THE GOOD, THE BAD AND THE LUCKY: THREE RESEARCH METHODOLOGIES USED IN CLIMATE CHANGE STUDY

Andy Lee Chen Hiung, Awangku Hassanal Bahar Pengiran Bagul, Datu Razali Datu Eranza, Toh Pei Sung, Noraizan Ripain

Faculty of Business, Economics, and Accountancy
Universiti Malaysia Sabah
Jalan UMS
88400 Kota Kinabalu
Sabah, MALAYSIA

E-mail: andylee@ums.edu.my

ABSTRACT

Tourism industry is one of the major growing industries in Malaysia. Sabah, a state in Malaysia, recorded a total of 941,765 international tourists and 1,933,996 local tourists in 2012. Malaysia, just like other countries, is affected by climate change and this, in turn, could affect the travelling decisions made by the tourists. Indicators of climate change such as temperature, geographical location and rainfall are some of the major potential threats to travelling and places of attractions. Research methods used in previous studies include survey, simulation, statistical model, empirical evidence, interview and focus group. This study employed three methods, content analysis, Delphi technique and survey through questionnaires to gain a better understanding on climate change, tourists' perception on climate change and the impact on their decision making. By using these three methods, this study attempts to identify the dimensions of climate change, to examine the link between these dimensions and perception, and the impact of climate change on tourists' decision to visit Sabah.

Keywords: Climate change; content analysis; Delphi technique, survey, perception.

1.0 INTRODUCTION

Tourism industry is the fastest growing industry in Malaysia. Sabah, a state in Malaysia, is also enjoying the inflow of funds brought in by tourists. The number of tourists arriving in Sabah was recorded at a total of 941,765 international tourists and 1,933,996 local tourists in 2012 (Sabah Ministry of Tourism, 2012). It is crucial for the state to ensure that tourist attraction centres are well-maintained and able to sustain so that future generations can continue to enjoy these attractions. However, climate change affects countries around the world and Malaysia is no exception. It is inevitable that the effects of climate change such as rising sea level, increasing temperature, and extreme weather will have some impact on tourists travelling to Sabah. Therefore, the perception of tourists towards the effects of climate change affecting the tourism industry is very important and whether the tourists' decision making will be affected by climate change.

The objective of this paper is to discuss and explain the combination of three methodologies used in the study of perception of climate change towards tourists' decision making. The justification of using the combination of three methodologies is to ensure the validity of the results. The three methods used in the study are content analysis, Delphi technique and survey.

2.0 LITERATURE REVIEW

There are two main research methodologies, qualitative and quantitative research. However, both methods have their own strengths and weaknesses. Qualitative research enables researchers to have insights into problems or issues. However, because the sample size is generally small, the results usually cannot be extrapolate to a more general population. Quantitative research, on the other hand, can provide more concrete results and provide proof of existence or non-existence of relationships among the factors but is unable to explain the reasons on the relationships.

Previous studies in climate change often used only one of the research methodologies such as survey (Scott, Gössling and Freitas, 2008; Lee, 2007), simulation (Hamilton and To, 2007), and empirical (Kripalani and Kulkarni, 1998). Some studies combined two research methodologies to enhance the validity of the results (Scott, Jones and Konopek, 2007; Hamilton, Maddison and To, 2005). By using more than one method, the validity of the results may be enhanced through the collaboration from the different methods.

In addition, some previous studies found that climate change would have some impact on the tourists' decision making when they are planning to travel (Agnew and Palutiko, 2006; Martin, 2006; Martin, 2005; Ottmar, 1999). Other studies found that climate change had little or no impact on tourists' decision to travel to a place (Hares, 2010; Hamilton et al, 2005, Nicholls and Hoozemans, 1996).

This study employed three research methodologies, that is, content analysis, Delphi technique and survey, in order to enhance the validity of the results of the study on perceptions of climate change towards tourists' decision making. The three methods are explained in detail in the following section.

3.0 RESEARCH METHODOLOGIES

Previous studies on climate change have either used single or two research methodologies to determine the dimensions of climate change and to identify the relevant variables. However, there are no widely acceptable groups of dimensions of climate change and variables. These studies also found inconclusive evidence of climate change affecting the tourists' decision making when they plan their travelling. This study proposed to use three different methods to enhance the validity of the study on the perceptions of climate change towards tourists' travelling decisions.

Content Analysis

Content analysis is a method of filtering and gathering of literature based on given keywords. It is useful in building up a strong literature review and to provide a collection of similar definitions of a given term. In this study, the main purpose was to define the dimensions of climate change and to identify the variables.

By using content analysis, climate change variables such as rain, storms, temperature, soil erosion, vegetation damage, rising sea level and wind were found to be generally understood by tourists (Scott, 2008; Gössling, 2006; Martin, 2006, Agnew and Palutiko, 2006; Chin, Moore, Wallington and Dowling, 2000). The study also tested these dimensions of climate change in a workshop to gauge the overall understanding.

Delphi Technique

Delphi technique is a method for structuring a group discussion among experts of a given topic or issue in order to extract a consensus of opinion from those experts. It was originally used by the US Air Force during the Cold War to predict how Soviet military might target the US industrial system in an attack and the number of atomic bombs to be dropped by the Soviet in order to have an impact on US military capability.

In research, Delphi technique is used in situations where there is no agreed definition from literature or to get a consensus on a complex problem. Climate change is a good example where no clear dimension of climate change can be obtained from literature.

From interviews with climate change experts who attended the BIMP-EAGA Conference in 2012, the dimensions of climate change identified in Sabah are humidity, rainfall, sea level, vegetation and activities. The panels were asked to identify as many dimensions of climate change as possible in the first round. Then a discussion among the experts was held to rank the dimensions from the most relevant to the least relevant. After the ranking, five dimensions were retained and the rest were discarded. These dimensions were then used in the development of the questionnaire to find out the perceptions on climate change of tourists in Sabah.

Survey

Survey can be done through interview or questionnaire, which can be self-administered or guided (or semi-structured). The main objective of a survey is to get feedback from the respondents on some given issues.

This study used questionnaire to collect data from tourists to determine their perception on climate change and the effect of climate change on their decision making. The questionnaire was developed with reference to the two research methodologies used earlier, that is, content analysis and Delphi technique. This was to ensure that the dimensions and variables of climate change were relevant to this region and agreed by the climate change experts.

The data was collected from two popular tourist spots, Jesselton Point and Mari Mari Cultural Village, in Kota Kinabalu, the capital of Sabah. A total of 150 questionnaires were collected from these places. From the survey, statistical results were produced to show that tourists in Sabah understood the meaning of climate change and they were well-aware of the impacts of climate change on the tourism industry.

4.0 DISCUSSION

By using three different research methodologies, the study attempted to enhance the validity of the results based the study on perceptions on climate change towards tourists' decision making. However, this study encountered several difficulties while using each of the three research methodologies.

Content analysis

By using content analysis method, one of the challenges found was the process of word search in literature databases. The search came back with too many papers containing a combination of key words, climate change, tourists' perception and tourists' decision making. Some of the

papers that were not relevant to this current study were discarded immediately. With the remaining papers, a word count was conducted on the key words for each of the papers and sorted from the highest word counts to the lowest. The higher the word counts, the more relevant the paper. From the list of papers, the various definitions and dimensions of climate change was gathered and grouped together. This was done manually by a research assistant.

Delphi technique

The study noted that it would be difficult to get climate change experts to be in one place for a group discussion. The cost of the study was one of the factors that had to be prioritised. The schedule of the entire research had to be aligned to the date of the BIMP-EAGA Conference 2012, which was held in Pacific Sutera, Kota Kinabalu, so that the experts could be interviewed in one session. The process, which had three different stages, took quite a while to complete. The first stage was to let the panels to discuss and agree on the dimensions and variables of climate change. The next stage was to let the panels rank the most relevant to the least relevant dimensions and variables of climate change. The third stage was to agree on the accepted dimensions and variables, and to make the decision to discard the other dimensions and variables.

Survey

The study found that it was difficult to administer the questionnaires at those tourist spots as the respondents were focusing on their vacation and sightseeing. Each questionnaire required a minimum of 10 to 15 minutes to complete. Therefore, some tourists refused to complete the questionnaire. The questionnaire was pilot tested to ensure terms and wordings in the questionnaire were not ambiguous, misleading, sensitive or requiring information that would be considered too personal or confidential.

5.0 CONCLUSION

Studies on tourists' perception on climate change and the impact of climate change on tourists' travel decision was a major challenge as there was no single accepted definition of climate change. In addition, there was a need to define dimensions of climate change in Sabah's context due to its tropical climate and local weather.

Three research methodologies were used to enhance the validity of the results found in the study. The three methods, content analysis, Delphi technique and survey, were used in that particular order so that the definition and dimensions of climate change could be obtained leading to the construction of the questionnaire.

This study was able to demonstrate that the combination of different methods in a single study could enhance the validity of the results. The content analysis was able to generate a set of common dimensions and variables of climate change. These dimensions and variables were matched against the results obtained from the interview on the panel of experts. The last step was to use these dimensions and variables of climate change to develop the questionnaires, which were given to the tourists to fill in. Therefore, the dimensions and variables used in the questionnaires have been thoroughly tested and the quality of the questionnaires would be enhanced.

REFERENCES

Ankre, R. (2005). *Visitor Activities and Attitudes in Coastal Areas* (No. 2005:1): European Tourism Research Institute (ETOUR).

Bigano, A., J. M. Hamilton, R. S.J. Tol, (2006). *The Impact of Climate Change on Domestic and International Tourism: A Simulation Study*, Fondazione Eni Enrico Mattei/ 86.2006

Burns, P., (2012). *Tourism and climate change: socio-cultural impact.* Retrieved from staffcentral.brighton.ac.uk/clt/ESD/.../PETER%20BURNS%202.ppt.

Carmen, M., and Iuliana, (2009). *Analysis of the impact of climate change on tourism in some European countries.* ANALELE ŞTIINłIFICE ALE UNIVERSITĂłII „ALEXANDRU IOAN CUZA" DIN IAŞI,Tomul LVI, ŞtiinNe Economice

Charter. M, and Tukker, A. (2006). *Sustainable consumption and production: Opportunities and challenges*. Papers from the *Launch Conference of the Sustainable Consumption Research Exchange (SCORE!) Network*.

Colorado State University, (2013). *Writing Guide: Content Analysis*, retrieved from http://writing.colostate.edu/guides/guide.cfm?guideid=61

EC (2007). Institute for Prospective Technological Studies, Joint Research Center, PESETA project, retrieved from http://peseta.jrc.es/index.html

ETUC, (2007). European Trade Union Confederation (ETUC), Instituto Sindical de Trabajo, Ambiente y Salud (ISTAS), Social Development Agency (SDA), Syndex, Wuppertal Institute, Climate Change and employment Impact on employment in the European Union-25 of climate change and CO2 emission reduction measures by 2030, Brussels

European Environment Agency (EEA), (2007), European environmental Agency, *Climate change: the cost of inaction and the cost of adaptation*, Technical report No 13.

Farrant, S. (2008). *Tourism and Climate Change*. Tourism Insight. Retrieved from http://www.insights.org.uk/articleitem.aspx?title=Tourism%20and%20Climate%20Change.

First C, (2005). *Responsible tourism – who cares?* First choice 2005 Trends Report. First Choice Press Office and BGB Communications.

Füssel, N. M., Klein, R., (2006). Climate Change Vulnerability Assessments: An Evolution Of Conceptual Thinking*, Climatic Change Volume 75, Number, pp. 301-329.*

IPCC (2001): McCarthy, J., Canziani, O., Leary, N., Dokken, D., White, K. (eds.) *Climate Change 2001: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change, IPCC, Cambridge University Press.

IPCC (2001). Third Assessment Report Climate Change Synthesis Report, Glossary

IPCC (2007). *Impacts, Adaptation and Vulnerability* – Summary for Policymakers.

IPPC TAR, (2001a). *Climate Change 2001: Impacts, Adaptation and Vulnerability*. IPPC Third Assessment Report, Cambridge University Press.

IPPC TAR, (2001b). *Climate Change 2001: The Scientific Basis*. IPPC. IPCC Third Assessment Report, Cambridge University Press.

Jensen, S., Birch, M., & Frederiksen, M. (2004). *Are tourists aware of tourism ecolabels? Results from a study in the County of Storström in Denmark.* Papers from *The 13th Nordic Symposium in Tourism and Hospitality Research*, Aalborg, Denmark.

Muller, H., Weber, F., and Volken, E.. (2001). Tourism. Climate Change and Switzerland 2050. IPPC, Third Assessment Report Climate Change Synthesis Report. Retrieved from http://proclimweb.scnat.ch/Products/ch2050/PDF_E/12-Tourism.pdf.

UNEP, (2012). *Climate Change-Introduction*. Retrieved from http://www.unep.org/climatechange/Introduction/tabid/233/language/fr-FR/Default.aspx. Accessed on 15 June 2012.

UNFCCC, (1992). United Nations Framework Convention on Climate Change.

UNWTO (2003), Papers from the *First International Conference on Climate Change and*

Tourism.
UNWTO, (2007). World Tourism Organization, Tourism & Climate Change Confronting the Common Challenges UNWTO Preliminary Considerations.
Titus, J.G., (1989). Policy Implications of sea level rise: the case of the Maldives. Papers from the *Small States Conference on Sea Level Rise*. Retrieved from http://papers.risingsea.net/Maldives/Small_Island_States_3.html.
Zilinger, M. (2005). *A spatial approach on tourists' travel routes in Sweden* (No. 2005:3): European Tourism Research Institute (ETOUR).