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The Contribution of Arrival Number of Halal Tourism and Economic Growth of West Sumatra Based on the Supply Chain Strategy: Using the Cointegration Test

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Abstract - **The purpose of this research is to identify the relationship between the number of halal tourist arrivals of West Sumatra with economic growth by using the method of test and Granger cause testers Granger in the period 2000–2017. To review this written report, tourism growth is proxy with the number of tourist arrivals (LAR). While the economic consumption of income from tourism (LPAD) is utilized as a placeholder for the increase of tourism as the research. The significance of this research is the maturation of the tourism sector, which is more grievous in the hope it can contribute significantly to the economic and social development of the country in question. Further development in the tourism industry of West Sumatra as a tourist destination has put tourism industry, which knows the halal tourism industry as one of the important industry and the biggest contributor of the western Sumatra region.**

Keywords: *cointegration test, economic growth, grangercausality,halaltourism*

1.   Introduction

The tourism industry is the leading sector that contributes significant towards the national income of Indonesia. Menparekraf explains in these last few years, the contribution of the tourism sector towards the national economy is getting bigger. Furthermore the current tourism industry is more and more focusing on the requirements of tourists, the star that is currently making the tourist is lawful. The market potential of Muslims in alternative niche tourism market in several nations in the globe. Views of the value of expenditure, global Muslim market tourism $142 billion (excluding Hajj and Umrah) or 11 percent of total global tourist market. In the year 2020 is calculated to be spending the Muslim market tourism reached USD 233 billion by the number of tourists reached 150 one thousand thousand people [1]. Statistically, the American tourist market and Europe for example, each shows cracks as much as 5.3 percent and 6.1 percent compared to an average growth of the entire world as much as 6.4 percent. Based on data that international tourist arrivals around the world increased by 7 percent in 2017. This is well above the trend that is sustainable and consistent with growth of 4 percent or higher since 2010. Europe recorded 8 percent more international arrivals compared to 2016, Africa with an increase 8 percent, Middle East 5 percent and America 3 percent. While countries in the Asia Pacific are predicted to grow by 6 percent annually from 2016 to 2021. While in 2016 around 12.02 million foreign tourists visited Indonesia, which was 15.5 percent higher than 2015, only 9.73 million visitors international entry into Indonesia (World Tourism Organization [2].The enactment of this tourism market, the more important it needs to be utilized in the first place by the states that became the new destinations of tourists with a new tourist product in particular tourist product based on nature and on-Islam. West Sumatra tourist attractions, with a coastline of 218 kilometers long and surrounded by several islands [3]. There are a number of factors in rating tourists to visit west Sumatra, namely tourist information, location, facilities and infrastructure, and convenience. According to [4] the factors that influence attractiveness are the availability of

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religious facilities, restaurants, souvenirs, factors in medical services, security, public transportation and accommodation. The routine of foreign tourists to travel to West Sumatrahas increased each year. Tourists visiting the country from Malaysia's dominant, i.e. as well as 43,558 people in 2014 and 2015 years, 36,262 people in. Meanwhile, tourists from Australia ranks second [3]. According to Global Muslim Travel Index [5], Indonesia is ranked 3 (three) as a halal tourism destination after Malaysia, and the United Arab Emirates. The chance to be able to absorb a very large peak position achieved by Indonesia, one of them supported Indonesia's Muslim population numbers are in the universe. The tourism industry has an impact on increasing economic growth in the long run [6]. The growth in the number of tourist arrivals will increase the income of the tourism industry, especially the growth of the hospitality industry, and provide opportunities for residents, especially the provision of jobs. Alterations to the development of tourism industry will directly provide impact positively and negatively to the ringing residential area. The shock received by the company for the development of tourism can be affiliated with several aspects such as economic, social, ethnic and natural surroundings [7]. Recognizing the importance of conducting research on halal tourists in West Sumatra is nothing but increasing economic growth, because West Sumatra is known for historic places. Therefore several variables were examined, among others, the tourism industry which was proxied by the arrival of tourists in West Sumatra. The work also examines the existence and direction of a long-term relationship between the growth of the tourism industry with economic growth that proxy with the locally-generated revenue (PAD). Next are the development of the tourism industry as an inducement or causes of economic development (economic development-led tourism) or vice versa (growth-led tourism expansion). To perform a valuation of the variables utilized in the empirical analysis of Granger and then test cases Granger will be applied.

2. Literature Review

The concept of Islamic tourism is a procedure of integrating Islamic values into all aspects of the tourist action. Halal tourism is any action that is allowed to use or be involved in the tourism industry, according to Islamic teachings. Therefore, the success of developing and marketing halal tourism destinations must be guided and the application of Islamic teachings and principles in all aspects of tourism activities [8]. Halal tourism development is an alternative for the tourist industry in Indonesia along with the halal tourism trends becomes part of the global Islamic Economics industry [9]. In the tourism industry, even though the study only examines the influence of the growth of the tourism industry to the economic growth in particular, but the shock of this industry towards the inquiry of economic growth through an input-output approach is rather wide, however this research but more specific relationship because the causal agency is relatively young. Research conducted by [10] in Spain to see the development of the tourism industry are a campaign for economic evolution in one way. While research [11], examined the long-term relationship between tourism development and economic growth by using cointegration techniques for OECD and non-OECD countries in the period 1990-2002. The results showed that the existence of a cointegration relationship between GDP and tourism development and tourism development had a greater impact on GDP in non-OECD countries than in OECD countries. In addition, in the long term, panel causality tests show a causal relationship in the direction of tourism development to economic growth in OECD countries, two-way relations in nonOECD countries, but only weak relations in Asia.While [12], examined the relationship between the relationship between tourism expenditure and economic growth in 49 countries. By using the co-integration panel and the Granger panel causality test, there is a cointegration and significant relationship between economic growth and tourism spending. The results of his research also show that there is a two-way causality relationship between tourism expenditure and economic growth. Ref. [13] examined the relationship between tourism and economic growth using panel data and cross-sectional data. The results of the study show that the relationship between tourism and growth depends on factors in the level of state specialization in tourism. The results of the study by [14], examined the relationship between tourism and economic growth in India during the period 1960-2014, using the BayerandHanck method resulted in tourism, economic growth and financial development having a cointegration relationship.

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This means that tourism growth is spurringeconomic growth in India both in the long and short term. Besides using Granger analysis, there is a granger relationship from tourism to economic growth.The results of study [15], examined the causal relationship between tourism acceptance and GDP. Using the Granger causality analysis based on the Vector Error Correction Model (VECM) it was found that there is no Granger causality between series, whereas using the coefficient model based on the state-space and rolling window models shows that GDP does not have predictive power for tourism revenue. however, tourism receiptshave positive-predictive content for GDP after the early 1980s while the study of [16] found a causality relationship between economic growth to the tourism industry. Ref. [17] concluded that destination branding effect significant to the integrated marketing scheme. This means it needs to be broken into a tourist destination, including its integrated marketing integration as well as the social factors community around tourist sites that will ascertain the decision of tourists for a visit [18,19, 20]. Ref. [21] examined the relationship of tourism in the long term in Greece in 1960.I – 2000.IV. the results of the study indicate that there is one integrated and significant vector between gross domestic product, the real effective exchange rate and tourism income from abroad. Furthermore, the results of his research also found that there was a strong Granger relationship between international tourism income and the economy.

3.   Methods

This inquiry, using time series data obtained from the Tourism Office of West Sumatera during the years 2000-2017. To study the growth of the tourism industry as the causal agent of economic development (economic development-led tourism) or vice versa (growth-led tourism expansion) using some proxy variables. The development of tourism is proxy with the number of tourist arrivals [22]. Tourism industry research proxied with the number of tourist arrivals and notated as a proxy of economic growth while LAR South Coast used Original income variable region (PAD), which in this case notated with the LPAD. The second variable in logarithmic phase.

4.   Results and discussion

A method for examining the relationship between the variables tested, used methods Granger and Johansen and Juselous. [23,24]. While [25] procedure stated Johansen can meet a special sample of data should Granger, Stationary with the same sequence. The first analysis in this study firstly used test unit root. After these requirements are satisfied, then the next test can be done with Granger. Next followed by the test causes Granger in identifying the direction of the relationship between economic variables.

Unit Root test

Unit root test data are important when time series data applied in economic analysis. This is to avoid estimation of "false". Compute the "false" does not consider the meaning and likely to cause bias [26]. There are various other researchers can be guided to identify data stationerity to the order of time, but in this study, the test used Augmented Dickey Fuller (ADF) as follows:

ADF   test:

$$\Delta Y_t = \alpha_1 + \delta t + \beta Y_{t-1} + \sum_{i=1}^{P} \Delta Y_{t-1} + v_t$$

(1)

Variable ΔY_{t-1} The first of the different variables, vatis an erratum was estimated and α, β, δ, and ϖ is the parameter that want to expect.Unit root test results are presented in Table 1. From the chart, be obtained each of the variables is not stationer on the form level based on the answers of the test the ADF. Yet the results test can even be managed with a different test first ADF, acquired all the variables studied are the stationer. ADF test results are as visibly at Table 1 follows:

Table1. Unit Root Test Level and the first Difference

Variable	Level		First Difference	
	T_μ	T_τ	T_μ	T_τ
LAR	-1.3487	-2.7735	-5.7341*	-5.7472*
LPAD	-1.7838	-2.1559	-7.888*	-5.6512*

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Note: Augmented Dickey-Fuller (ADF) T_μ without train; T_τ with the trend. The critical value of the 5percent degree of signifying respectively, for ADF without the trend and the trend is-2.9571 and-3.5806 at level. Augmented Dickey-Fuller (ADF) T_μ without train; T_τ with the trend. The critical value of the 5 percent degree of signifying respectively, for ADF without the trend and the trend is-2.9604 and-3.5628 at the first difference. Rejection of the hypothesis done when the value obtained under the critical value, which implies that the variables are stationary.

5.   Cointegration Test

The Granger test done to grab if the form of the relationships between variables, with the precondition that Granger test can be acted in terms of all of the variables examined stationer at the same spot at the first deviation. This entails both the variable cointegration in the

order I (1). If this variable is supposed to be cointegrated then there exists a long-term balance between the variables. For example, if the development of the tourist industry (LAR) and economic growth (LPAD) is cointegrated, then the development of the tourist industry will converge along a long-term balance, other than he would diverge from long-term equilibrium [27]. The appropriate method is applied to prove the existence of a long-term relationship, it is Granger and the error correction mechanism [28].The Granger test used in this study is based on Johansen's procedure. The decision of the Johansen Granger test is shown in table 2. The Granger test results in Table 2, obtained an equation that really exists Granger between variables. This carries the meaning of testing the hypothesis in the study accepting Johansen. This means that there is a long-term relationship between economic growth and the number of visits by tourists. The statistical trace (trace λ) shows there is one Granger equation.

Table2. Johansen Test and Juselious λ trace: one equation Granger Test

Hyphotesis		Trace statistic	Critical value	Probability
Ho	H_1	(λ_{trace})	95%	
r = 0	r ≥ 1	30.5668	32.8641	0.0064
r ≤ 1	r ≥ 2	8.7757	24.5339	0.1437
Note: * rejected the hypothesis at the 5 percent level. Test of Trace illustrates the shape equation 1 Granger on significant levels of 5 percent, λtrace shows the rank cointegration variable				

The statistical results, trace (λ max) shows there is one equation of cointegrated between the variables. This stands for the enactment of the test of this research hypothesis Johansen. This

means there is a long-term relationship between economic growth and the number of tourist arrivals. To better explain described in Table 3.

Table3. Johansen test and Juselious maximum eigenvalue λ_{max}: One equation Granger test

Hyphotesis		Trace statistic	Critical value	Probability
Ho	H_1	(λ_{trace})	95%	
r = 0	r = 1	31.7534	19.3550	0.0234
r = 1	r = 2	7.7377	12.5219	0.1737
Note: * the starting hypothesis at the 5 percent level. Test of Trace illustrates the shape equation 1 Granger on significant levels of 5 percent, λmax shows the rank cointegrate variable				

6.   Granger Causality Test

[23] states if there is a two-variable data cointegrate time sequence, then at least there is a lineal relationship between both variables. Thus the test is stating there is a long-term relationship between variable LAR and LPAD. To set out the management of the relationship

cause casualties or in other words a form of variable AR causes the LPAD or vice versa. Because of the variable LPAD and LAR is cointegrate I on the same order I(1.1), the establishment of the model of the VAR on the superior level (level) can be done [26]. The relationship between cause and LPAD LAR in bivariate regression can be shown as sticks with:

$$LPAD_t = \mu_1 + \sum_{i=1}^{l} \alpha_{1i}LPAD_{t-1} + \sum_{i=1}^{l} \beta_{1i}LAR_{t-1} + e_{1t}$$
$$(2)$$

$$LAR_t = \mu_2 + \sum_{i=1}^{l} \alpha_{2i}LAR_{t-1} + \sum_{i=1}^{l} \beta_{2i}LPAD_{t-1} + e_{2t}$$
$$(3)$$

With a deterministic component, μ is the e_t is white noise while LAR and LPAD describes the variable growth of tourists and economic growth. In this study tourist growth is proxied as tourist arrivals[22]. In the system of Granger, who declared null hypothesis of growth of tourists not or isn't causing Granger economic growth cannot be denied if:

$$\beta_{11} = \beta_{12} = \ldots\ldots\ldots = \beta_{1n} = 0,$$
$$(4)$$

The same situation against the hypothesis of null for economic growth is not the cause of the growth of tourists not Granger can be denied if:

$$\beta_{21} = \beta_{22} = \ldots\ldots\ldots = \beta_{2n} = 0,$$
$$(5)$$

The decision of the test causes Granger as shown in table 4. The test of research on the causes of Granger is not sensitive to changes in lag [29,30]. All lags were tested significant at a significant level of 5 percent to 10 percent. The optimal delay in research occurs in lag 5. Furthermore, the results of the study show that at the optimal lag of 5, the LAR variable is the cause of Granger in the LPAD. The results of this study are consistent with previous studies. Thus it can be concluded from this empirical study supporting the hypothesis that the growth of tourist visits causes economic growth (tourism led economic growth). In addition, empirical research has gotten the opposite, namely economic growth has caused Granger to number tourists (growth-led tourism expansion). The coefficient value indicates that 1 percent growth in tourist arrivals will increase economic growth (PAD) by 0.1654 percent.

Table4.The Granger causality Test of the growth tourist arrivals and regional Economic growth

	Ho: LPAD not a cause for LAR		Ho: LAR not a cause for LPAD	
Lag optimum	5	5	5	5
F-Statistic	1.6457	2.4517	1.8477	2.3437
Probability	0.2357	0.0769	0.1637	0.0789
Lag coefficient		0.1724		0.1654
Lag structure	F-Statistic	Probability	F-Statistic	Probability
1	0.0132	0.7540	5.3255	0.0121
2	0.8327	0.5432	4.5647	0.0345
3	0.9327	0.5463	3.6736	0.0632
4	1.8346	0.2344	2.7899	0.0542
5	1.7336	0.2461	3.8349	0.0743

Note: ***, **, and * significant at the level of 1percent, 5 percent and 10 percent.

7. Conclusion and Recommendation

The growth of the West Sumatra tourism industry contributes significantly to the economic development of the region. By applying the Granger Johansen method, there is a proven long-term relationship between the growth of the tourism industry and economic growth. While the cause of the Granger test proves there is a one-way relationship, namely the growth of the tourism industry affects economic growth. The growth of the tourism industry also requires the development of various other sectors. In terms of policy, it must be a decree that allows the tourism industry as one of the main drivers of economic growth in each region. In West Sumatra, for example, the Government has encouraged the tourism industry as one of the main industries to increase incomes from within and outside the country. Thus various integrated efforts need to be mobilized to stimulate the development of this industry. Furthermore, the authorities participating directly encouraged the tourism industry to increase regional income. Local governments need to promote the superiority of the regional tourism industry, especially now that the government is intensifying the halal tourism industry. Therefore marketing research is done to make it easier for tourists to get information about destinations in these fields in West Sumatra.

Therefore the evolution of the halal tourism industry has the effect of calculating regional economic growth. Finally, this research needs to be further carried out to determine the influence of other variables from other management systems, such as the marketing perspective, using different data and methods such as vector error correction models or autoregressive lag interference methods

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