Jurnal Kepariwisataan Indonesia 19 (1) (2025) 51-66
http://ejournal.kemenpar.go.id/index.php/jki
P-ISSN: 1907-9419, E-ISSN: 2685-9075, Juni 2025

THE IMPACT OF ENGAGEMENT RATE ON THE NUMBER OF DOMESTIC TOURIST TRIPS: A CASE STUDY OF DIGITAL MARKETING THROUGH INSTAGRAM IN SUPER PRIORITY DESTINATION, LIKUPANG

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Article Info

Keywords:
Likupang, Engagement Rate, Tourism, Digital Marketing

Received:
June 24, 2024
Approved:
June 24, 2025
Published:
June 30, 2025

Abstract

The tourism industry has an important influence on the economy. Consequently, the government has designated Super Priority Destinations (DSP) as a development priority. Likupang, located in North Sulawesi, is one of the DSP established by the government. The government, together with tourism stakeholders, has promoted Likupang through various digital marketing efforts, including social media campaigns and influencer engagement, to increase tourist interest and visits. The ultimate goal is to achieve equitable economic growth across Indonesian regions through the development of the tourism sector. In general, the number of domestic tourist trips is an indicator of progress and challenges in the tourism sector. Digital marketing, particularly through social media such as Instagram helps attract visitors and achieve the objective of increasing the number of tourists. Therefore, this study aims to examine and discuss the effectiveness of Instagram content from three tourism stakeholders, namely the management of tourist attractions, the government, and the private sector comprising service and accommodation providers. The effectiveness was measured using engagement rate (ER) and topic modeling. The results showed that using topic modeling with the Latent Dirichlet Allocation (LDA) method on uploaded captions, three topic categories were produced with a coherence score of 0.59, while the average ER of all uploads was 92.26. The simultaneous test also showed that the variables of Hotel Occupancy Rate (TPK), Inflation, Google Trend Index (IGT), as well as Covid, Tourist Attraction, Government, and ER of all topics together had a significant influence on the number of domestic tourist trips. Furthermore, the partial test results showed that the TPK, Government ER, and ER of Topic 2 (prohibition of littering and the natural beauty of tourism) variables partially had a significant influence on the number of domestic tourist trips. The multiple linear regression model formed can explain 68% of the variation in the data. This implies that, to some extent, social media such as Instagram is an effective tool to promote tourism sites and influence the number of domestic tourist trips. However, in the case of DSP Likupang, some improvements are needed to achieve the expected objectives.

How to cite:
Artiari, N., Nurmawati, E., Sugiyarto, T. (2025). The Impact of Engagement Rate on The Number of Domestic Tourist Trips: A Case Study of Digital Marketing Through Instagram in Super Priority

Doi: 10.47608/jki.v19i12025.51-66

Destination, Likupang. *Jurnal Kepariwisataan Indonesia: Jurnal Penelitian dan Pengembangan Kepariwisataan Indonesia, 19*(1), 51-66. https://doi.org/10.47608/jki.v19i12025.51-66

INTRODUCTION

Indonesia is a country with diverse natural and cultural wealth. BPS identified 633 tribes living in Indonesia based on the results of the 2010 Population Census (BPS, 2015). Furthermore, based on data from the Ministry of Home Affairs, BPS estimated the number of islands at 16,766 (BPS, 2022). This attractive natural beauty and cultural diversity make the country an appeal to tourists, both from within and abroad. In general, tourism activities in a place will have physical, economic, and social impacts on the people in the area (Nurhajati et al., 2018).

The tourism sector has supported new job creation, increased living standards, and community income, as well as elevated currency exchange rates (Mill, 2010). This shows that tourism has a major impact on economic growth. Tourism also has an influence on the social life of the community. The development can foster the growth of social capital, strengthen community organizations, increase community insight, as well as awareness of preserving and protecting the environment (Rohani & Purwoko, 2020). The positive influence of tourism also includes improving the quality of education (Hamzah & Hermawan, 2018) which is stimulated by economic development.

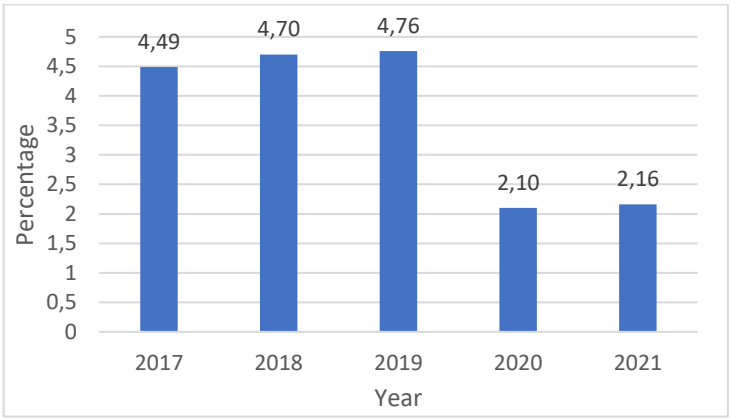

Figure 1: Tourism Sector Contribution to GDP, 2017-2021 (%)
Source: Tourism Satellite Account Indonesia 2016-2019, 2021

The impact of the tourism sector on the economy is reflected through the contribution of the Tourism Industries Direct Gross Value Added (TDGVA) to Gross Domestic Product (GDP). Figure 1 is a graph showing the percentage contribution of TDGVA to GDP from 2017 to 2021. The contribution of TDGVA to GDP in 2017 was 4.49%, then increased in 2018 and 2019 to 4.70% and 4.76% respectively. In the following year, the percentage decreased by 57% to 2.10%. In 2021, the percentage only increased by 2.86%, namely to 2.16%, which is still far from the TDGVA contribution in the previous few years. Therefore, the recovery of the post-pandemic tourism sector needs to be pursued.

One of the government efforts to restore the tourism sector after the pandemic is the development of tourist villages and the development of Super Priority Destinations

(DSP) (Kemenparekraf, 2023). The 10 Priority Tourism Destinations (DPP) are refocused into five DSP with the hope of increasing the quantity and quality of domestic and international tourist visits. One of the DSP is in North Sulawesi Province, Likupang, which is a beach with white sand. In addition, North Sulawesi has received attention through Bunaken National Park (Waani, 2016) with an underwater beauty attracting tourists both from within the country and abroad.

To support the development of Likupang as a DPP, various promotional strategies have been carried out, particularly through digital platforms. The Ministry of Tourism and Creative Economy has collaborated with local governments and tourism stakeholders to promote Likupang through social media campaigns, influencer engagement, and digital content creation that showcases natural beauty, marine biodiversity, and eco-tourism potential. For instance, Likupang is included in the "Wonderful Indonesia" campaign, which uses Instagram, YouTube, and other digital channels to reach domestic and international audiences. The use of hashtags such as #Likupang and #ExploreLikupang on social media helped build brand awareness and attract user-generated content. Additionally, the government has facilitated the creation of digital content by inviting travel bloggers, photographers, and content creators to visit and share experiences online. These efforts are aimed at increasing public interest and engagement with Likupang as a destination, thereby encouraging more tourist visits and supporting the post-pandemic recovery of the tourism sector (Kemenparekraf, 2022).

The progress of tourist attractions is reflected in the increasing number of tourists (Kemenparekraf, 2022) defined as people who travel outside the usual environment but not more than one year with any main purpose except to be employed by the resident entity being visited (UNWTO, 1994). Based on this definition, there are two types of tourists traveling within the country. Domestic tourists visit other areas within the country, while foreign tourists refer to people from other countries (UNWTO, 1994).

Figure2. Tourism Expenditure Growth by ADHB
Source: Tourism Satellite Account Indonesia 2016-2019, 2021

Figure 2 is a graph showing the development of spending by tourists according to ADHB. The percentage growth of international visitor expenditure has decreased since 2019 due to the COVID-19 pandemic. Although both decreased, the percentage growth in domestic visitor expenditure experienced a decline less than international visitors in 2020. Even in 2021, the growth of domestic visitor expenditure increased quite rapidly independent of international visitor expenditure (BPS, 2023). This proves that domestic

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tourists are quite reliable for the recovery of the tourism sector after the COVID-19 pandemic.

The role of domestic tourists in advancing the tourism industry is important. Consequently, increasing the number of domestic tourists is one of the targets of tourism development. In line with this, various efforts have been made to increase tourist attractions and provide convenience for tourists to visit. For the government and owners of the tourism industry, information about the factors that influence the number of domestic tourists is needed. This information can be used as data input for preparing more effective planning.

Several previous studies have identified variables that can be used to explain the trend in the number of tourists. For example, Suwanto et al., (2020) stated that the average Hotel Room Occupancy Rate (TPK) and the number of tourist visits have a strong and positive relationship. In addition, Yakup & Haryanto, (2019) mentioned that changes in the price of goods and services could affect the number of international visitors. This condition allegedly also applies to domestic tourist trips, because purchasing power is determined by inflation. High inflation encourages a decrease in purchasing power thereby reducing the tendency for tourism activities.

In this era of rapid development in technology and information, increased tourist visits can be achieved by promoting tourist attractions through digital media. This is also in line with digital marketing trends that refer to the use of technology and online platforms to promote products or services, interact with target audiences, and build relationships with customers (Erwin et al., 2023). Basically, digital marketing aims to increase brand awareness, increase engagement and interaction with customers, attract new customers, and create loyalty, ultimately enhancing business sustainability.

Tourism businesses are increasingly using social media and influencer marketing to intensify promotional activities (Limbono & Lolita, 2023). This is also supported by the public ability to use various digital media to obtain information about a tourist attraction. In general, searching for tourism-related information on Google often produces an index generated from keywords around tourism, commonly called the Google Trend Index (IGT) (Rödel & Van Der Kaap, 2017). Several previous studies have also examined the role of digital media in promoting a region (Saefullah & Darma, 2014). Numerous social media including Facebook, YouTube, and Instagram simultaneously have a significant effect on tourist interest (Nifita & Arisondha, 2018). However, no study has specifically discussed the content used in promoting tourist attractions quantitatively, especially at Likupang DSP.

Instagram is one of the social media that allows users to share and receive information through the upload feature. Posts on this platform focus on images and videos that usually include other information in the form of hashtags, the image or video source location, and captions explaining the purpose of the post (Fiallos et al., 2018). However, hashtags or captions do not always appropriately describe the uploaded image (Giannoulakis & Tsapatsoulis, 2016). Furthermore, the activities of social media users, including Instagram, are closely related to tourism activities. Social media user posts can serve as a means of documentation to commemorate tourism events to show self-existence (Antopani, 2015). The large percentage of users in Indonesia also allows Instagram to be an effective tourism promotion media for related parties. Therefore, data from this platform has the potential to support studies related to tourism conditions (Li et al., 2018).

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Due to the potential, Instagram is used as a tool for tourism promotion. However, disseminating information through social media is not always effective. One way to assess effectiveness is through engagement rates (ER). Active or passive interactions on social media can identified from the calculation of ER (Priadana et al., 2021). The ER of Instagram can be calculated using several variables such as likes and comments on a post (Arman et al., 2019).

Approximately 80 % of government agencies have Instagram handles, but more than 50 % have not been able to optimize the use as indicated by the resulting ER (Azmi & Budi, 2018). The study also found that the Ministry of Tourism and Creative Economy (Kemenparekraf) has the highest ER, reaching 150,062.3 while the ER of government agencies is estimated at 20.67.

Several factors affect the ER of an Instagram account, including content topic represented by the caption of the posted message, as well as media type, and upload time. By understanding the factors that influence engagement rate, tourism industry stakeholders can enhance the effectiveness of Instagram accounts in disseminating information related to tourist destinations.

Numerous stakeholders play a major role in the development of tourist attractions. Stakeholders are those who have the power and right to participate in decision-making, as well as those who give and/or are affected by the results of the decisions (Murphy & Murphy, 2004). According to Gayatri 2005, stakeholders can be divided into three groups, namely the government, business/private actors, and the community, with different roles and functions. The government is a body with the authority to formulate binding regulations, in this case, the tourism office of North Sulawesi Province. The private sector acts as a business actor who can create jobs including those who offer travel services and tourist accommodation. Meanwhile, the community acts as a host, creating a conducive environment for tourists (Rahim, 2012), including the manager of the tourist attraction.

Based on the above description, this study aims to assess the Instagram content of the three types of tourism stakeholders. The assessment includes topic modeling to understand the content of posted messages and calculate the ER to identify the response of public and the effectiveness of promotion. Several variables were assessed to determine the number of domestic tourist trips. These include hotel room occupancy rate (TPK), Inflation, Google Trend Index (IGT), and dummy Covid variables.

METHODOLOGY

This study applied a qualitative approach to examine the discussion on Instagram upload captions by tourism industry stakeholders while a quantitative approach was used to determine the relationship patterns of tourism-related variables. Secondary data were collected from January 2019 to November 2023.

Data on the number of tourist trips, TPK, and inflation from North Sulawesi province were collected through the Central Statistics Agency (BPS) website. Meanwhile, Instagram data related to posts were collected from three tourism industry stakeholder accounts selected based on the suitability of the period and the highest ER. The three stakeholders were government, tourist attraction managers, private service providers consisting of tourism service providers, and accommodation services. The total number of Instagram accounts studied was four, namely the tourism office of North Sulawesi

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province, Likupang tourist attraction manager, the tourism service provider "amazingsulut", and accommodation provider "bluebaydivers1212".

More specifically, data were collected through web scraping using the Python library, Instaloader. In addition, IGT data were collected based on the terms “North Sulawesi”, “Likupang”, “North Sulawesi hotel”, and “North Sulawesi airplane”. The terms were collected through the Trends Explore tool by applying a location filter in Indonesia, a category in the form of “Travel”, and a search type in the form of “Web Search”. To consider the COVID-19 situation, dummy variables were used to represent the presence or absence of a pandemic in the study period.

The initial stage carried out on the scraped Instagram data was preprocessing. This stage aimed to prepare the data collected for easy application in the next stage. Preprocessing on Instagram upload captions was carried out in steps outlined in Table 1.

Table 1. Preprocessing Stage on Caption of the Scraped Instagram

Stage	Description
Case folding	Convert all letters in the text to lowercase.
Cleaning	Removes characters, symbols, punctuation, emojis, usernames, and hashtags
Tokenizing	Separates text into mutually independent chunks of words or phrases referred to as tokens
Stop word elimination	Eliminate words that lack meaning and have a high frequency of occurrence, such as conjunctions and personal pronouns.
Stemming	Change the whole word to its base word by removing all types of affixes to reduce word variation.

Source: Research data, 2025

Table 1 shows the preprocessing stages applied to Instagram caption data. Each step from case folding to stemming was crucial for cleaning and standardizing text data, enabling more accurate analysis in subsequent stages. These steps helped to reduce noise, ensured consistency, and extracted meaningful features from raw social media content.

Caption data that had passed through the preprocessing stage were then analyzed through topic modeling. The method used was Latent Dirichlet Allocation (LDA) through the Gensim library in Python. Topic modeling was carried out with several experiments to achieve appropriate accuracy. This was executed by setting a certain parameter range of the number of topics and the number of passes.

Engagement rate (ER) calculation was performed on all uploads that had been categorized based on the topic of the caption. The calculation was based on the number of likes (L) and comments (C) as in equation (1). The ER values of all uploads from the three accounts in the same month and year were then averaged to derive the average.

$$ER_i = \frac{L_i + 2C_i}{3} \quad \text{...(1)}$$

All data prepared were then analyzed followed by classical assumptions and hypothesis testing. Tests on classical assumptions include normality, multicollinearity, heteroscedasticity, and autocorrelation. A good regression model does not have multicollinearity, heteroscedasticity, and autocorrelation (Ghozali, 2016). Hypothesis testing was carried out simultaneously and partially. The simultaneous test was carried out with the F test to determine whether all independent variables had a significant effect on

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the dependent. The partial test was conducted using the T-test, to find out whether each independent variable partially has a significant effect on the dependent. Furthermore, multiple linear regression models were analyzed using the Ordinary Least Square (OLS) method (Iswati et al., 2016).

RESULTS AND DISCUSSION

Instagram accounts of tourism industry stakeholders in North Sulawesi have played an active role in promoting tourist destinations since 2017. The Likupang tourist attraction management account was created in 2020. Therefore, to fulfill the adequacy of time series data, the Bunaken National Park tourist attraction management account was added.

Table 2. Preprocessing Result on Caption

Stage	Sample Results
Before preprocessing	Sudah ke sini? 😍 Location: Ranowangko Beach, Minahasa, Sulawesi Utara Credits to @blackpacker__ . Bantu Kami Dalam Membagikan Keindahan Alam Sulawesi Utara di #amazingsulut #exploresulut . Jangan Sambarang Buang Sampah, Kurangi Penggunaan Sampah Plastik neh 😊🙏 Bawa Tumbler Dari Rumah . #amazingsulut #amazingindonesia #indonesiaituindah #exploreindonesia #instagram #Genpi #DiIndonesiaAja #InDOnesiaCARE #WonderfulIndonesia #GenPISulut #PesonaIndonesia #visitnorthsulawesi2022 #disulutjo #sulawesiutara #minahasa #beach #ranowangko
Translate	Sudah ke sini? 😍 Lokasi: Pantai Ranowangko, Minahasa, Sulawesi Utara Penghargaan untuk @blackpacker__ . Bantu Kami Dalam Membagikan Keindahan Alam Sulawesi Utara di #amazingsulut #exploresulut . Jangan Sambarang Buang Sampah, Kurangi Penggunaan Sampah Plastik neh 😊🙏 Bawa Tumbler Dari Rumah

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Stage	Sample Results
	.
	#amazingsulut #amazingindonesia #indonesiaituindah #exploreindonesia #instagram #Genpi #DiIndonesiaAja #InDOnesiaCARE #WonderfulIndonesia #GenPISulut #PesonaIndonesia #visitnorthsulawesi2022 #disulutjo
	#sulawesiutara #minahasa #beach #ranowangko
Case folding	sudah ke sini? 😍
	lokasi: pantai ranowangko, minahasa, sulawesi utara
	credits untuk @blackpacker__
	.
	bantu kami dalam membagikan keindahan alam sulawesi utara di
	#amazingsulut
	#exploresulut
	.
	jangan sambarang buang sampah,
	kurangi penggunaan sampah plastik neh 🥰 🙏
	bawa tumbler dari rumah
	.
	#amazingsulut #amazingindonesia #indonesiaituindah #exploreindonesia #instagram #genpi #diindonesiaaja #indonesiacare #wonderfulindonesia #genpisulut #pesonaindonesia #visitnorthsulawesi2022 #disulutjo
	#sulawesiutara #minahasa #beach #ranowangko
Cleaning	sudah ke sini lokasi pantai ranowangko minahasa sulawesi utara credits untuk bantu kami dalam membagikan keindahan alam sulawesi utara di jangan sambarang buang sampah kurangi penggunaan sampah plastik neh bawa tumbler dari rumah
Tokenizing	[‘sudah’, ‘ke’, ‘sini’, ‘lokasi’, ‘pantai’, ‘ranowangko’, ‘minahasa’, ‘sulawesi’, ‘utara’, ‘credits, ‘untuk, ‘bantu’, ‘kami’, ‘dalam’, ‘membagikan’, ‘keindahan’, ‘alam’, ‘sulawesi’, ‘utara’, ‘di’, ‘jangan’, ‘sambarang’, ‘buang’, ‘sampah’, ‘kurangi’, ‘penggunaan’, ‘sampah’, ‘plastik’, ‘neh’, ‘bawa’, ‘tumbler’, ‘dari’, ‘rumah’]
Stop word elimination	[‘lokasi’, ‘pantai’, ‘ranowangko’, ‘bantu’, ‘keindahan’, ‘alam’, ‘sambarang’, ‘buang’, ‘sampah’, ‘sampah’, ‘plastik’, ‘bawa’, ‘tumbler’, ‘rumah’]
Stemming	[‘lokasi’, ‘pantai’, ‘ranowangko’, ‘bantu’, ‘indah, ‘alam’, ‘sambarang’, ‘buang’, ‘sampah’, ‘sampah’, ‘plastik’, ‘bawa’, ‘tumbler’, ‘rumah’]

Source: Reasearch data, 2025

Table 2 shows the caption preprocessing results produced at each stage. In the case folding stage, all letters in the text were converted into lowercase letters. The cleaning stage produced text devoid of punctuation, emojis, hashtags, and usernames. In the next stage, namely tokenizing, tokens or pieces of words were formed from the text. Words with less meaning such as ‘dan’, ‘yang’, and ‘by’ were eliminated at the stop word elimination stage. In the last stage of preprocessing, stemming was performed to convert all words into base form. The text only contained the base word which is the core of the caption.

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Table 3. Topic Modeling Results on Caption

Keywords	Topic	Number of Post	ER Average
0.035*"selam" + 0.031*"matahari" + 0.027*"pulau" + 0.026*"sinar" + '0.019*"sahaung" + 0.018*"jalan" + 0.017*"senang" + 0.016*"indah" + '0.011*"bangka" + 0.011*"pantai"	Diving activities and the beauty of marine tourism	958	29,05
0.017*"nasional" + 0.016*"taman" + 0.009*"desa" + 0.009*"giat" + 0.008*"pulau" + 0.008*"masyarakat" + 0.008*"kawasan" + 0.007*"wisata" + 0.007*"pariwisata" + 0.006*"laut"	Village tours and tourism activities	1309	38,06
0.081*"sampah" + 0.070*"indah" + 0.069*"alam" + 0.049*"bantu" + 0.047*"plastik" + 0.042*"location" + 0.034*"kesini" + 0.031*"buang" + 0.030*"sembarang" + 0.030*"bawa"	Prohibition of littering and the natural beauty of tourism	2076	157,49
0.011*"info" + 0.010*"diskon" + 0.008*"september" + 0.008*"layar" + 0.007*"khusus" + 0.006*"email" + 0.006*"mesan" + 0.005*"die"	Information on offering tourism services with special discounts	164	45,26

Source: Research data, 2025

Table 3 shows the modeling results on the topic of stakeholder Instagram uploads in North Sulawesi. By setting the parameters of the number of topics in the range of 3 to 10 and the number of passes 1 to 20, the highest coherence score of 0.59, was produced at the number of topics 4 and passes 10. Based on the keywords, topic 0 discusses diving activities and the beauty of marine tourism in North Sulawesi. Topic 1 discusses village tourism and community activities in tourist areas. Meanwhile, the keywords in topic 2 show revolve around the prohibition of littering and the natural beauty of tourism. Topic 3 contains information on offering tourism services with special discounts.

Topic 2 had with highest average user interaction compared to the other three. This topic has a total number of 2,076 posts and an average ER of 157.49. Meanwhile, topic 3 had the lowest number of posts namely 164 with an average user interaction of 45.26.

Table 3 shows that the prohibition of littering and the natural beauty of tourism are topics that can attract public attention. This data from one side can be used by tourism industry managers to maintain sustainability and improve business performance. Reviewing the concept of sustainable tourism, all topics are important due to the effect on the economic and environmental dimensions. Sustainable tourism pays attention to the overall impact on current and future conditions in the economic, social, and environmental dimensions, including considering the needs of tourists, businesses, environmental sustainability, and local communities (UNWTO, 1994).

The ER calculation on the four accounts showed that the Instagram account had the highest average, namely the private sector service provider account estimated at 148.99, while the government (tourism office) account had the lowest average ER of 15.16. This shows that the Instagram account of tourism and promotion service providers has been quite effective in reaching target users and establishing interactive communication. On the other hand, tourism agency accounts with a low average ER still need improvement. The monthly data series showed that ER was high in certain months such as July, November,

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and January. This information is in line with the cycle of tourist activity which is influenced by the holiday season.

Based on the stages that have been carried out, the dataset used in multiple linear regression modeling consisted of 59 rows and 12 columns. The number of tourist trips was the dependent variable, while the independent variables consisted of TPK, Inflation, IGT, Covid, Tourist Attraction ER, Government ER, Service provider ER, Accommodation Provider ER, as well as ER of Topics 0, 1, 2 and 3. The normality test was carried out using the Shapiro-Wilk test with the results shown in Table 4.

Table 4. Normality Test Results

Variable	P-Value	Decision
Number of Domestic Tourist Trips	0.217	Fail to Reject
Hotel Room Occupancy Rate (TPK)	0.132	Fail to Reject
Inflation	0.000	Reject
Google Trend Index (IGT)	0.098	Fail to Reject
Dummy Variable Covid (Covid)	1.360×10^{-11}	Reject
Tourist Attraction ER	0.111	Fail to Reject
Transf. Government ER	6.585×10^{-7}	Reject
Private ER	0.037	Reject
Accommodation ER	0.000	Reject
ER of Topic 0	0.000	Reject
ER of Topic 1	5.030×10^{-9}	Reject
ER of Topic 2	0.230	Fail to Reject
ER of Topic 3	1.000×10^{-9}	Reject

Source: Researvh data, 2025

The p-value of the Shapiro-Wilk test is shown in Table 4. Hypothesis 0, stating that data are normally distributed was rejected because the p-value >0.05. The number of domestic tourists, Hotel Room Occupancy Rate, IGT, Tourist Attraction, and ER of Topic 2 variables were considered normally distributed. Meanwhile, variables of Inflation, Covid, Government, Private, Accommodation, as well as ER of Topics 0, 1, and 3 were not normally distributed. Transformation with the Logarithm and Box-Cox methods was further applied to achieve normal distribution. Inflation, Covid, and ER Topic 1 variables remained not normally distributed while other variables became normally distributed. However, the variables were still included in the model.

Table 5 shows the multicollinearity and homoscedasticity test results. The multicollinearity test was carried out by determining the VIF value of all variables. Hypothesis 0, stating that there was no multicollinearity between the independent variables in the model, was rejected because the value exceeded the set threshold. By setting 5 as the VIF threshold, the assumption of no multicollinearity was violated in the accommodation and private ER variables. Therefore, these two variables were removed from the model.

Table 5. Multicollinearity and Homoscedasticity Test Results

Variable	VIF	Multicollinearity Decision	p-value Breusch-Pagan	Homoscedasticity Decision
Hotel Occupancy Room Rate	2.889	Fail to Reject	0.503	Fail to Reject

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Inflation	1.137	Fail to Reject	0.504	Fail to Reject
Google Trend Index	2.339	Fail to Reject	0.636	Fail to Reject
Dummy Variable Covid	2.531	Fail to Reject	0.259	Fail to Reject
Tourist Attraction ER	1.712	Fail to Reject	0.655	Fail to Reject
Transf. Government ER	3.967	Fail to Reject	0.180	Fail to Reject
Private ER	5.009	Fail to Reject	0.405	Fail to Reject
Accommodation ER	5.216	Fail to Reject	0.562	Fail to Reject
ER of Topic 0	1.961	Fail to Reject	0.684	Fail to Reject
ER of Topic 1	2.273	Fail to Reject	0.584	Fail to Reject
ER of Topic 2	3.391	Fail to Reject	0.076	Fail to Reject
ER of Topic 3	1.425	Fail to Reject	0.326	Fail to Reject

Source: Research data, 2025

The heteroscedasticity test was performed with the Breusch-Pagan test on all variables. Hypothesis 0, stating the absence of heteroscedasticity, was rejected because the p-value was less than the threshold of 0.05. Based on Table 5, all variables have a p-value greater than 0.05. Therefore, the assumption of no heteroscedasticity has been met. The model was built from the independent variables of Hotel Occupancy Room Rate, Inflation, IGT, Covid, Tourism Attraction, Government, and ER of Topics 0, 1, 2, and 3, as shown in Figure 3

OLS Regression Results

Dep. Variable:	wisnus	R-squared:	0.678
Model:	OLS	Adj. R-squared:	0.610
Method:	Least Squares	F-statistic:	10.09
Date:	Sun, 16 Jun 2024	Prob (F-statistic):	7.42e-09
Time:	14:01:53	Log-Likelihood:	-730.72
No. Observations:	59	AIC:	1483.
Df Residuals:	48	BIC:	1506.
Df Model:	10		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	-1.082e+05	1.57e+05	-0.690	0.493	-4.23e+05	2.07e+05
TPK	4865.2148	1180.703	4.121	0.000	2491.252	7239.178
inflasi	1.637e+04	9100.219	1.799	0.078	-1925.326	3.47e+04
igt	973.1053	879.746	1.106	0.274	-795.743	2741.954
covid	3.138e+04	2.8e+04	1.121	0.268	-2.49e+04	8.77e+04
er_obj	568.4306	2287.011	0.249	0.805	-4029.913	5166.774
er_topik0	326.8109	424.608	0.770	0.445	-526.921	1180.542
er_topik2	-496.9718	172.755	-2.877	0.006	-844.320	-149.624
er_topik3	163.1312	191.078	0.854	0.397	-221.056	547.318
er_pem_box	1.301e+05	2.84e+04	4.578	0.000	7.29e+04	1.87e+05
er_topik1_box	-1.034e+05	6.53e+04	-1.582	0.120	-2.35e+05	2.8e+04

Omnibus:	1.429	Durbin-Watson:	1.300
Prob(Omnibus):	0.490	Jarque-Bera (JB):	1.162
Skew:	0.126	Prob(JB):	0.559
Kurtosis:	2.360	Cond. No.	3.58e+03

Figure 3. Python output of Multiple Linear Regression Model Formation

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The autocorrelation test was performed with the Durbin Watson test of the regression model and based on Figure 3, the resulting value was 1.300. For data with 59 rows and 10 independent variables, the threshold value to avoid violation of no autocorrelation assumption ranged between 1.2122 and 2.0111. Therefore, the value indicates that there is no positive and negative autocorrelation in the model.

Simultaneous hypothesis test was performed using the F test. Hypothesis 0, states that the variables of Hotel Occupancy Room Rate (TPK), Inflation, IGT, Covid, Tourist Attraction, Government, Service provider, Accommodation, as well as ER of Topic 0, 1, 2, and 3 together do not have a significant influence on the tourist destination variable. This hypothesis was rejected when the F count was less than the p-value of 0.05. The calculated F value was 7.42 x 10^{-9}, hence, H0 was rejected. This implies that all variables together have a significant influence on tourist destination.

Hypothesis 0 of the test states that partially, there is no significant influence of each independent variable, namely TPK, Inflation, IGT, Covid, Tourist Attraction, Government, Service provider, Accommodation, as well as ER of Topic 0, 1, 2 and 3 on tourist destination. This hypothesis was rejected because the p-value was less than 0.05. The p-values for the variables of TPK, Government, and ER of Topic 2 were 0.00, 0.00, and 0.006, respectively. Therefore, Hypothesis 0 was rejected, implying that the variables partially have a significant influence on domestic tourist trips. Meanwhile, the p-values of Inflation, IGT, Covid, Tourist Attraction, as well as ER of Topics 0, 1, and 3 variables were 0.087, 0.279, 0.275, 0.800, 0.448, 0.126, and 0.401 respectively, all exceeding 0.05. Therefore, hypothesis 0 was not rejected, implying that the variables partially do not have a significant influence on tourist destination.

Based on Figure 3, the multiple linear regression model formed is written as follows:

y=-108200+ 4865.21 TPK* + 16370 Inflation + 973.11 IGTtrans + 3128 Covid + 568.43 Tourist Attraction ER + 13010 Government ER trans* + 326.81 ER of Topik 0-103400 ER of Topik 1 trans-496.97 ER ofTopik2(trans)* + 163.13 ER of Topic 3

Formula description: *) significance variables

The R squared value is 67,8%, suggesting that 67,8% of the factors affecting the number of domestic tourist trips can be explained by the variables of TPK, Inflation, IGT, Covid, Tourist Attraction, Government, as well as ER of Topics 0, 1, 2, and 3. Meanwhile, the remaining 32,2 % can be explained by other factors not examined in this study.

From the perspective of digital marketing, the statistical inference results show several points of concern. Firstly, the ER of Instagram accounts managed by government has a positive impact on increasing domestic tourist trip to Likupang. This also shows that the provided information may be considered by the public as more reliable. The government is often seen as an entity that does not focus on earning profit. Therefore, the posted information tends to be neutral and expected to capture reality.

Secondly, the ER of Topic 2 which discusses the prohibition of littering has a significant effect in determining the number of domestic visitors to Likupang. The impact is negative indicating that increasing ER will lead to lower domestic tourist trip. This result is quite different from the expected outcome. Some possible explanations include the possibility that the advice to maintain cleanliness and other recommendations to visitors

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may lead to reluctance toward visiting the destination. This may also create a perception that the cleanliness of the destination is worrying. In addition, the calculation of ER does not consider the content of the response provided by the public. The ER only considers the number of likes and comments. In this context, the negative response from the public may lead to a damaging campaign for the service providers and the tourist destination.

Thirdly, the ER of tourist attraction managers does not significantly affect the number of domestic tourist trips. This implies that the Instagram account of tourist attraction manager is not effective in promoting the destination since it cannot affect the number of domestic visitors. The condition can be attributed to the content of uploaded information on Instagram.

CONCLUSION

In conclusion, all variables analyzed together have a significant influence on the number of domestic tourist trips. However, only the variables of TPK, Government ER transformation, ER of Topic 2 on the prohibition of littering, and the natural beauty of tourism, have a significant influence. Accordingly, some results also showed that digital marketing by three stakeholders of the tourism industry must be improved. To some extent, Instagram account owned by the local government was quite effective in promoting and supporting the development of DSP Likupang. On the other hand, accounts owned by service and accommodation providers, as well as the management of tourist site must be enhanced.

In this era of advanced information technology, the strategy of using digital marketing should sufficiently support the sustainability of tourism industry. The strategy may stimulate the demand side by increasing the number of visitors. In the case of DSP Likupang, some improvements are needed to achieve the desired condition. In the context of managing Instagram account as promotion media, the services provider and management of tourist site must develop the content of uploaded messages, underscoring the competitive value of tourist destination. Uploaded contents that provide adequate information in more specific terms can attract the attention of the public and influence viewers or readers decisions. This information should contain specific attractions not available at other destinations.

Finally, the analysis also showed that the ER was not consistently related to the number of visitors. The calculation of ER focuses on the frequency of likes and comments but does not consider the content. Since information is exposed to everyone in this era, the tourism industry stakeholders should be cautious about negative information related to the destination. The content of public comments on the posted information on social media must be addressed wisely. Stakeholders are to provide a solution or logical answer for every comment which has negative information. This action will reduce the negative impact and increase the public interest to attend the destination.

REFERENCES

Antopani, T. (2015). Fotografi, Wisata, dan Media Aktualisasi Diri. *Jurnal Rekam*, *11*, 31–40. https://doi.org/https://doi.org/10.24821/rekam.v11i1.1293

Arman, A. A., Sidik, A. P., Institut Teknologi Bandung. School of Electrical Engineering and Informatics, Institut Teknologi Bandung. Informatics Engineering Group, & Institute of Electrical and Electronics Engineers. (2019). 2019 International Conference on ICT for

Doi: 10.47608/jki.v19i12025.51-66

Smart Society (ICISS) : "Innovation and Transformation Toward Smart Region" : proceeding : Bandung, 19-20 November 2019. *International Conference on ICT for Smart Society (ICISS)*, 1–6.

Azmi, A. F., & Budi, I. (2018). *Proceedings of 2018 the 10th International Conference on Information Technology and Electrical Engineering : "Smarter Technology for Better Society" : Ramada Bintang Bali Resort, 24th-26th July 2018, Kuta, Bali*. 18–21.

BPS. (2015). *profil-penduduk-indonesia-hasil-supas-2015*.

BPS. (2023). *BADAN PUSAT STATISTIK BPS-Statistics Indonesia Tourism Satellite Account Indonesia Indonesia Tourism Satellite Account*.

Fiallos, A., Jimenes, K., Fiallos, C., & Figueroa, S. (2018). Detecting Topics and Locations on Instagram Photos. *2018 5th International Conference on EDemocracy and EGovernment, ICEDEG 2018*, 246–250. https://doi.org/10.1109/ICEDEG.2018.8372314

Ghozali, I. (2016). *Aplikasi Analisis Multivariete SPSS 23*.

Giannoulakis, S., & Tsapatsoulis, N. (2016). Evaluating the descriptive power of Instagram hashtags. *Journal of Innovation in Digital Ecosystems*, *3*(2), 114–129. https://doi.org/10.1016/j.jides.2016.10.001

Hamzah, F., & Hermawan, H. (2018). Evaluasi Dampak Pariwisata Terhadap Sosial Ekonomi Masyarakat Lokal. *Jurnal Pariwisata*, *5*(3). http://ejournal.bsi.ac.id/ejurnal/index.php/jp

Iswati, H., Syahni, R., & Maiyastri. (2016). 165-328-2-PB. *Jurnal Matematika UNAND*, *3*(4), 168–176. https://doi.org/https://doi.org/10.25077/jmu.3.4.168-176.2014

Kemenparekraf. (2022, June 6). *Siaran Pers: Menparekraf: Kekayaan SDA Modal Pengembangan Pariwisata Berkualitas Berkelanjutan Mendukung Kebangkitan Ekonomi*. https://www.kemenparekraf.go.id/berita/siaran-pers-menparekraf-kekayaan-sda-modal-pengembangan-pariwisata-berkualitas-berkelanjutan-mendukung-kebangkitan-ekonomi

Kemenparekraf. (2022, June 3). *Siaran Pers: Likupang Tourism Festival 2022 Dorong Destinasi Pariwisata Super Prioritas Semakin Dikenal*. https://kemenparekraf.go.id/ragam-pariwisata/likupang-tourism-festival-2022-dorong-destinasi-pariwisata-super-prioritas-semakin-dikenal

Kemenparekraf. (2023, February 2). *Siaran Pers: Kemenparekraf Paparkan Upaya Pemulihan Sektor Parekraf Indonesia Pascapandemi*. https://www.kemenparekraf.go.id/berita/siaran-pers-kemenparekraf-paparkan-upaya-pemulihan-sektor-parekraf-indonesia-pascapandemi

Li, J., Xu, L., Tang, L., Wang, S., & Li, L. (2018). Big data in tourism research: A literature review. *Tourism Management*, *68*, 301–323. https://doi.org/10.1016/j.tourman.2018.03.009

Limbono, P., & Lolita, L. T. V. (2023). Branding and Tourism In Komodo: Raising Resort Awarness Through Instagram Influencer. *Jurnal Kepariwisataan Indonesia*, *17*(2), 222–239.

Mill, R. C. (2010). *Tourism the International Business*.

Murphy, P., & Murphy, A. (2004). Strategic Management for Tourism Communities: Bridging the Gaps. In *Strategic Management for Tourism Communities*. https://doi.org/10.21832/9781873150856

Nifita, A. T., & Arisondha, E. (2018). Pengaruh Medua Sosial terhadap Minat Berkunjung Wisatawan di Taman Geopark Kabupaten Merangin. *Jurnal Manajemen Terapan Dan Keuangan*, *7*(2), 169–180. https://doi.org/https://doi.org/10.22437/jmk.v7i2.5490

Nurhajati, N. (2018). Dampak Pengambangan Desa WisataTerhadap Peningkatan Kesejahteraan Masyarakat. *Publiciana*, *11*, 1–13. https://doi.org/https://doi.org/10.36563/publiciana.v11i1.136

Priadana, A., Saputra, A. B., Cahyo, P. W., & Habibi, M. (2021). *Health in Digital Era 4.0: Analyzing Reader Engagement Rate on Instagram Account of Government Health Agencies*.

Rahim, F. (2012). *Pedoman Kelompok Sadar Wisata | i* (1st ed.). Kemenparekraf.

Doi: 10.47608/jki.v19i12025.51-66

Rödel, E., & Van Der Kaap, H. (2017). *Forecasting tourism demand in Amsterdam with Google Trends A research into the forecasting potential of Google Trends for tourism demand in Amsterdam 2*.

Rohani, E. D., & Purwoko, Y. (2020). Dampak Sosial Pariwisata terhadap Masyarakat Desa Ekowisata Pampang Gunung Kidul menuju Desa Ekowisata Berkelanjutan. *Sosiologi Reflektif*, *14*(2), 237–254.

Saefullah, D. A., & Darma, G. S. (2014). Jurnal Manajemen dan Bisnis STRATEGI MARKETING WISATA WEDDING SEBAGAI DESTINASI ALTERNATIF. *Jurnal Manajemen Dan Bisnis*, *11*(1), 17–34. http://journal.undiknas.ac.id/index.php/magister-manajemen/

Suwanto, Sdm, P., Dan, P., Kreatif, E., Pariwisata, K., Pariwisata, B., Haryono, J. M., 47-48, K., & Selatan, J. (2020). *HUBUNGAN JUMLAH KUNJUNGAN WISATAWAN MANCANEGARA DENGAN RATA-RATA TINGKAT PENGHUNIAN KAMAR HOTEL PROVINSI DKI JAKARTA TAHUN 2012-2018 Relationship between the Number of Foreign Tourists Visit and Average Hotel Room Occupancy Rate in DKI Jakarta Province in 2012-2018*.

UNWTO. (1994). *Statistical Papers Series M No. 83 Recommendations on Tourism Statistics*. United Nations.

Waani, H. F. (2016). SOSIAL BUDAYA DALAM PENGEMBANGAN PARIWISATA DI KELURAHAN BUNAKEN KECAMATAN BUNAKEN KOTA MANADO. *Acta Diurna*, *5*(2).

Yakup, A. P., & Haryanto, T. (2019). Pengaruh Pariwisata terhadap Pertumbuhan Ekonomi Di Indonesia. *Bina Ekonomi*, *23*(2), 39–47.

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