DETERMINANTS OF TOURISTS ARRIVALS
- IMPACTS OF FACTORS AND ITS IMPLICATIONS

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1. ABSTRACT

Due to the advancement of the public transportation system, it takes less time to travel abroad and; as a result, the world is facing the rapid growth in tourism industry. This paper chooses volume of visitors as the dependent variable, with cultural distance, the six dimensions promoted by Geert Hofstede, geographical distance and GDP gap as independent variables. The objective of this paper is to find out whether these variables between countries are related to the number of visitors; therefore, may imply the effects on tourism economic. The single regression and multiple regressions are used to justify the hypotheses. The goal of this research is to provide the possible determinants for the amount of inbound travelers for countries and travel industry to figure out the suitable policies.

Key words: tourism, cultural distance, GDP gap

2. INTRODUCTION

Nowadays, tourism industry has become more and more important. And tourism industry has also contributed a lot to GDP. In the view of this situation, the importance of tourism is undoubtedly. As tourists from foreign country is one of the main portions of tourism, the factors that influence total visitors from other country are particular important to governments and tourism agencies. Understanding what influence the number of total visitors will provide policy makers with the information needed for further industry expansion.

In this study, eleven countries have been chosen as the research target, which are Taiwan, Singapore, Vietnam, USA, Canada, Japan, Australia, South Korea, Greece, New Zealand and China. Getting the data of number of visitors, whom come from a particular country, from tourism bureau official website of these eleven countries, the purpose of this study, is to estimate the impact of specific factors on number of total visitors. Regression method is used in this study. The dependent variable in the regression is the number of total visitors and the independent variables are the determining factors specific to the arrival’s country and the departure country: cultural distance, geographical distance, and GDP gap.

3. LITERATURE REVIEW

In this essay, Hofstede’s culture distance is often used as culture indicators to do the correlation model; however, could Hofstede’s culture distance proper to be applied on the research for tourism economy? In the following contents of Hofstede’s culture distance section will explain this. Other than the cultural part, GDP per capita and geographic distance were also taken into consideration. There are, indeed, much more factors that may influence people’s decisions of where to visit when it comes to
travel, and the reason in this essay to select only these three factors above others was because of the limited time and the limited application of second hand data.

3.1 Hofstede’s 6 Cultural Dimensions

Hofstede’s cultural dimensions theory is developed by Geert Hofstede, originally aimed at using factor analysis to examine the results of a world-wide survey of employee values by IBM around 1960-1970, in which Geert Hofstede served in IBM. And this theory was one of the first that quantified the cultural differences observed. Later on, due to the base of cross-cultural psychology, this cultural dimensions theory thus has been also drawn by researchers and consultants in many realms relating to international business and communication, also on other aspects of culture, such as social beliefs. Due to these reasons, we chose this as one of our variables.

And the 6 different cultural dimensions are shown in the graph 3.1 below.

![Graph 3.1](image)

3.2 Hofstede’s Culture Distance

As the formula shown below, it’s the formula used in this essay to calculate the cultural distance between countries. This formula is found in Vol. 4, No. 1, January 2011, International Business Research journal. Lots of researchers have been working hard on Hofstede’s cultural distance formula to make it much flawless, and this is the modified formula construction from Hofstede’s by Uhlenbruck.

\[
\text{Hofstede’s Distance} = \left[ \sum_{i=1}^{6} \left( I_{ia} - I_{ia} \right)^2 / N_i \right]^{1/2} / \left| D_{ai} \right|
\]

Where:
- \( I_{ia} \) Index for the \( i \)th cultural dimension for the \( a \)th country
- \( I_{ia} \) Index for the \( i \)th cultural dimension for the \( r \)th country
- \( V_i \) Variance of the index of the \( i \)th cultural dimension
- \( |D_{ai}| \) Number of compared measures

(Formula 3.1)
3.3 GDP per Capita

The GDP per Capita data used in this essay are from the World Bank official website, calculated in current U.S dollars.

3.4 Geographical distance

Several research papers, such as ‘Distance Matters: An Assessment of International Tourism Demand in Spain’ by Ordóñez, José Manuel; Ordóñez, Maria Del Carmen; Torres, José Luis; and many other have indicated that geographic distance does matter to tourism economy. Hence, simple geographic distance data from Google Earth are collected and used in this essay.

3.5 The amount of visitors

In this essay, the data of all the amounts of visitors are collected from each countries tourist bureau. In case of definition of “tourists” may differ from country to country, amount of visitors is used rather than amount of tourists, in order to give a more correct and fair base to different countries contained in this essay.

3.6 U-Shape Model

To confirm the U-shaped hypotheses, we try to find the related essays in tourism area.

3.6.1 Analysis of international tourist arrivals worldwide: The role of world heritage sites (Yu-Wen Su and Hui-Lin Lin, National Taiwan University, 2014)

This research implies that when add one world heritage site (WHS in short as follows) to WHS-poor and WHS-abundant country (possessing more than 21 WHS), the marginal inbound total visitors will lead to larger increase. There will be just slight increase effect when add one WHS to WHS-rich country; as a result, the result will show a U-shape graph.

3.6.2 Synergy and congestion in the tourist destination life cycle (Sam Cole, University of Buffalo, 2012)

This research chooses the local hotel at a cross-section of Caribbean and other island destinations as the observed targets. The result finds out that the cheapest and the most expensive hotels will attract more customers than the one with moderate price, which presents a U-shape graph.

3.6.3 Combined Effects of Load Factors and Booking Time on Fares: Insights from the Yield Management of a Low-Cost Airline (Marco Alderighi, Marcella Nicolini, Claudio A. Piga, 2012)
This research examines the pricing behavior of a low-cost airline (Ryanair). They focus on the effect on ticket prices of the number of days to the departure date. The result shows that the early bookers (who book at least 49 days prior to departure) and the latest bookers (who book at last 10 days prior to departure) are willing to pay higher air fares than those who book between 35 and 14 days from departure. Hence, it shows a U-shape graph.

Due to the three essays above, this report propose a bold assumption of the U-shape theory.

4. HYPOTHESES

At first, we assume that all the relationship between dependent variable and independent variables are linear. After reviewing the data resources above, we change some of the hypotheses.

4.1 Cultural distance: U-shape
The closer and the farer the cultural distance between two countries, the greater the number of visitors

4.2 Geographic distance: negative linear relationship
The closer the geographic distance, the greater the number of visitors

4.3 GDP gap: U-shape
The wider and the closer the GDP gap between two countries, the greater the number of visitors

5. METHODOLOGY

5.1 Simple regression

To see the relationship between number of total visitors and these three factors separately, firstly, simple regression is used and those factors are defined:

\[ \text{Number of total visitors} = \frac{\sum x_i}{n} \]  
(Formula 5.1)

\( x_i \) – index for the data total visitors of \( i \)-th year (roughly from 2000~2013)
\( n \) – index for duration of \( x_i \)

5.1.1 Culture distance
In 《Examining The Use of Hofstede's Uncertainty Avoidance Construct in International Research: A 25-Year Review》, it calculate Hofstede culture distance by the equation:
### 5.1.2 Geographical distance

Most international airports are set at the capital, so while determining geographical distance, two capitals are set as the points and the straight distance is the geographical distance.

### 5.1.3 GDP gap

Using data from Word bank, sum up 10 years’ GDP (2003–2012) and average the number, which is divided 10.

\[
\text{GDP gap} = \frac{\sum \text{GDP}_i}{10} \tag{Formula 5.3}
\]

\(\text{GDP}_i\) – index for yearly GDP of \(i\)th year

Regression: Ultimate ANOVA under 95% confidence level.

### 5.2 The Multiple Regressions

The results of the simple regressions show that the relationship is not significant enough to explain why the number of total visitors divergence among 11 countries. Thus, putting three factors into a multiple regression would present the relationship clearer.

The original equation is:

\[
y = b_0 + b_1(x_1) + b_2(x_1)^2 + b_3x_2 + b_4(x_3) + b_5(x_3)^2 + \varepsilon
\]

Independent variable - \(y\): number of total visitors

Dependent variable - \(x_1\): Cultural distance

\(x_2\): Geographical distance

\(x_3\): GDP gap

Still, those factors in the multiple regressions might be highly related and lead to collinear problem. In order to escalate the accuracy of the research statistics, the equation centralized the variables that are assumed to be U-shaped relation. The adjusted equation:

\[
y = b_0 + b_1(x_1 - \bar{x}_1) + b_2(x_1 - \bar{x}_1)^2 + b_3x_2 + b_4(x_3 - \bar{x}_3) + b_5(x_3 - \bar{x}_3)^2 + \varepsilon
\]

Independent variable - \(y\): number of total visitors

Dependent variable - \(x_1\): index for cultural distance
\( x_2 \): index for the geographical distance
\( x_3 \): index for GDP gap
\( \bar{x}_1 \): index for the average of \( x_1 \)
\( \bar{x}_3 \): index for the average of \( x_2 \)

Regression: Ultimate ANOVA under the 95% confidence level.

6. RESULTS ANALYSIS

6.1 Result of the Multiple Regressions

The data gained from each country are put together and used to run the multiple regression. In the multiple regression, “the total visitors” is dependent variable and “cultural distance”, “geographical distance”, “GDP gap” are independent variable. The result is that the significant level is 0.000229 and the adjusted R-Square is 0.0658.

The adjusted R-Square is 0.0658 which means all the dependent variable cannot precisely predict the dependent variable. The reason is that this research project just takes three different factors into consideration. There are still a lot of factors that may affect the number of total visitors such as political stability, the climate in the country, the feasibility to get visa and etc. Because not all the factors are considered, the ability to explain the number of visitors is limited.

The overall significant level is 0.000229 and the table 6.1 shows the significant level for each dependent variable.

<table>
<thead>
<tr>
<th></th>
<th>Significant level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural distance</td>
<td>0.000519384</td>
</tr>
<tr>
<td>Geographical distance</td>
<td>0.015972338</td>
</tr>
<tr>
<td>GDP gap</td>
<td>0.011410613</td>
</tr>
<tr>
<td>Square of cultural distance</td>
<td>0.00481694</td>
</tr>
<tr>
<td>Square of GDP gap</td>
<td>0.096212334</td>
</tr>
</tbody>
</table>

The result of overall and individual significant level shows that the relationship between independent variable and dependent variable is significant. It means the number of total visitors is affected by cultural distance, geographical distance, GDP gap, Square of cultural distance and Square of GDP.
6.2 Graph and Analysis

And the table 6.2 shows the coefficient for each dependent variable.

(Table 6.2)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural distance</td>
<td>-212986</td>
</tr>
<tr>
<td>Geographical distance</td>
<td>-35.9171</td>
</tr>
<tr>
<td>GDP gap</td>
<td>10.33855</td>
</tr>
<tr>
<td>Square of cultural distance</td>
<td>99199.59</td>
</tr>
<tr>
<td>Square of GDP gap</td>
<td>-0.00035</td>
</tr>
</tbody>
</table>

The coefficient shows the tendency of each factor. The graph below is roughly drawn from the coefficient.

A. Geographical distance

(Graph 6.1)

Graph 6.1 shows the graph of geographical distance which is a negative line. It means that the farer the geographical distance between two countries, the less number of mutual visitors. The possible reason is that if the country is far away from visitors’ home country, they must spend more money and take more time to get there. Because the consideration of cost and time, they tend to go to the country near their home.

B. Cultural distance

(Graph 6.2)
Graph 6.2 shows the graph of cultural distance which indicates that both the larger and closer the cultural distance between two countries, the more mutual visitors. The possible reason is that visitors want to avoid culture shock or experience different culture. If the visitors want to avoid cultural shock, they may tend to go to the country whose culture is similar to theirs. And if they want to experience different culture, they may tend to choose the country whose culture is very different from theirs as their destination.

C. GDP gap

Graph 6.3 shows the graph of GDP gap which indicates that both the larger and smaller the GDP gap between two countries, the less mutual visitors. The possible reason is that if one country’s GDP is far more than their home country, the price index of that country may be too high for the visitors. And if one country’s GDP is far less than their home country, the visitors may tend not to visit there because the country is less developed so that the economic situation is not suitable for the visitors to travel and the visitors may fear about the situation.

7. CONCLUSION AND FUTURE PROSPECT

7.1 Conclusion

This report uses multiple regression analysis as calculation tool and proposes the hypotheses of the U-shape theory. Number of total visitors is regarded as the dependent variable with the culture distance, GDP gap, and geographical distance as the three independent variables. The culture distance presents a U-shape relationship, GDP gap presents an inverted U-shape relationship and geographical distance presents a negative linear relationship with number of total visitors. All three independent variables will influence the inbound numbers. This research adopts 11 countries with 283 data volume in total, which stands the position as 11 countries itself and regard the inbound total visitors of each country.

7.2 Policy Assistance

There are lots of tourism researches recently as the tourism grows rapidly. This research try to give
some possible factors that might influence the inbound visitors and hence, it could provide some phenomenon when travel agency and government when making the policy decision.

7.3 Research restriction and suggestion for following research

In collecting the visitor’s number, we find all the research on the official website of all country. However, we face the difficulty to find the data of each country with same year amounts and the specific country inbound number due to the different calculation method of different country. As a result, we could just take the broadest standard level making our research indelicate. Similarly, we could only propose three dependent variables because of the difficulty of collecting the primary data. In the process, we have been considered the transportation density, travel service spots number and air fares as the possible factors. Compared to the dependent variables we proposed, these factors are neither able to count nor easy to be specific. As a consequence, we expect the following research could acquire more explicit variables by questionnaire or other surveys. Furthermore, we also expect that the World Travel and Tourism Council (WTTC) could propose a world-standard tourism related calculation chart and rules, pursuing all countries to adopt. Moreover, WTTC could courage all countries to take the statistics of some tourism pointers, making more tourism research more complete and accountable.

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