damanik et al., 2022). Data from the Central Statistics Agency during 2019-2023 shows a decrease in the percentage of domestic tourists visiting tourist villages as seen in Figure 1. During the Covid-19 pandemic, 3,539 people who are operational officers from 70 villages have lost their jobs because the tourist villages closed their services (Raharjana & Anshori, 2022).

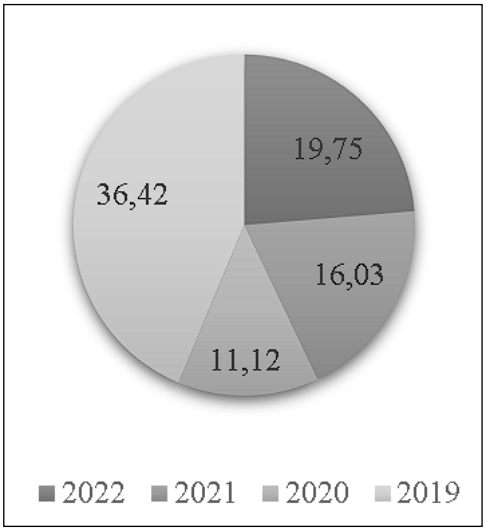

Figure 1. Prosentase of Domestic Tourists Visiting Rural Tourism

Source: BPS, 2019-2022

Tourism is a sector that is very vulnerable to various shocks or disruptions (Gallego & Font, 2019). The vulnerability of the tourism sector is mainly caused by the easily damaged structure and function and the inability of the tourism system to adapt to disturbances quickly (Qin & Chen, 2022). The Covid-19 pandemic has been the biggest shock for tourism throughout the world (Gössling et al., 2020) and tourism is the sector most affected by this outbreak (Henseler et al., 2022; Marco-Lajara et al., 2022).

Nevertheless, it is important to note that not all tourist villages in Indonesia have been negatively affected. While some tourist villages

had to temporarily close their operations during the pandemic, others continued to operate partially, and certain villages even saw development opportunities (Damanik et al., 2022). Wibowo & Hariadi (2022) stated the Covid-19 pandemic had a positive impact and created new opportunities in rural tourism by implementing the nature tourism concept.

Therefore, building resilience in tourism is a crucial factor and a new solution to managing sustainability (Higgins-Desbiolles, 2020; Feng et al., 2021; Hu et al., 2021; Ohe, 2022). Planning-based resilience is an effective alternative for developing sustainable tourism (Hall et al., 2017; Lew, 2014). Specifically, resilience is crucial to rural tourism sustainability and an essential variable in assisting the tourism sector in recovering from the effects of a pandemic (Pocinho et al., 2022).

Giacometti & Teras (2019) stated that although there is no consensus on a single definition of resilience. resilience is identified as the system's capacity to adapt toward challenges that threaten system function (Folke et al., 2010; Southwick et al., 2014). Proag (2014) Hosseini et al. (2016); and Heslinga et al. (2020) stated that resilience describes the ability of a system to work well when under pressure or the ability of a system to absorb and recover from the impact of disruptive events without fundamental changes in the function or structure of the system. Meanwhile, Régibeau & Rockett (2013) defined resilience as the ability of an economy, society, organization, or individual to recover effectively from an unexpected shock.

Since the 21st century, resilience has become increasingly widely accepted as a basic framework for understanding the world system in dealing with various (anthropogenic) disaster contexts, including its application in tourism (Cochrane, 2010). Resilience was first used in the field of tourism in the '90s (O'Hare & Barret, 1994), and gradually, studies of resilience expanded to rural tourism, including community resilience in rural tourism (Lew et al., 2016); tourism projects in rural land development (Shi et al., 2022); the impact of the tourism industry on the overall resilience capacity of a region (Ibanescu et al., 2022); rural tourism in Japan during the new normal (Ohe, 2022), and the impact of Covid-19 on rural area resilience (Yu et al., 2023).

Although the concept of resilience has developed in various fields, there is no measurement method agreement generally that can become a reference in policies for strengthening the resilience of rural tourism. This study aims to analyze the economic resilience of tourist villages in Indonesia in the face of the Covid-19 pandemic, determine the typology and economic resilience factors of tourist villages. The problem that will be answered in this research is: what is the level of resilience of tourist villages in Indonesia in facing the Covid-19 pandemic? What is the typology of tourist village resilience, and how do various variables influence the economic resilience of tourist villages?. The research results will become a model for measuring the resilience of tourist villages and become a reference for developing resilient and sustainable tourist villages.

2. RESEARCH METHODS

2.1 Study Area and Data Source

The study was conducted in 24 tourist villages representing tourist villages located in Central Java, East Java, West Java, Special Region of Yogyakarta, and West Nusa Tenggara. The selection of these villages was based on several factors: the availability of data, they were suspected of being affected by the Covid-19 shock, and their presence was assessed as having impacted the economy and social the rural society. Table 1 provides an overview of the profiles of the 24 villages and their main tourist attractions.

Table 1. Profile of 24 Villages as Research Object

No	Village Tourist	Regency	Province	Main Tourist Attraction
1	Pentingsari	Sleman	Special Region of Yogyakarta	Welcoming dance tour packages, traditional dance learning tour packages, gamelan learning tour packages
2	Karangrejo	Magelang	Central Java	Panoramic view of Bukit Punthuk Setumbu and Bukit Rhema
3	Wanurejo	Magelang	Central Java	Traditional farming tour packages), Sonjo Ndeso tour packages, Javanese sugar education
4	Bleberan	Gunung Kidul	Special Region of Yogyakarta	Andong tour packages, Javanese fashion tour packages, Karawitan tour packages
5	Tinalah	Kulon Progo	Special Region of Yogyakarta	Rancang Kencono Cave, Cultural tourism
6	Gunung Gajah	Pemalang	Central Java	Exploring nature, River tubing, Camping
7	Pulau Cemara	Brebes	Central Java	Mountain panorama
8	Mandiraja	Pemalang	Central Java	Beach panorama
9	Wana Wisata	Boyolali	Central Java	Panorama of nature and Sidok waterfall
10	Tlogoweru	Demak	Central Java	Panorama of the Kedung Ombo reservoir, floating stalls
11	Wonosari	Grobogan	Central Java	Owl breeding, Fishing
12	Tlogowero	Temanggung	Central Java	Panorama of the Kedung Ombo reservoir, culinary delights
13	Bilebante	Central Lombok	West Nusa Tenggara	Banyu Ciblon Lestari Baths
14	Tambaksari	Pasuruan	East Java	Panoramic view of the countryside, camping ground
15	Pampang	Gunung Kidul	Special Region of Yogyakarta	Panorama of nature and culture
16	Bendolawang	Malang	East Java	Panorama nature and river tubing Bendowo river
17	Malangjiwan	Klaten	East Java	Panorama of nature and Agrotourism
18	Beji	Gunung Kidul	Special Region of Yogyakarta	Umbul Brintik Natural Baths
19	Tetebatu	East Lombok	West Nusa Tenggara	Natural panorama and customary forest
20	Sade	Central Lombok	West Nusa Tenggara	Rural natural panorama, cycling package, camping ground
21	Bonjeruk	Central Lombok	West Nusa Tenggara	Traditional tourism of the Sasak tribe

No	Village Tourist	Regency	Province	Main Tourist Attraction
22	Hanjeli	Sukabumi	West Java	Natural panorama of ancient cliff waterfalls, traditional culinary
23	Tepus	Gunung Kidul	Special Region of Yogyakarta	Hanjeli Product Education, Hanjeli Harvest Tour Packages, Numbuk Hanjeli Tour Packages
24	Cibuntu	Kuningan	West Java	Traditional dances, village tour packages, and beach panoramas

Source: https://jadesta.kemenparekraf.go.id/

This study uses secondary data in the form of documents of tourist village management. The data collection process uses the documentation observation method. To assess the resilience of these villages in facing the Covid-19 shock, data was collected from 2019 (before the Covid-19 pandemic) to 2022 (during and after the Covid-19 pandemic).

2.2 Analysis Method

This study aims to assess the resilience of tourist villages over time, specifically before and after the Covid-19 pandemic. By incorporating a time dimension and utilizing a composite index, this approach provides a unique perspective on the interplay between normalization, aggregation, and temporal factors (Bacchini et al., 2020). While previous research by (Frigerio et al., 2018) has explored the concept of vulnerability in relation to resilience, this study does not include spatial correlation analysis. This study focuses on examining the temporal variations in resilience levels across 24 tourism villages, dividing the study into three distinct periods: pre-crisis (2019-2020), crisis (2020-2021), and post-crisis (2021-2022). This stage follows the concept of crisis management, which consists of three steps: pre-crisis, crisis, and post-crisis (Coombs, 2023)

To measure economic resilience of tourist village is used a synthetic indicator known as the Adjusted Mazziotta-Pareto Index (AMPI) was developed by Mazziotta & Pareto (2016). AMPI is a composite index that allows data comparison across units and time, resulting in compatibility with the spatiotemporal approach. The choice of the AMPI method also corresponds to the characteristics of a tourism system that is complex, dynamic, and associated with many variables (Baggio, 2020; Lv et al., 2021) so that it cannot be measured by a single indicator (Mazziotta & Pareto, 2013; Mazziotta & Pareto, 2017; Scaccabarozzi et al., 2022).

The AMPI method started with normalizing data or indicators using the following formula:

$$r_{ij} = \left[\frac{(x_{ij} - Minx_j)}{Maxx_j - Minx_j}\right] * 60 + 70$$

where is the matrix of n rows containing unit analysis and m columns containing indicators, and and are the goalspots for indicator j. Such normalization is a refinement of the MPI method to appreciate absolute changes over time (Mazziotta & Pareto, 2104). The range of normalization is varied between 70 and 130. If we denote and as the mean and standard deviation of normalized value of unit , respectively, the generalized form of AMPI is given by the following equation:

$$AMPI_i^{+/-} = M_{ri} \pm S_{ri}cv_i$$

Where represents the coefficient of variation of the unit i. The sign indicates whether the phenomenon to be measured is maximized (the higher, the better) or minimized (the lower, the better).

As stated earlier, the AMPI needs a "goal spot" to facilitate interpreting the results. A reference point of 100, which is the average of indicators in a given year, is used. The AMPI value higher or lower than this reference point indicates whether the unit being analyzed is progressing or regressing. In this case, it indicates whether the units are more resilient or vice versa. The procedure to set the goal spot is the following:

$Ref_{x_j \pm \Delta}$ where $\Delta = \frac{(Sup_{x_j} - Inf x_j)}{x}$

where and represents the maximum and the minimum of indicator across all periods and the reference value of indicator j (Mazziotta & Pareto, 2017).

Measuring resilience using the AMPI method goes through several stages, starting with selecting indicators for tourism village resilience. At this stage, because there is no unanimous consensus in terms of both definition and measurement (Stanícková & Melecký, 2018; Martin, 2012; Muštra et al., 2020), the determination of economic resilience indicators in the study follows the following principles: must involve various dimensions/variables that are considered proxies of a phenomenon so that appropriate action can be taken (Proag, 2014) or part of it, may react adversely during the occurrence of a hazardous event. This concept of vulnerability implies a measure of risk associated with the physical, social and economic aspects and implications resulting from the system's ability to cope with the resulting event. Concepts of resilience take two broad forms, namely (1; the selection of non-neutral variables; each may represent a different aspect of resilience in reacting to shocks, depending on the territorial context (Compagnucci & Urso, 2021).

In this study, economic resilience tourist village indicators are compiled from two main components: capacity and performance dimension. Capacity relates to resources that are part of the tourist village system, which is measured through indicators: (1) capacity building (cbdg), (2) employees (emp): (3) Village Development Index (VDI). Meanwhile, performance is related to the results of the work of the tourist village during and after disturbances, which is measured through indicators: (1) tourist (trs) (2) income (inc), (3) cost (cst). Indicators of tourist village economic resilience are listed in Table 2.

Table 2. Resilience Indicators of Rural Tourism

Capacity Dimension	Performance Dimension
Capacity building: number of trainings conducted in a year (times)	Tourist: number of tourists during the year (person)
Employees: number of employees in a year (people)	Income: total income for a year (IDR)
Village Development Index: a framework to maintain villages' potential and ability to achieve sustainable development and prosper village life covering social, economic, and ecological aspects (per district)	Cost: total cost for a year (IDR)

In accordance with the AMPI stages, data on resilience indicators from 24 tourist villages is normalized first. Data normalization results are shown in Table 3-5.

Table 3. Normalized AMPI Indicator in 2019

Tourist Village	cbdg*)	emp	VDI	trs	inc	cst
Pentingsari	111	101	106	99	128	124
Karangrejo	120	96	101	98	100	110
Wanurejo	102	96	101	97	99	101
Bleberan	93	112	104	102	100	111
Tinalah	96	101	101	98	98	97
Gunung Gajah	93	95	100	99	98	95
Pulau Cemara	96	97	95	100	98	96
Mandiraja	93	97	98	98	98	95
Wana Wisata	93	95	98	104	99	112
Tlogoweru	120	95	95	97	98	94

Tourist Village	cbdg*)	emp	VDI	trs	inc	cst
Wonosari	90	97	95	101	99	96
Tlogowero	93	96	104	99	98	98
Bilebante	105	120	100	99	100	106
Tambaksari	102	97	99	98	98	95
Pampang	90	99	100	97	98	94
Bendolawang	96	99	98	97	98	94
Malangjiwan	90	97	98	127	100	105
Beji	105	98	104	98	98	96
Tetebatu	105	125	100	97	99	103
Sade	108	96	99	104	99	98
Bonjeruk	111	99	99	97	98	95
Hanjeli	96	98	98	97	98	95
Tepus	90	97	104	97	98	94
Cibuntu	93	96	101	99	98	97

Source: AMPI Analysis

*) variables symbol

Table 4. Normalized AMPI Indicator in 2020

Tourist Village	cbdg*)	emp	VDI	trs	inc	cst
Pentingsari	95	95	106	96	94	95
Karangrejo	95	97	101	98	115	120
Wanurejo	95	97	101	98	108	106
Bleberan	100	113	103	104	114	108
Tinalah	125	101	102	97	95	96
Gunung Gajah	95	97	100	103	97	98
Pulau Cemara	95	101	96	105	97	99
Mandiraja	95	99	98	100	96	97
Wana Wisata	100	96	97	101	99	100
Tlogoweru	98	96	94	96	94	95
Wonosari	98	98	95	104	106	98
Tlogowero	95	96	104	99	97	98
Bilebante	111	105	100	96	95	96
Tambaksari	100	98	102	98	96	97
Pampang	106	101	101	97	94	95
Bendolawang	95	98	97	96	94	95
Malangjiwan	95	99	100	126	124	125
Beji	100	100	105	97	96	97
Tetebatu	109	125	99	97	112	105
Sade	106	99	99	106	97	97
Bonjeruk	106	100	101	97	96	97
Hanjeli	98	98	96	96	96	97

Tourist Village	cbdg*)	emp	VDI	trs	inc	cst
Tepus	95	98	103	96	95	96
Cibuntu	95	95	102	96	94	95

Source: AMPI Analysis

*) variable symbol

Table 5. Normalized AMPI Indicator in 2021

Tourist Village	cbdg*)	emp	VDI	trs	inc	cst
Pentingsari	102	102	106	95	95	97
Karangrejo	119	97	100	97	123	125
Wanurejo	93	97	100	97	105	104
Bleberan	93	110	103	100	101	101
Tinalah	123	102	102	96	95	96
Gunung Gajah	93	96	100	100	94	97
Pulau Cemara	95	100	95	106	96	98
Mandiraja	93	97	97	98	94	96
Wana Wisata	98	96	97	108	109	106
Tlogoweru	98	96	95	95	93	95
Wonosari	95	98	95	108	107	97
Tlogowero	98	96	103	98	95	97
Bilebante	109	106	99	96	98	98
Tambaksari	93	98	101	96	94	97
Pampang	102	100	100	95	93	95
Bendolawang	95	98	101	95	93	95
Malangjiwan	93	98	100	125	117	117
Beji	93	97	105	95	93	95
Tetebatu	102	125	98	96	118	108
Sade	107	98	99	115	96	97
Bonjeruk	107	101	100	99	109	102
Hanjeli	95	97	96	95	94	96
Tepus	105	97	105	95	94	96
Cibuntu	95	97	102	100	97	98

Source: AMPI Analysis

*) variable symbol

Table 6. Normalized AMPI Indicator in 2022

Tourist Village	cbdg*)	emp	VDI	trs	inc	cst
Pentingsari	126	124	97	116	125	128
Karangrejo	155	116	94	116	163	167
Wanurejo	107	113	94	119	124	123
Bleberan	107	135	96	119	118	120
Tinalah	155	124	97	115	120	124
Gunung Gajah	110	112	92	118	113	116
Pulau Cemara	113	120	90	122	116	117

Tourist Village	cbdg*)	emp	VDI	trs	inc	cst
Mandiraja	107	114	93	115	113	116
Wana Wisata	113	113	91	138	125	124
Tlogoweru	126	113	90	112	112	115
Wonosari	110	116	89	136	124	117
Tlogowero	110	112	95	115	114	117
Bilebante	123	140	96	117	131	125
Tambaksari	117	117	94	115	114	117
Pampang	123	120	95	113	112	115
Bendolawang	110	116	94	112	112	115
Malangjiwan	110	117	93	163	141	143
Beji	107	114	97	113	113	115
Tetebatu	113	162	95	114	129	125
Sade	123	117	93	151	119	121
Bonjeruk	136	129	94	123	139	134
Hanjeli	110	116	90	113	113	116
Tepus	120	118	97	113	116	119
Cibuntu	110	114	96	117	118	120

Source: AMPI Analysis

*) variable symbol

Futhermore, a typology of tourist village resilience will be presented in the 2019-2022, 2020-202, and 2019-2021 periods to describe the resilience characteristics of each tourist village. Determining the resilience typology of tourist villages uses the resilience trend matrix developed by Compagnucci & Urso (2021), which classifies resilience typologies into eight types (Table 7). This resilience trend matrix helps investigate how the use of different indicators will affect resilience measures and helps explore whether certain indicators are more appropriate for assessing the resilience of tourist village.

Table 7. Resilience Trends Schema

No.	Trend	Periods		
		I	II	III
1	Systemic declining	-	-	-
2	Turnaround	-	-	+
3	Counter cyclical	-	+	-
4	Positive jolt	-	+	+
5	Resistance	+	+	+
6	Severely hit	+	-	-
7	Standard resilience	+	-	+
8	Lagged shock	+	+	-

Source: Compagnucci & Urso (2021)

The resilience trend metric will analyze and compare the conditions of each village based on sequential variations of the resilience index (Δ) during the 2019-2022 period, calculated as the geometric value of the resilience index through the following equation:

$$\Delta cbdg = \left(\frac{\Sigma cbdg_{t+k}}{\Sigma cbdg_t}\right)^{1/k} - 1 \qquad [1]$$

$$\Delta trs = \left(\frac{\Sigma trs_{t+k}}{\Sigma trs_t}\right)^{1/k} - 1 \qquad [2]$$

$$\Delta inc = \left(\frac{\sum inc_{t+k}}{\sum inc_t}\right)^{1/k} - 1 \qquad [3]...[6]$$

In equation [1] we consider the ratio between number of capacity building activities (Σcbdg) at the end of the period (t+k) on the value the capacity building activities (t), we raise the result to the power of one divided by the period length

(k) and we subtract one from the subsequent result. In equations [2], [3] to equation [6] according to the number of variables, we perform the same calculations using the variables number of tourists (Σ trs), total income (Σ inc), number of employees (Σ emp), and total costs (Σ cost) and the value of the Village Development Index (VDI)2.

4. RESULTS AND DISCUSSION

4.1 Economic Resilience Tourism Village Index

Table 8 shows that one year after the pandemic, all tourist villages suffered from a lower performance, as indicated by decreases in their AMPI scores. The delta (Δ) score from 2019-2020 showed changes in the resilience index of 24 tourist villages in 2019-2020. This period was the most critical period to hit the tourism village. All 24 villages studied experienced a decreased resilience index (negative delta AMPI). The impact, however, affected villages differently. Some experienced a slight reduction in their resilience score, while others were significantly affected.

Table 8. Comparison of Tourism Village Resilience Index Prior to During the Covid-19 Pandemic

Tourist Village	AMPI								
	2019	2020	Δ_1	2020	2021	Δ_2	2021	2022	Δ_3
Pentingsari	107.543	92.728	-14.815	107.543	99.363	-8.18	107.543	118.566	11.023
Karangrejo	103.401	94.608	-8.793	103.401	108.836	5.435	103.401	130.491	27.09
Wanurejo	99.358	96.037	-3.321	99.358	99.233	-0.125	99.358	112.524	1.166
Bleberan	103.293	102.091	-1.202	103.293	101.050	-2.243	103.293	114.805	11.512
Tinalah	98.628	92.423	-6.205	98.628	101.606	2.978	98.628	120.395	21.767
Gunung Gajah	96.659	95.469	-1.19	96.659	96.610	-0.049	96.659	109.813	13.154
Pulau Cemara	97.094	95.242	-1.852	97.094	98.471	1.377	97.094	112.095	15.001
Mandiraja	96.557	95.666	-0.891	96.557	95.744	-0.813	96.557	109.006	12.449
Wana Wisata	99.879	97.276	-2.603	99.879	102.027	2.148	99.879	115.969	16.09
Tlogoweru	99.090	94.181	-4.909	99.090	95.247	-3.843	99.090	110.458	11.368
Wonosari	96.174	95.931	-0.243	96.174	99.775	3.601	96.174	113.914	17.74
Tlogowero	98.003	95.103	-2.9	98.003	97.693	-0.31	98.003	110.091	12.455
Bilebante	104.705	94.876	-9.829	104.705	100.928	-3.777	104.705	120.750	16.045
Tambaksari	98.129	96.477	-1.652	98.129	96.436	-1.693	98.129	111.619	13.49
Pampang	96.381	94.768	-1.613	96.381	97.326	0.945	96.381	112.194	15.813
Bendolawang	97.041	94.443	-2.598	97.041	95.986	-1.055	97.041	109.545	12.504
Malangjiwan	101.882	97.627	-4.255	101.882	107.394	5.512	101.882	124.144	22.262
Beji	99.838	96.154	-3.684	99.838	96.206	-3.632	99.838	109.628	9.79
Tetebatu	104.052	98.319	-5.733	104.052	107.203	3.151	104.052	120.301	16.249
Sade	100.603	96.692	-3.911	100.603	101.590	0.987	100.603	118.571	17.968
Bonjeruk	99.790	95.858	-3.932	99.790	102.940	3.15	99.790	124.534	24.744
Hanjeli	97.321	96.095	-1.226	97.321	95.607	-1.714	97.321	109.075	11.754
Tepus	96.584	94.218	-2.366	96.584	98.353	1.769	96.584	113.240	16.656
Cibuntu	97.597	93.544	-4.053	97.597	98.162	0.565	107.543	118.566	14.364

Source: AMPI Analysis

Table 9. Comparison of Tourism Village Resilience Index After the Covid-19 Pandemic

Tourist Village	AMPI								
	2019	2022	Δ_1	2020	2022	Δ_2	2021	2022	Δ_3
Pentingsari	107.543	118.566	11.023	92.728	118.566	25.838	99.363	118.566	19.203
Karangrejo	103.401	130.491	27.09	94.608	130.491	35.883	108.836	130.491	21.655
Wanurejo	99.358	112.524	1.166	96.037	112.52	16.487	99.233	112.524	13.291
Bleberan	103.293	114.805	11.512	102.091	114.805	12.714	101.050	114.805	13.755
Tinalah	98.628	120.395	21.767	92.423	120.395	27.972	101.606	120.395	18.789
Gunung Gajah	96.659	109.813	13.154	95.469	109.813	14.344	96.610	109.813	13.203
Pulau Cemara	97.094	112.095	15.001	95.242	112.095	16.853	98.471	112.095	13.624
Mandiraja	96.557	109.006	12.449	95.666	109.006	13.34	95.744	109.006	13.262
Wana Wisata	99.879	115.969	16.09	97.276	115.969	18.693	102.027	115.969	13.942
Tlogoweru	99.090	110.458	11.368	94.181	110.458	16.277	95.247	110.458	15.211
Wonosari	96.174	113.914	17.74	95.931	113.914	17.983	99.775	113.914	14.139
Tlogowero	98.003	110.091	12.455	95.103	110.091	14.988	97.693	110.091	12.398
Bilebante	104.705	120.750	16.045	94.876	120.750	25.874	100.928	120.750	19.822
Tambaksari	98.129	111.619	13.49	96.477	111.619	15.142	96.436	111.619	15.183
Pampang	96.381	112.194	15.813	94.768	112.194	17.426	97.326	112.194	14.868
Bendolawang	97.041	109.545	12.504	94.443	109.545	15.102	95.986	109.545	13.559
Malangjiwan	101.882	124.144	22.262	97.627	124.144	26.517	107.394	124.144	16.75
Beji	99.838	109.628	9.79	96.154	109.628	13.474	96.206	109.628	13.422
Tetebatu	104.052	120.301	16.249	98.319	120.301	21.982	107.203	120.301	13.098
Sade	100.603	118.571	17.968	96.692	118.571	21.879	101.590	118.571	16.981
Bonjeruk	99.790	124.534	24.744	95.858	124.534	28.676	102.940	124.534	21.594
Hanjeli	97.321	109.075	11.754	96.095	109.075	12.98	95.607	109.075	13.468
Tepus	96.584	113.240	16.656	94.218	113.240	19.022	98.353	113.240	14.887
Cibuntu	97.597	111.961	14.364	93.544	111.961	18.417	98.162	111.961	13.799

Source: AMPI Analysis

During 2019-2020, the Pentingsari tourist village experienced the most significant plunge in the resilience index compared with other villages. The government's travel ban policy resulted in a degradation dramatically in the number of tourist arrivals. Therefore, the tourist village, offering rural and agricultural cultural attractions, closed its services rather than bearing costs disproportionate to its income. However, several tourist villages remain open despite the number of visitors and their income decreasing sharply. They kept their activities to maintain their status of tourist village by engaging in other activities such as training their staff or maintaining facilities.

Compared with 2019-2021 and 2020-2021, they have depicted extreme differences in the tourist village resilience index. From 2020 to 2021 (one year after the Covid-19 pandemic), almost all villages, except Tambaksari village, showed a remarkable recovery evidenced by positive changes in their AMPI scores (delta AMPI positive). These conditions indicate that during this period, the tourist village has adapted to the shocks caused by Covid-19. The resilience index generally increases because tourist villages implemented health protocols in the tourism sector (Cleanliness Healthy Safety Environment or CHSE Protocol) and conducted training related to services during the new normal period, and

several villages modified tourist destinations in digital formats by offering travel packages. Digital tourism was developed to target visitors who could not visit in person or were still afraid of catching Covid-19. In addition, the recovery was also supported by the government policy that gradually reopened tourism activities. As a result of this policy, the number of visitors gradually increased.

As seen from Table 8, during 2020-2021 (Δ2), the most significant increase in the resilience index occurred in Karangrejo village. Karangrejo village is a community-based tourist village offering rural and agricultural cultural attractions. With full support from the community, especially in providing lodging facilities and implementing the CHSE protocol to ensure visitors' health during their tours, this village raised the number of visitors, followed by increases in other resilience indicators.

Table 9 compares AMPI resilience scores before, during, and after Covid-19 (i.e., from 2019 to 2022, using 2022 as a "goal spot"). As can be seen from Table 9, the overall AMPI scores showed significant climbs toward 2022, indicating a strong recovery trend from the shock. The most significant rise in AMPI scores occurred in 2021-2022, when all villages experienced an increase in the index, reaching double digits. This condition illustrated that tourist villages have adapted to the Covid-19 shock and can be fully recovered. One of the villages that showed strong resilience, indicated by the highest positive value of delta (Δ), was Karangrejo. One of the reasons for the success of Karangrejo village was its ability to build partnerships with several parties, especially with State-Owned Enterprises, by forming the Village Economic Center (known locally as Balkondes). This is in accordance with research Fafurida (2017) Public and private partnerships can increase the economic growth of the tourism sector.

In addition, the Tourism Awareness Group (known as Pokdarwis) has played a pivotal role in strengthening resilience to the Covid-19 shock. The collaboration of the two institutions is influential in developing creativity and encouraging visitor arrival. Karangrejo also pointed out a high level of community involvement in providing homestays and other supporting facilities that have been adapted to health protocols, which have increased the performance of this tourist village, both in terms of the number of visitors and income. This condition is evidence of the successful implementation of community-based tourism, which has successfully dealt with external shocks. The success of the Karangrejo tourist village has earned it an award from the Indonesian government as a sustainable tourist village.

4.2 Typology of Economic Resilience Tourist Village Index

The results of the AMPI analysis (Table 8-9) were used to determine and analyze the typology of tourist village resilience. Futhermore, based on the trend resilience scheme (Table 7), tourist villages are grouped based on their resilience trend (Table 10). Table 10 shows that at the start of the pandemic (2019-2020), all villages showed a negative AMPI index. However, in 2020-2021, 12 villages (50%) could adjust so that their AMPI index values were positive. These conditions continue, so all villages showed positive resilience in 2021-2022.

Based on the trend of resistance variation during 2019-2020; 2020-2021; 2021-2022, as many as 50% of the total villages (12 tourist villages) are included in the turnaround category (- - +), meaning that at the beginning and during the pandemic they were not able to survive, but then recovered after the pandemic ended. Meanwhile, 12 other villages were shaken by the pandemic in the initial period (2019-2020) and soon recovered in the following period (2020-2021; 2021-2022), so they are classified as villages with a positive jolt typology (- + +). If seen per region, the typology trend of the tourist village typology is more diverse (Table 11). In Central Java, five villages (50% of the tourist villages analyzed lead to a turnaround typology, while five other villages are on a positive jolt typology. In East Java, all observed villages (2 villages) lead to a turnaround typology. In Yogyakarta (DIY), conditions are more diverse; one village (16.67%) leads to a systemic declining typology, three villages (50%)

lead to a turnaround typology, and three villages (50%) lead to a positive jolt typology. Meanwhile, in West Java, there is one village (50%) towards a turnaround, and one village (50%) toward a positive jolt. In West Nusa Tenggara (NTB), one village (25%) leads to a turnaround typology, and three villages (75%) lead to a positive jolt.

An analysis per indicator is carried out to find out the indicators that determine the resilience of tourist villages. This analysis will find out how different indicators different effects the resilience of tourist villages. The analysis uses the data in Tables 3-6, and based on the resilience trend scheme in Table 7, the analysis results are shown in Tables 12 and 13.

Table 12 shows that if the tourist village resilience typology is based on indicators of the number of visitors, then there are seventeen villages (70.8%) leading to the standard resilience typology (+ - +), and seven villages (29.2%) leading to the resilience typology (+ + +). If the resilience typology is based on total income indicators, there are three villages (16%) lead to the standard resilience typology (+ - +), sixteen tourist villages (66.6%) lead to turnaround typology (- - +), three villages village (12.5%) leads to a typology of resistance (+ + +), one tourist village (4.16%) leads to a typology of systemic decline (- - -), and one village (4.16%) leads to positive jolt typology (- + +). Furthermore, if resilience is based on cost indicators, there are eight tourist villages (33.3%) that lead to a turnaround typology (- - +), fifteen villages (62.5%) lead to a resistance typology (+ + +), one village (4.16%) leads to the standard resilience typology, and one village (4.16%) leads to the positive jolt typology (- + +). This analysis shows that in the dimensions of resilience performance, the indicator that has the greatest influence on the typology of resilience in tourist villages is the number of visitors. Meanwhile, cost is an indicator that has the least influence on the resilience of a tourist village.

Table 13 presents a typology of tourist village resilience based on capacity dimensions. If the resilience typology is based on the number of employee indicators, there are five tourism villages (20.8%) that lead to a turnaround typology (- - +), fourteen villages (58.3%) lead to a resistance typology (+ + +), three villages (12.5%) leads to a standard resilience typology (+ - +), two villages (0.08%) leads to a positive jolt typology (- + +). If resilience is based on the Development Village Index (DVI) indicator, there are fiveteen villages (62,5%) leading to a systemic declining typology (- - -). four villages (16,6%) leading to a counter-cyclical typology, (- + -), three tourist villages (12.5%) lead to a typology of lagged shocks (+ + -), two tourist villages (0.08%) lead to a typology of turnaround (- - +). Furthermore, if the resilience typology is based on capacity-building indicators, eleven villages (45.837%) lead to a turnaround typology (- - +), five tourist villages (16.6%) lead to a standard resilience typology (+ - +), nine tourist villages (16.6%) leads to the resistance typology (+ + +). This analysis shows that in the dimensions of resilience capacity, Development Village Index (DVI) indicator has the greatest influence on the typology of resilience in tourist villages.

Table 10. Resilience Trends per Region Prior to During the Covid-19 Pandemic

Tourist Village	Periods			Typology
	2019-2020	2020-2021	2021-2022	
Pentingsari	-	-	+	Turnaround
Karangrejo	-	+	+	Positive Jolt
Wanurejo	-	-	+	Turnaround
Bleberan	-	-	+	Turnaround
Tinalah	-	+	+	Positive Jolt
Gunung Gajah	-	-	+	Turnaround
Pulau Cemara	-	+	+	Positive Jolt
Mandiraja	-	-	+	Turnaround

Tourist Village	Periods			Typology
	2019-2020	2020-2021	2021-2022	
Wana Wisata	-	+	+	Positive Jolt
Tlogoweru	-	-	+	Turnaround
Wonosari	-	+	+	Positive Jolt
Tlogowero	-	-	+	Turnaround
Bilebante	-	-	+	Turnaround
Tambaksari	-	-	+	Turnaround
Pampang	-	+	+	Positive Jolt
Bendolawang	-	-	+	Turnaround
Malangjiwan	-	+	+	Positive Jolt
Beji	-	-	+	Turnaround
Tetebatu	-	+	+	Positive Jolt
Sade	-	+	+	Positive Jolt
Bonjeruk	-	+	+	Positive Jolt
Hanjeli	-	-	+	Turnaround
Tepus	-	+	+	Positive Jolt
Cibuntu	-	+	+	Positive Jolt

Source: AMPI Analysis

Table 11. Resilience Trends per Region

Tipology	Central Java	East Java	DIY	West Java	NTB	Total
Systemic declining	0	0	0	0	0	0
Turnaround	5	2	3	1	1	12
Counter cyclical	0	0	0	0	0	0
Positive jolt	5	0	3	1	3	12
Resistance	0	0	0	0	0	0
Severely hit	0	0	0	0	0	0
Standard resilience	0	0	0	0	0	0
Lagged shock	0	0	0	0	0	0
Total	10	2	6	2	4	24

Source: AMPI Analysis

Available online at http://journals.ums.ac.id, Permalink/DOI: 10.23917/jep.v24i1.23036
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Table 12. Trends and Typology of Economic Resilience of Tourist Villages per Region on Performace Dimension During the Covid-19 Pandemic

Tourist Village	Tourists			Status	Income			Status	Cost			Status
Pentingsari	+	-	+	Standard resilience	-	-	-	Systemic declining	-	-	+	Turnaround
Karangrejo	+	-	+	Standard resilience	+	-	+	Standard resilience	+	+	+	Resistance
Wanurejo	+	-	+	Standard resilience	+	-	+	Standard resilience	+	+	+	Resistance
Bleberan	+	-	+	Standard resilience	+	-	+	Standard resilience	-	-	+	Turnaround
Tinalah	+	-	+	Standard resilience	-	-	+	Turnaround	-	-	+	Turnaround
Gunung Gajah	+	+	+	Resistance	-	-	+-	Turnaround	+	+	+	Resistance
Pulau Cemara	+	+	+	Resistance	-	-	+	Turnaround	+	+	+	Resistance
Mandiraja	+	-	+	Standard resilience	-	-	+	Turnaround	+	+	+	Resistance
Wana Wisata	+	+	+	Resistance	-	-	+	Turnaround	-	-	+	Turnaround
Tlogoweru	+	-	+	Standard resilience	-	-	+	Turnaround	+	+	+	Resistance
Wonosari	+	+	+	Resistance	+	+	+	Resistance	+	+	+	Resistance
Tlogowero	+	-	+	Standard resilience	-	-	+	Turnaround	-	-	+	Turnaround
Bilebante	+	-	+	Standard resilience	-	-	+	Turnaround	-	-	+	Turnaround
Tambaksari	+	-	+	Standard resilience	-	-	+	Turnaround	+	+	+	Resistance
Pampang	+	-	+	Standard resilience	-	-	+	Turnaround	+	+	+	Resistance
Bendolawang	+	-	+	Standard resilience	-	-	+	Turnaround	+	+	+	Resistance
Malangjiwan	+	-	+	Standard resilience	+	+	+	Resistance	+	+	+	Resistance
Beji	+	-	+	Standard resilience	-	-	+	Turnaround	+	-	+	Standard resilience
Tetebatu	+	-	+	Standard resilience	+	+	+	Resistance	+	+	+	Resistance
Sade	+	+	+	Resistance	-	-	+	Turnaround	-	-	+	Turnaround
Bonjeruk	+	+	+	Resistance	-	+	+	Positive jolt	+	+	+	Resistance
Hanjeli	+	-	+	Standard resilience	-	-	+	Turnaround	+	+	+	Resistance
Tepus	+	-	+	Standard resilience	-	-	+	Turnaround	+	+	+	Resistance
Cibuntu	+	+	+	Resistance	-	-	+	Turnaround	-	+	+	Positive jolt

Source: AMPI Analysis

Avalaible online at http://journals.ums.ac.id, Permalink/DOI: 10.23917/jep.v24i1.23036
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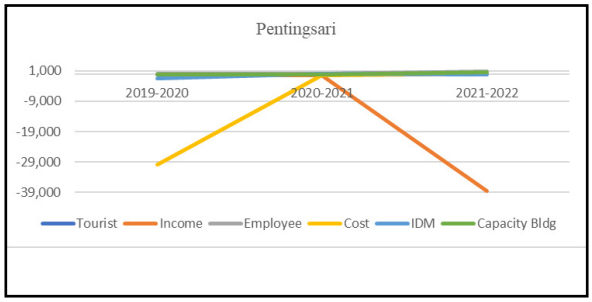
Table 13. Trends and Typology of Economic Resilience of Tourist Villages per Region on Capacity Dimension during the Covid-19 Pandemic

Tourist Village	Employee			Status	DVI			Status	Capacity Building			Status
Pentingsari	-	-	+	Turnaround	-	-	-	Systemic declining	-	-	+	Turnaround
Karangrejo	+	+	+	Resistance	-	-	-	Systemic declining	-	-	+	Turnaround
Wanurejo	+	+	+	Resistance	-	-	-	Systemic declining	-	-	+	Turnaround
Bleberan	+	-	+	Standard resilience	-	-	-	Systemic declining	-	-	+	Turnaround
Tinalah	-	+	+	Positive jolt	-	+	-	Counter cyclical	+	-	+	Standard resilience
Gunung Gajah	+	+	+	Resistance	-	-	-	Systemic declining	+	+	+	Resistance
Pulau Cemara	+	+	+	Resistance	-	-	-	Systemic declining	+	-	+	Standard resilience
Mandiraja	+	-	+	Standard resilience	-	-	-	Systemic declining	+	+	+	Resistance
Wana Wisata	+	+	+	Resistance	-	-	-	Systemic declining	-	-	+	Turnaround
Tlogoweru	+	+	+	Resistance	-	-	-	Systemic declining	+	+	+	Resistance
Wonosari	+	+	+	Resistance	-	+	-	Counter cyclical	+	+	+	Resistance
Tlogowero	-	-	+	Turnaround	-	-	-	Systemic declining	+	+	+	Resistance
Bilebante	-	-	+	Turnaround	-	-	-	Systemic declining	-	-	+	Turnaround
Tambaksari	+	+	+	Resistance	+	+	-	Lagged shock	-	-	+	Turnaround
Pampang	+	+	+	Resistance	-	-	-	Systemic declining	+	+	+	Resistance
Bendolawang	-	-	+	Turnaround	-	+	-	Counter cyclical	-	-	+	Turnaround
Malangjiwan	+	+	+	Resistance	+	+	-	Lagged shock	+	+	+	Resistance
Beji	+	-	+	Standard resilience	-	-	+	Turnaround	-	-	+	Turnaround
Tetebatu	+	+	+	Resistance	-	-	+	Turnaround	+	-	+	Standard resilience
Sade	+	+	+	Resistance	-	-	-	Systemic declining	-	-	+	Turnaround
Bonjeruk	+	+	+	Resistance	+	+	-	Lagged shock	-	-	+	Turnaround
Hanjeli	-	-	+	Turnaround	-	-	-	Systemic declining	+	-	+	Standard resilience
Tepus	+	+	+	Resistance	-	+	-	Counter cyclical	+	+	+	Resistance
Cibuntu	-	+	+	Positive jolt	-	+	-	Counter cyclical	+	+	+	Resistance

Source: AMPI Analysis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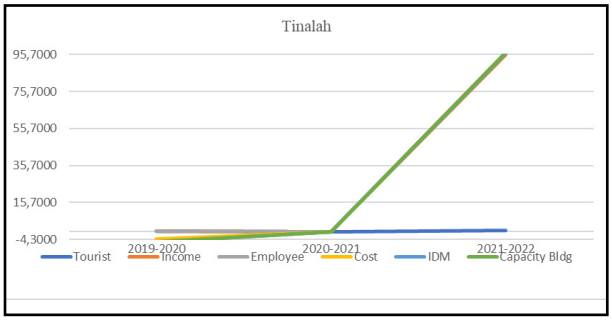
Capacity Bldg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Cost
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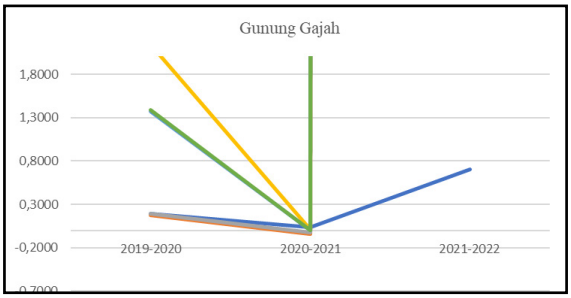
Capacity Bldg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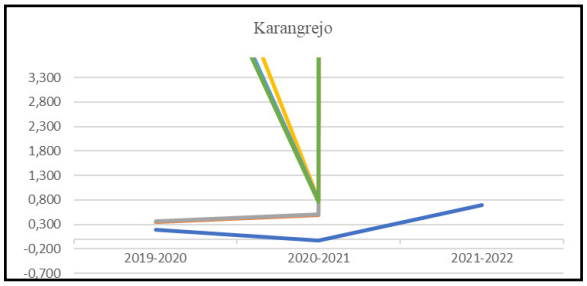
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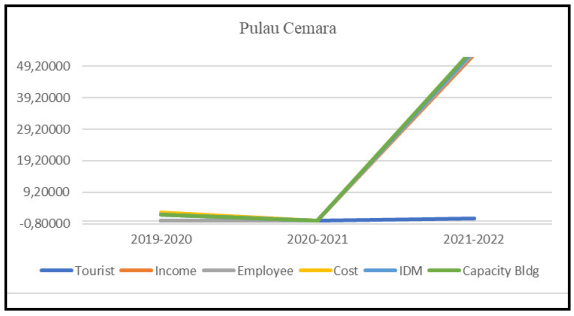
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Tourist
Income
Employee
Cost
IDM
Capacity Bldg


Wana Wisata
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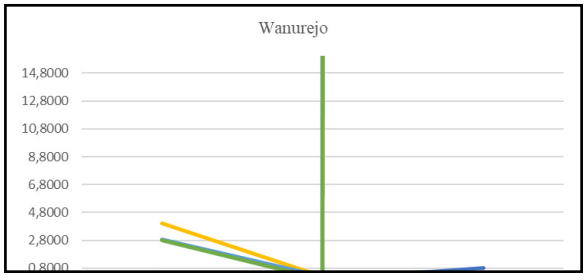
2020-2021
2021-2022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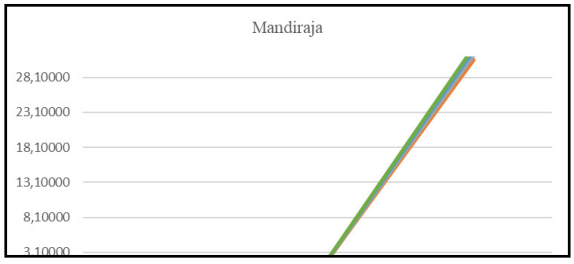
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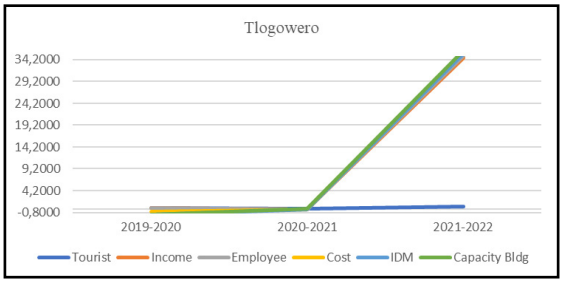
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Employee
Cost
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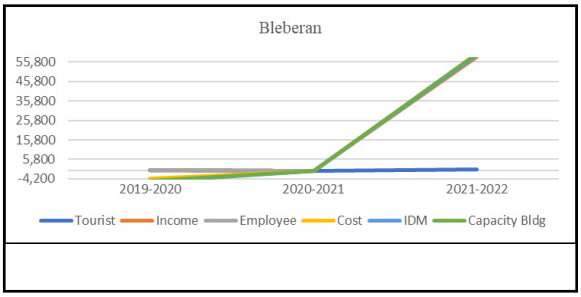
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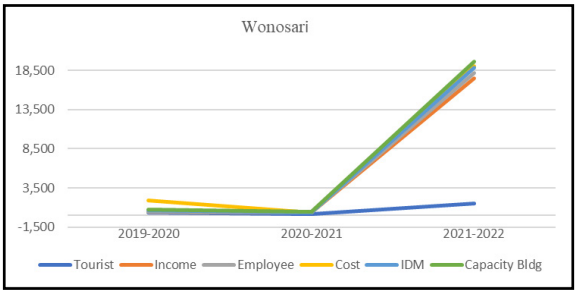
2021-2022
Tourist
Income
Employee
Cost
IDM
Capacity Bldg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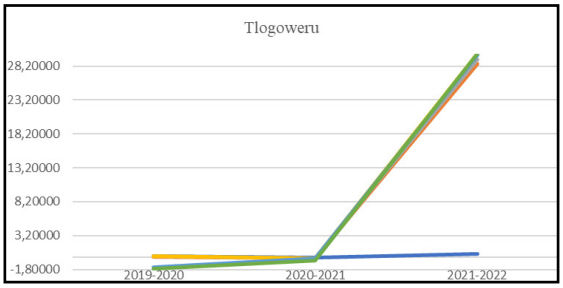
2020-2021
2021-2022
Tourist
Income
Employee
Cost
IDM
Capacity Bldg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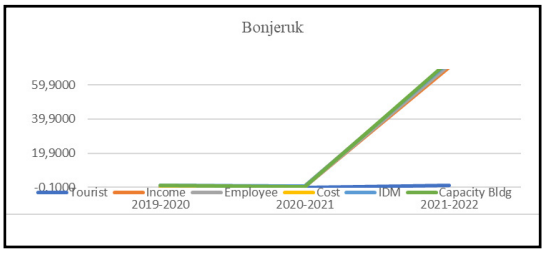
2019-2020
2020-2021
2021-2022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Income
Employee
Cost
IDM
Capacity Bldg
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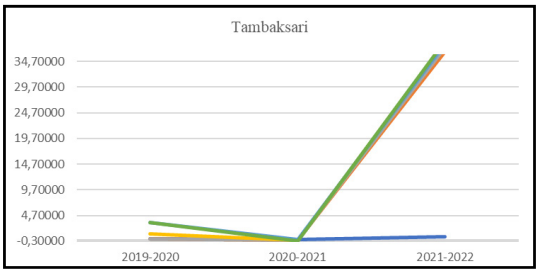
2021-2022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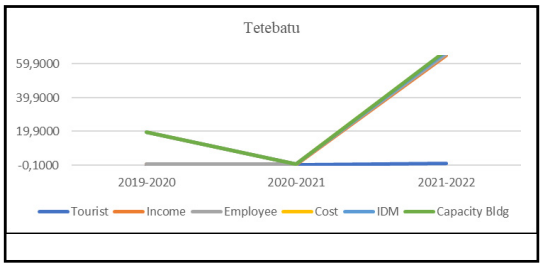
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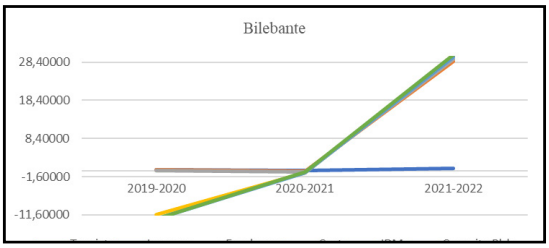
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2020-2021
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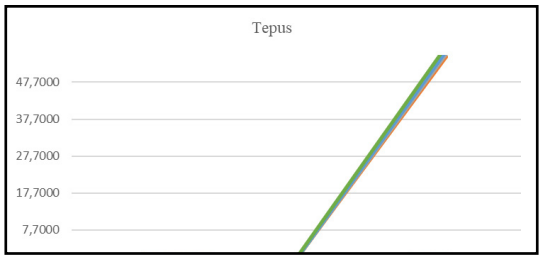
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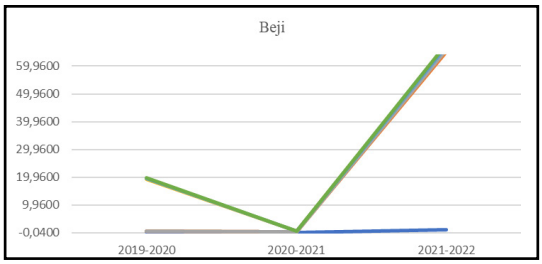
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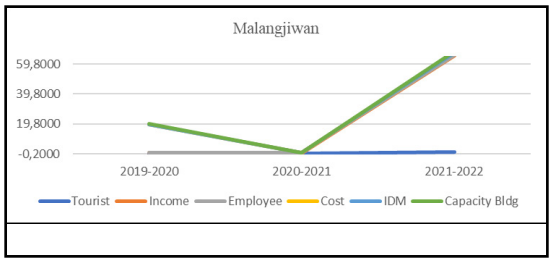
2021-2022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Tourist
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Employee
Cost
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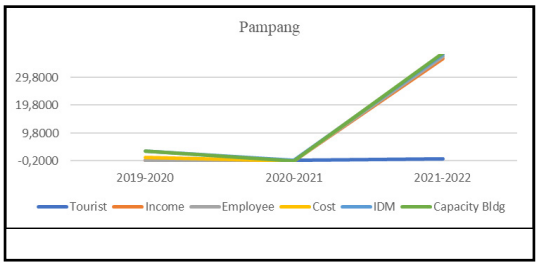
Capacity Bldg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Employee
Cost
IDM
Capacity Bldg

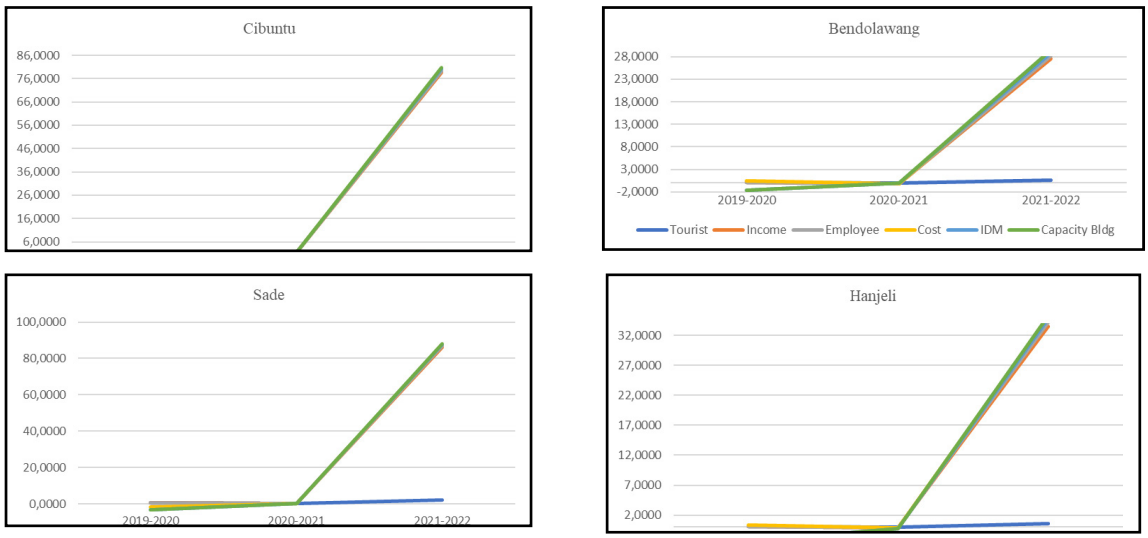

Figure 2. Profile of Tourism Village Based on Economic Resilience in Pandemic Covid-19 Period indicator

5. CONCLUSION

Measuring economic resilience, especially in Indonesia's rural tourism context, is complex since no universal method can be implemented in different tourism settings. Yet, knowing how resilient rural tourism is allows us to develop better policy measures to protect it or help it recover from the shocks. A synthetic composite index is a simple tool of resilience measurement that policymakers can easily understand since it can be compared across regions and time. For this reason, this research used such an approach to measure the resilience of rural tourism in the developing country of Indonesia.

The main objective of this study is to assess the economic resilience level of rural tourism in several villages in Indonesia guided by a research question on how resilient rural tourism in Indonesia is by comparing the level of resilience using a composite index before, during, and after the external shock of the Covid-19 pandemic. the results show that almost all rural tourisms villages were hard hit in the first year of the pandemic. However, unlike other tourism destinations, villages that offer rural tourism were able to recover from the shock within a relatively short period of time.

Based on the trend of resilience index during pandemic, 50% of the total villages (12 tourist villages) are included in the turnaround category typology (- - +), meaning that at the beginning and during the pandemic they were not able to survive, but then recovered after the pandemic ended. Meanwhile, 12 other villages were shaken by the pandemic in the initial period, and soon recovered, so they are classified as villages with a positive shock typology (- + +).

However, unlike other tourism destinations, villages that offer rural tourism were able to recover from the shock within a relatively short period. Various creative ideas as a form of adaptation to a new normal were created by tourist village managers. Several villages succeeded in developing virtual traveling packages by utilizing digital technology. It is recorded that more than 64 locations in Indonesia can be visited virtually. The villages also succeeded in training staff and implementing additional infrastructure in the context of health protocols, including cleanliness, health, safety, and environmental sustainability (CHSE). This illustrates the resilience of the rural tourist village in the face of the Covid-19 shock.

The indicator that has the most significant influence on the typology of resilience in the

performance dimensions is the number of visitors. Meanwhile, the cost is an indicator that has the most minor influence. The Development Village Index (DVI) indicator has the most significant influence on the capacity dimensions.

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