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Changes in Seasonal Patterns and Resilience of Domestic Tourist's Demand during the Pandemic: Evidence from Indonesia

Addin Maulana[1] [addin.maulana@yahoo.co.id]

Abstract | COVID-19 significantly impacts the ability of tourism demand to recover. Limited research exists on the recovery of domestic tourism demand following such a crisis. This study aims to illustrate the changes in seasonal patterns and models the resilience of domestic tourists through the quantitative method. The seasonality index and Gini coefficient are applied to model the seasonality. This study produced several findings. First, the pandemic impacted the number of trips as well as the travel patterns of domestic tourists. The high number of peak seasons during the pandemic is due to the high Gini coefficient, which causes an uneven distribution of monthly domestic trips. Second, the response of domestic tourists to social movement restrictions was instant, and it took 18 months to recover.

Keywords | Domestic tourist, Trip, Seasonal pattern, Resilience; Pandemic; Indonesia

[1] National Research and Innovation Agency, Republic of Indonesia

1. Introduction

The World Health Organisation (WHO) declared COVID-19 a pandemic in March 2020 (World Health Organisation, 2020). It has prompted various countries to issue policies on international and domestic travel. The policy steps taken by the government, in general, are to place restrictions (Ob & Mp, 2018) intended for its citizens in the form of travel restrictions. Travel restrictions arise when their citizen's safety and health conditions pose a potential threat both during the trip and at the destination, and the contents reflect the level of risk estimated by each country (Mylonopoulos et al., 2016). These policies can generally be Travel Warnings or Travel Bans (Budiasa & Nadra, 2016). It led to a drop in demand as Travel Restrictions were the main factor (World Tourism Organisation, 2022).

Under these conditions, the World Tourism Organisation (UNWTO) predicts that the domestic market will be the first to recover compared to the international market (World Tourism Organisation, 2020, p. 6). This ability is called resilience (Delaplace et al., 2018), where the ability to adapt (Daniels & Tichaawa, 2023) and innovate became a critical factor (Fabry & Zeghni, 2019). The recovery of the tourism industry will be determined by how resilient people are at grass-root levels (Hussain & Fusté-Forné, 2021). It is consistent with the characteristics of the domestic tourists themselves.

Domestic tourists are a massive travel activity (Gabor et al., 2012), as the key to reviving tourism during a pandemic (Woyo, 2021). This market is relatively resilient to crises, including economic, natural, health, and political disruptions. Even when there are general exigencies like epidemics or security warnings, this market is less averse to altering travel plans (Federation of Indian Chambers of Commerce and Industry, 2007, p. 4; Kumar, 2016). Visiting friends and relatives (VFR) is the largest market segment of the domestic market. The traditional ethos of the societal structure is a critical part of an individual's social commitments (Federation of Indian Chambers of Commerce and Industry, 2007, p. 4). For Asian people, family ties play an important role, so VFR purposes dominate both in terms of motivation and choice of accommodation facilities (World Tourism Organisation (UNWTO), 2013), including Indonesia (Arifatin & Utari, 2021, pp. 59–60).

Since the pandemic occurred, government policies related to limiting human movement or social activities have been arranged by considering that humans are a medium for the virus's spread. It is because the government has to control and restore the situation as quickly as possible if a natural or human disaster occurs in a country (Mao et al., 2010). This policy is

'costly' from a social and economic perspective (Calina et al., 2020). Travellers belonged to those primarily affected in the early stages of the outbreak, travellers became vectors of the disease, and finally, travel and tourism became the victims (Wilder-Smith, 2006).

Indonesia is one of the countries where domestic tourists play an essential role in the tourism economy. The high role of domestic tourists in the Indonesian economy shows in the national Tourism Satellite Account (TSA), with its ability to revive the transportation sector, hotels, food and beverage providers, creative industries, and so on (Barudin et al., 2017). Domestic tourists are the higher contributor compared to other sources of tourism income, namely inbound tourists, outbound tourists, tourism investment, tourism promotion, and tourism development, to Output, Gross Value Added, Labor Compensation, and Tax on Net Product (Sub directorate of Tourism Statistics - BPS Statistics Indonesia, 2019).

Indonesia is classified as a developing country from the perspective of the tourism economy, as its tourism sector is largely driven by domestic travel (Boniface & Cooper, 2005). However, many developing countries continue to overlook the potential of domestic tourism, whereas developed nations actively manage and invest in their domestic tourism sectors to promote sustainable development (Kabote et al., 2017). Domestic tourists can serve as a foundation for a country's tourism economy (Maulana, 2019; Raun & Ahas, 2016), contributing to job creation, reducing rural exodus, and revitalising local economies (World Tourism Organisation [UNWTO], 2013). Therefore, in the (post-)pandemic period, many destinations would benefit from developing domestic tourism in order to enhance community resilience (Adams et al., 2021).

Research related to changes in seasonal patterns and domestic tourist resilience models is still onerous to find. Therefore, it is critical to conduct studies related to this matter so that they can provide an overview, especially during a pandemic. Indonesia does not have strong enough resilience to face the unstable recessions conditions and follow new tourism trends that have emerged in the pandemic era or after the pandemic ends (Wibowo & Hariadi, 2022).

This research aims to fill the gap in both the scientific and policy aspects. The objectives are identifying seasonal pattern changes as well as presenting a model of the resilience of domestic tourist demand. This research provides significant academic, practical, and policy benefits, particularly in understanding the recovery of domestic tourism amid and post-COVID-19. It contributes to the literature on seasonal travel patterns and the role of domestic tourists in tourism recovery.

2. Theoretical framework

Tourism is a social, cultural and economic phenomenon related to the movement of people (World Tourism Organisation, 2010, p. 1). Thus, better knowledge on tourist context (Saluveer et al., 2020), and understanding the seasonal patterns of tourist travel is very important in formulating policies (Arifatin & Utari, 2021, pp. 48–49). It is essential to identify shifts in the seasonality of domestic tourists during a pandemic. Corluka (2019) confirmed that although seasonality is one of the most prominent features of tourism, paradoxically, it is also one of the least understood, highlighting the importance of further research in this area.

Before discussing seasonal patterns, it is crucial to identify which factors encourage people to travel. Seasonal causes lie in generating and receiving areas, pushing and attracting tourist requests for seasonal behaviour (Corluka, 2019). These factors consist of push factors that come from within the tourist and pull factors that come from outside and affect their need and/or desirability to travel (Antara & Prameswari, 2018). Several previous studies provide an overview of these driving factors. One of the push factors is the desire to seek experience or escape from routine (Moon & Han, 2018; Subadra et al., 2019). On the other hand, pull factors include distance (Artal-Tur et al., 2016; Mariyono, 2017; Mishra & Bansal, 2017), destination image (Battour et al., 2018; X. Liu et al., 2015), price (Moon & Han, 2018; Theara, 2017; Utama, 2016), diversity of attractions, season/climate (Jayaprakash, 2017; Yusup et al., 2016), visa requirements, air connectivity, security aspects (Andres et al., 2016, pp. 6–7), marketing programs (J. Liu et al., 2019; Sukirman, 2017), as well as domestic and tourist destination government policies related to tourist trips (Artal-Tur et al., 2016; Mylonopoulos et al., 2016; Ob & Mp, 2018).

Changes in the characteristics of tourism demand can create clear market advantages for destinations willing to adapt their offerings to the needs of tourism (Nella & Christou, 2016). Seasonality has become one of the most distinctive and determinative features of the global tourism industry (Corluka, 2019; Lim & McAleer, 1999) to maintain competitiveness and attractiveness (Choe et al., 2019). Seasonality refers to the recurring patterns of visitor behaviour observed annually (Corluka, 2019; Cannas, 2012). It is often described as fluctuations typically linked to a calendar year (Kementerian Pariwisata dan Ekonomi Kreatif & International Labour Organisation, 2012; Lundtorp, 2001). Seasonality can also be a temporal imbalance in the tourism phenomenon (Butler, 2001), and it is often a problem in tourism development (Jangra & Kaushik, 2018). Seasonal imbalances have consequences for

the environment, provision of incentives and human resource productivity, and social consequences that impact the community satisfaction level (Turrión-Prats & Duro, 2018).

Seasonal fluctuations impact not only the fixed capital requirements but also the overall operations of the tourism industry (Šergo et al., 2016). These patterns, driven by both natural and social factors, influence material and labor usage, pricing, costs, profitability, service quality, and consumer satisfaction (Secareanu & Firoiu, 2011). Moreover, seasonal trends have a simultaneous effect on the structure of tourism supply (Šergo et al., 2016).

Seasonality can be measured by various indicators, such as the number of tourist arrivals (Butler, 2001; Þórhallsdóttir & Ólafsson, 2017), the number of departures, the number of overnight stays, or the number of expenses periodically (Karamustafa & Ulama, 2010). There are two types of seasonal patterns, namely peak seasons and off-seasons. Peak seasons positively affect employment and salaries, increasing the tourism sector's contribution to the Gross domestic product (GDP), while off-seasons generally affect tourist destinations more negatively (Alzboun, 2018). The use of the identification of seasonal patterns allows the optimisation of current resources effectively and efficiently.

There are few studies on seasonal patterns. For instance, Fernandez-Morales, Cisneros-Martinez, and McCabe (2016) analysed seasonal patterns in England using the decomposition of the Gini coefficient. Þórhallsdóttir and Ólafsson (2017) conducted research in Iceland using seasonality indicators, the seasonality ratio, and the Gini coefficient. Similarly, Jangra and Kaushik (2018) analysed trends and seasonality in the tourism industry of the Kinnaur Desert, Himachal Pradesh, employing the seasonality index. Alzboun (2018) examined the seasonal pattern of the City of Petra in the south of Jordan, using the seasonality indicator, the seasonality ratio, the Gini coefficient and the seasonality index.

The seasonality ratio serves to help clarify the similarity throughout the year (Karamustafa & Ulama, 2010), whereas the seasonality indicator is a measure of the width of the season and the use of capacity relative to usage in peak months. This calculation describes the average value of room occupancy rates because it uses the average foreign tourist staying in an accommodation compared to the overall capacity (Karamustafa & Ulama, 2010). The seasonality index estimates the demand from previous years based on moving averages (Alzboun, 2018), however, this calculation does not apply to new destinations (Karamustafa & Ulama, 2010).

The Gini coefficient, commonly used in economics to describe inequality through the Lorenz Curve, also measures the maximum annual utilisation factor constrained by seasonality (Karamustafa & Ulama, 2010). It can evaluate data throughout the year and make comparisons between different years, making it a practical tool for comparing tourist visits over time. Furthermore, it helps implement the right marketing strategy based on the seasonality of each tourist market (Alzboun, 2018). The Gini coefficient and the Lorenz Curve are simultaneously used to measure inequality and concentration in tourism variables (Fernández-morales, 2014).

The application of seasonal pattern measurement models in times of crisis is still limited. Thus, this study will fill this literature on the changes in seasonal patterns and the recovery of tourism demand after the pandemic.

3. Methods

The present research uses a quantitative descriptive research approach. The type of data used is secondary data in the form of domestic trip data in Indonesia from 2019 to 2021. Tourist data is an indicator for seasonal indicators (Þórhallsdóttir & Ólafsson, 2017). The methods of calculating the seasonal variation of foreign tourists used in this study include Seasonality Index and Gini Coefficient. The seasonality index (I) is measured using Jangra and Kaushik (2018) formula.

$$I = {}^{v_n}/_{\bar{v}} \times 100$$

Where v_n is the number of arrivals in month *n*, and $\bar{v}$ is the average number of visitors in one year.

Karamustafa and Ulama (2010) divide the season into several segments: 1st off-peak season, 1st shoulder season, peak season, 2nd shoulder season, and 2nd off-peak season. First, the 1st off-peak season is where the seasonality index (I) value is less than 100 and moves towards a value of 100. Second, the 1st shoulder season is where I value moves up from 100 towards the peak season. Third is peak season, which is the peak period. Fourth is the 2nd shoulder season, where the value of I moves down from the peak season to a value of 100. Fifth, the 2nd off-peak season is a movement in the value of I down from 100 after the 2nd shoulder season period.

The Gini coefficient ($\mathcal{G}$) is the maximum calculation of the annual utilisation factor limited by the season (Karamustafa & Ulama, 2010). As mentioned, the $\mathcal{G}$ evaluates data throughout the

year, enabling comparisons across different years, and serves as a practical tool for comparing tourist visits by nationality. Additionally, it aids in implementing appropriate marketing strategies based on the seasonality of each tourist market (Alzboun, 2018).The $\mathcal{G}$ and Lorenz Curve measure inequality and concentration in tourism variables (Fernández-morales, 2014). The $\mathcal{G}$ is the area between the curve and the 45-degree equivalence line divided by the entire area below the 45-degree line (Lundtorp, 2001). The proportion area of the remaining between the 45-degree straight line, the curve by the total area above (left area between the 45-degree straight line and the curve), and under the curve (Karamustafa & Ulama, 2010). Calculating the $\mathcal{G}$ is critical when making comparisons because it provides a reliable and easy-to-understand numerical measure (Þórhallsdóttir & Ólafsson, 2017).

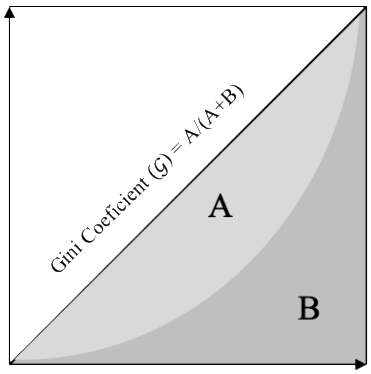

Figure 1. *Gini Coefficient* from *Lorenz Curve*

Source: Lundtorp (2001)

With the help of the illustration in figure 1, the formula for calculating the $\mathcal{G}$ (Lundtorp, 2001) is as follows:

$$\mathcal{G} = \frac{2}{n}\sum_{i=1}^{n}(X_i - Y_i)$$

Where n is the number of observed data fractions (Example, number of months = 12), X_i is the ranking (Example: 1/12, 2/12, …, 12/12), so$X_i = {}^{1}/_{n}$ and Y_i are cumulative of the observed fractions in the Lorenz Curve.

A higher $\mathcal{G}$ indicates a difference in data distribution. A value of 0 indicates equal monthly data distribution, whereas if the results of the calculation of $\mathcal{G}$ have a value of 1 shows that the data is not evenly distributed every month in one year (Karamustafa & Ulama, 2010). Therefore, it can be concluded that the higher $\mathcal{G}$, the more seasonal variation increases. If $\mathcal{G}$ value is less than 0.5, the seasonality rate is low (Alzboun, 2018).

The present study will also model the resilience of domestic tourism demand using the model by Taleb-Berrouane and Khan (2019) to identify Indonesia's current position. As shown in figure 2, these authors describe a resilience curve consisting of five stages and five points where change begins to occur (A, B, C, D, E). Stage 1 consists of a phase where the system is stable, then point A appears as a trigger for disturbances which makes the start of stage 2, namely the phase where the disturbances performance effect occurs. Point B appears when control reacts and begins to enter stage 3. Stage 3 is where temporal stability occurs at a lower level and it shows the temporal stability of the system at a lower performance, where BC presents a decrease in system performance if no control action or the control action fails. Stage 4 shows the effect of corrective action aimed at returning performance to the initial stage or long-term stable level, and it is initiated by point D. Stage 5 is a new level of performance that can be higher than, equal to, or lower than the initial level depending on the maintenance strategy adopted. It happens when the previous stability is reached (point E).

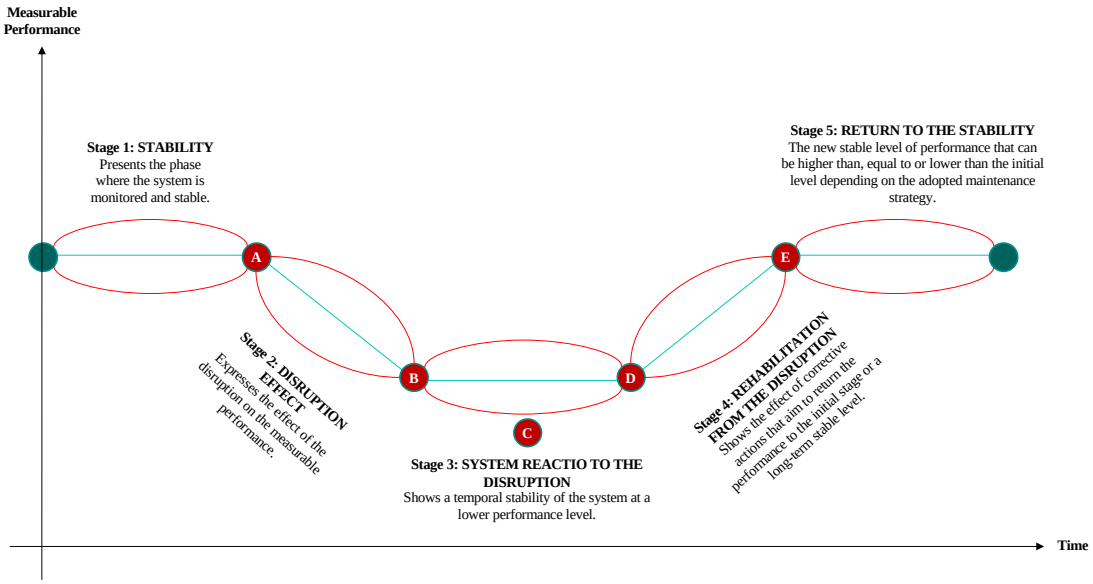

Figure 2. The Bathtub Curve Resilience Lifecycle Model

Source: Taleb-Berrouane & Khan, 2019

To describe this, several steps were undertaken: (1) Using data on average monthly visits to analyse the conditions of the observed annual period (2019–2021); (2) Establishing 2019 as the baseline, representing Stage A (stability) before the pandemic; and (3) Describing the five stages and the five points of the resilience model.

4. Results

Figure 3 shows the data on the number of domestic tourist trips every month from 2019 to 2020.

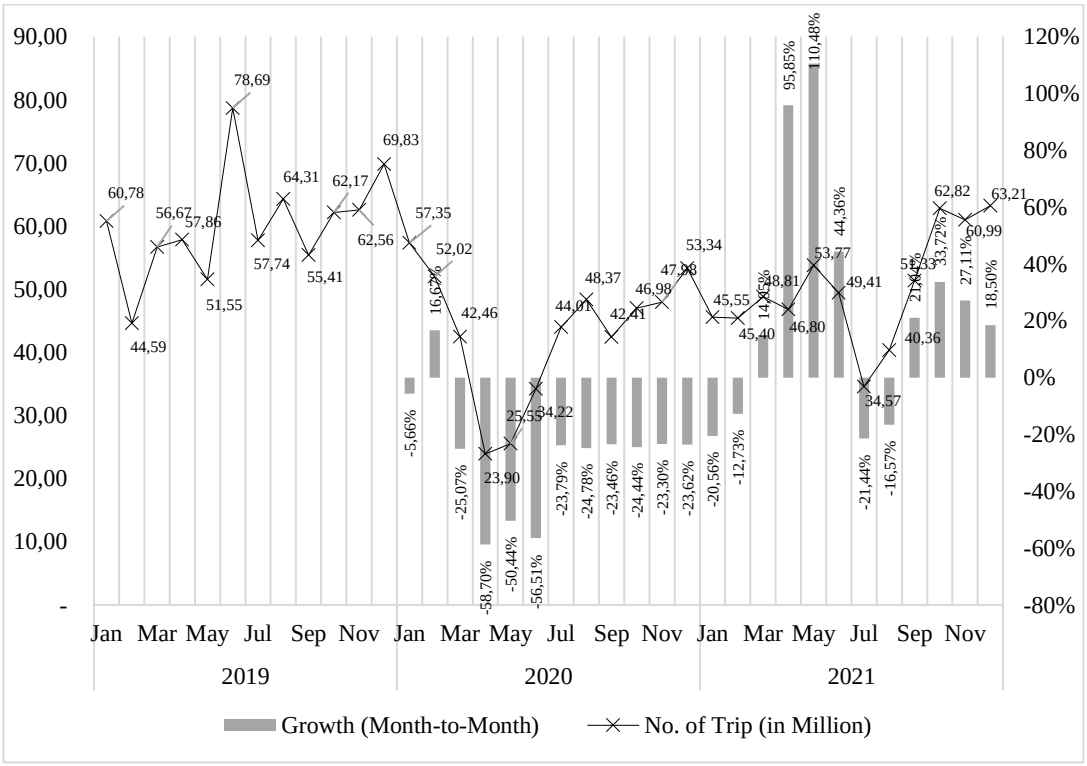

Figure 3. Development of Domestic Tourists Trip in Indonesia 2019-2021

Source: BPS-Statistics Indonesia, reworked by the author, 2022

In 2019, before the pandemic, the number of domestic tourist trips was at its peak in June and December. According to the BPS-Statistics Indonesia report, this peak occurred because June coincided with Eid al-Fitr and school holidays, while December was driven by Christmas, New Year, and school holidays (Arifatin & Utari, 2021, p. 48). The number of trips decreased a total of 28.19% in 2020.

Seasonality Index (*I*) Domestic Tourists Trip in Indonesia

The following table shows the seasonality index of domestic tourist statistics in Indonesia.

Table 1. Calculation of *I* of Domestic Tourists in Indonesia, 2019-2020 Period

Period	1	2	3	4	5	6	7	8	9	10	11	12
2019 (*I*)	101,00	74,09	94,17	96,14	85,66	130,76	95,94	106,86	92,07	103,31	103,95	116,04
2020 (*I*)	132,70	120,37	98,25	55,30	59,12	79,19	101,83	111,94	98,13	108,71	111,03	123,43
2021 (*I*)	90,65	90,34	97,13	93,14	107,01	98,32	68,80	80,31	102,15	125,01	121,37	125,78

Source: Author, 2022

Table 1 shows that, during 2019, before the pandemic, six periods had a value of $I > 100$, namely in months 1, 6, 8, 10, 11, and 12. In 2020, seven periods had a value of $I > 100$, namely in months 1, 2, 7, 8, 10, 11, and 12. The data shows that there are several similar periods where *I* is worth more than 100, namely months 1, 8, 10, 11, and 12. When referring to Karamustafa and Ulama (2010) regarding the division of seasonal patterns, figure 4 shows that the peak season period in 2019 was more numerous than the periods in 2020 and 2021.

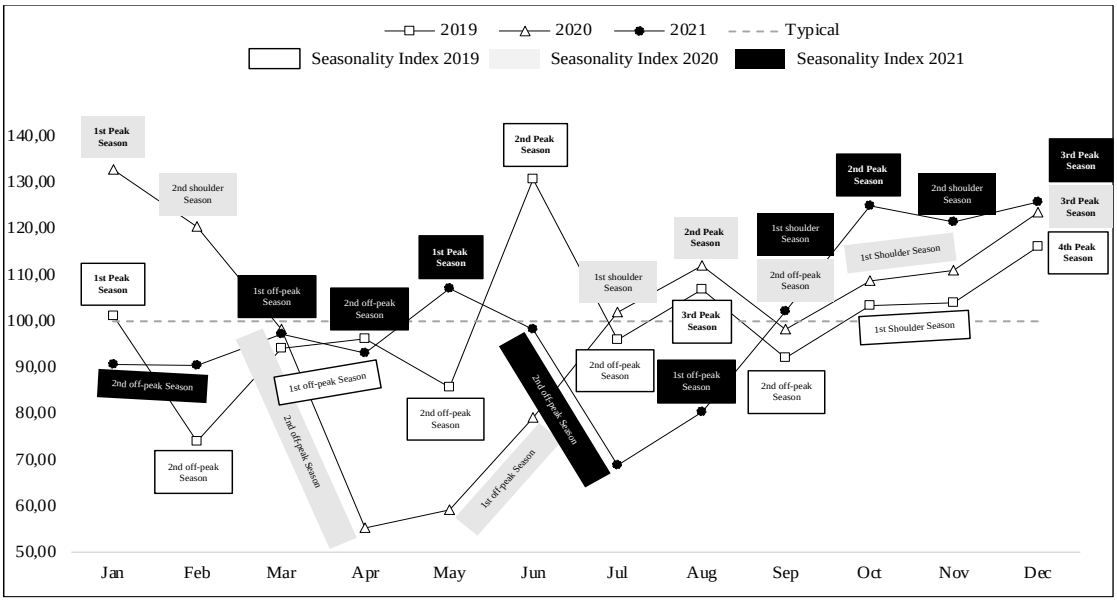

Figure 4. Seasonality Index of Domestic Tourist Trip Development in Indonesia in 2019-2020

Source: Own Elaboration

Another notable difference between 2019 and the following years is the shift in peak season months. In 2019, the peak seasons occurred in January, June, August, and December, with June being the highest due to its coincidence with the Eid al-Fitr holiday. However, in 2020, peak seasons were observed in January, August, and December, while May – when Eid al-Fitr took place – became the first off-peak season, likely due to strict travel restrictions imposed by the government to curb the spread of COVID-19. In 2021, peak seasons occurred in May, October, and December, with May marking the peak travel period, coinciding with Eid al-Fitr. This shift in travel patterns suggests that the government's movement restrictions, which varied across different phases of the pandemic, had a significant impact on domestic tourism demand. Despite these fluctuations, year-end periods consistently remained a peak season both before and during the pandemic, highlighting the strong resilience of travel demand during this time. The restrictions on social activities, as highlighted by Artal-Tur et al. (2016), Mylonopoulos et al. (2016), and Ob and Mp (2018), played a crucial role in shaping domestic travel behaviour, limiting movement during certain months while allowing recovery in others. As noted by Arifatin and Utari (2021, pp. 48–49), these restrictions significantly impacted the visitation patterns of domestic tourists in Indonesia. Therefore, the results should be interpreted in the context of movement restrictions, as they directly affected fluctuations in domestic travel demand. The following figure illustrates the Gini coefficient and Lorenz curve of domestic tourist trips in Indonesia.

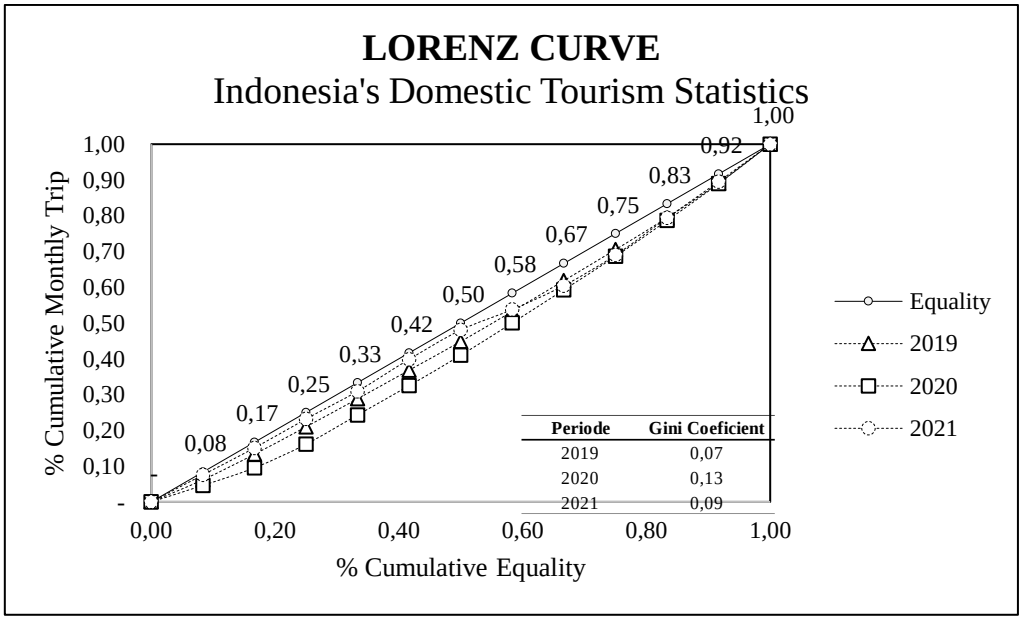

Figure 5. $\mathcal{G}$ of Domestic Tourists in Indonesia

Source: Own Elaboration

Figure 5 shows that the G of domestic tourists trip in Indonesia in 2019 was 0.07, while in 2020 increased to 0.13, and in 2021 it decreased to 0.09. Referring to Alzboun (2018), the seasonal distribution of domestic tourist travel patterns in Indonesia in 2019 and 2021 is at a low level and based on Karamustafa and Ulama (2010), where the $\mathcal{G}$ value is close to 0 (zero), the distribution of domestic tourist trips relatively evenly per month. In other words, the monthly value of the domestic tourist trips was insignificant. It is different from what occurred in 2020, where $\mathcal{G}$ is higher, which shows that there are months when domestic tourist trips in Indonesia have significant differences or are uneven.

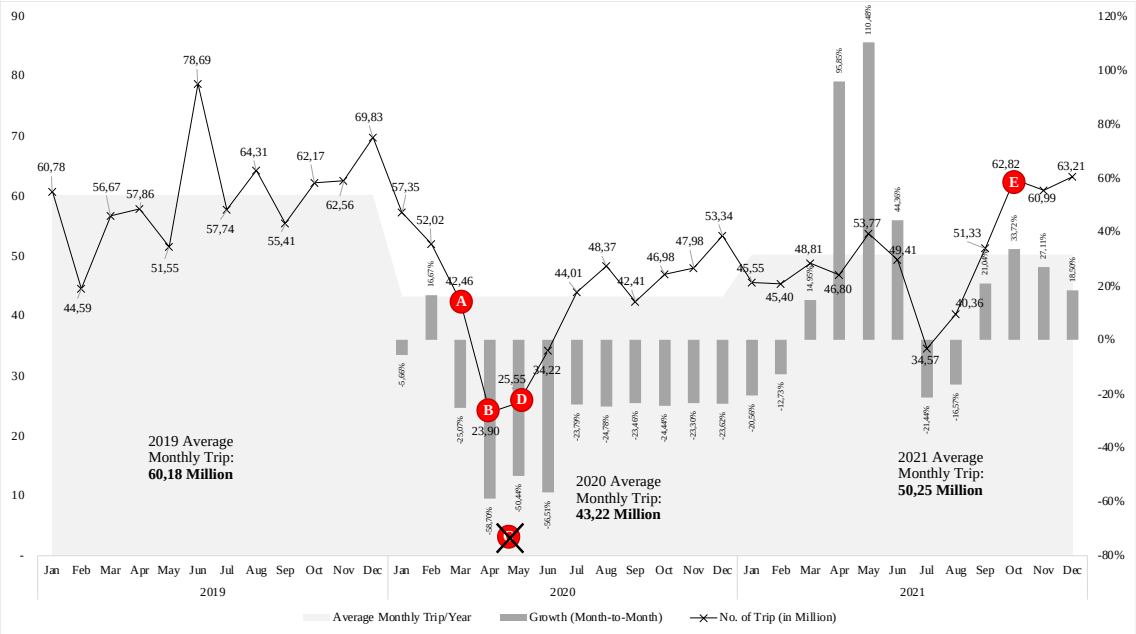

Figure 6. Number of Trips, Growth, and Demand Resilience of Domestic Tourists in Indonesia

Source: Own Elaboration

Figure 6 shows that disruption (point A) occurred in March 2020, when the first case occurred in Indonesia. It resulted in a policy of limiting international travel to social movements in Indonesia. In mid-March 2020, the government of Indonesia appealed to the Indonesian people to limit activities outside the home except for urgent matters, cancelling in-person teaching and learning in schools and replacing it with Distance Learning (DL), optimising Work From Home (WFH), and limiting all activities that allow enormous crowds to gather in one place (Bureau of Press Media and Information Secretariat of The Presidential, 2020a). The policy of restricting Indonesian citizens from travelling abroad was carried out a few days later (Ministry of Foreign

Affairs, 2020). Indonesia even froze tourist destination visas through Regulation of the Minister of Law and Human Rights No. 8/2020 concerning (Temporary Suspension of BVK and VOA, as Well as Stay Permit Granting to Prevent Covid-19 Outbreak (in Bahasa), 2020). At the end of March 2020, the government issued a policy regulation on Large-Scale Social Restrictions through Government Regulation no. 21/2020 concerning Large-Scale Social Restrictions in Handling Coronavirus Disease 2019 (Covid-19) (Large-Scale Social Restrictions in Handling Coronavirus Disease 2019 (Covid-19) (in Bahasa), 2020), which together with this also made an appeal not to carry out homecoming activities during the holidays (Bureau of Press Media and Information Secretariat of The Presidential, 2020b), and declared a public health emergency (Bureau of Press Media and Information Secretariat of The Presidential, 2020c).

However, if we look back, the decline in domestic tourist trips did not last long. In May 2020, domestic tourist trips in Indonesia were at point D or the rehabilitation period. It takes 18 months (from point A to point E) for domestic demand to recover (above the 2019 monthly average), which falls in October 2021 and is assumed to be point E or new stability. Even though the monthly average trip in the 2021 period (50.25 million) is still lower than the 2019 period (60.18 million), with October 2021 conditions, the average number of domestic tourist trips in 2023 will be at the same level as 2019 or even higher. These findings mean that the demand for domestic travel in Indonesia has recovered, and October 2021 was a new level of stability higher than in 2019.

5. Conclusion

The present study shows that the COVID-19 pandemic has strongly impacted domestic tourism demand in Indonesia, both number of trips and seasonal patterns. The Seasonal Index and Gini Coefficient show a change in the distribution of trips that are more uneven during the pandemic, with an increase in travel intensity in certain periods and a rapid response of tourists to social restrictions. These findings confirm that the resilience of domestic tourism to crises is highly dependent on the flexibility of government policies in addition to people's behaviour patterns influenced by social and economic factors.

Academically, this study contributes to the literature on the seasonal pattern of domestic tourism in crisis conditions, which is still minimally discussed in the tourism literature. The quantitative approach can be an analytical model for other studies examining the recovery of the tourism sector in developing countries. In practical terms, the results of this study provide insight for

policymakers and tourism industry players on the importance of data-driven adaptation strategies to accelerate the recovery of the post-crisis tourism sector.

Although this study provides a comprehensive overview of the dynamics of domestic tourism during the pandemic, there are some limitations that need to be noted. First, this research only focuses on Indonesia, so generalisations to other countries with different tourism characteristics remain challenging. Second, the method relies on secondary data, which, although representative, still has limitations in capturing subjective factors such as tourists' perceptions of travel risks.

The author recommends expanding the geographical coverage by comparing domestic tourism resilience patterns in various countries. Additionally, qualitative approaches, such as in-depth interviews with tourism industry stakeholders, can provide a deeper understanding of the social and psychological factors that influence travelers' travel decisions in times of crisis.

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