INFORMATION ACCURACY ASSESSMENT FRAMEWORK FOR MALAYSIA TOURISM INDUSTRY

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UNIVERSITI TEKNOLOGI MALAYSIA

INFORMATION ACCURACY ASSESSMENT FRAMEWORK FOR MALAYSIA TOURISM INDUSTRY

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DEDICATION

This thesis is dedicated, along with the note “in loving memory” to my late father-in-law, for imparted me with his guidance, motivation and knowledge. I earnestly feel his inspiration and encouragement driving me to complete this research. His desire for me to complete my studies will forever remain in my memory.

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ABSTRACT

Tourism industry is a rapidly growing service sector and prime contributor to the world economy. Despite the industry's growth, tourism information accuracy is the current concern in this industry. Many tourism fraud cases in Malaysia, including Umrah packages, membership cards and tour information compliance issues which had cost millions of losses were reported. Further, studies have confirmed that tourism information is overwhelming and many lack accurate information. Therefore, the aim of the study is to address the tourism information accuracy issues by proposing the Information Accuracy Assessment Framework for Malaysia Tourism Industry. With reference to the tourism information accuracy concerns, the following objectives were identified. First, to identify the existing information accuracy practices in leveraging the influencing factors of the tourism information accuracy issues. Secondly, to develop the proposed Information Accuracy Assessment Framework for Malaysia Tourism Industry. Thirdly, to validate the proposed framework. In phase one of the research, semi-structured interviews with fifteen respondents from the tourism industry were conducted to identify the tourism information accuracy practices. The identified tourism information accuracy practices were tourism information gathering, information source, content accuracy and credibility, information accuracy control measures, information procedures, information traceability, and information historical changes. The tourism information accuracy influencing factors were information resources, institutional and information environmental requirements, quality commitments, and information quality. Thus, the Information Accuracy Assessment Framework for Malaysian Tourism Industry was developed. The framework consisted of accuracy as the main factor and the sub factors include tourism institutional and information environment. The framework dimensions were information organizational and business, and information quality, which consisted of accuracy characteristics, accuracy assessments, accuracy assessment processes, and accuracy assessment result interpretations. A holistic approach to the framework involved assessing tourism information using the accuracy and assessment indicators in the assessment stages. The framework assessment process covered twelve assessment indicators in determining the information accuracy ratings and accuracy levels. The information accuracy rate and levels were classified into five levels of information accuracy, whereby level one was the lowest level and level five was the highest level of information accuracy assessment. In phase two, the framework was validated by five tourism experts on the framework's usability, and the validated framework was refined in terms of assessment effectiveness, assessment clarity, assessment methodology process, assessment checklist, framework terminologies, tourism information definition, information and institution requirements. In summary the framework is useful to tourism information centre as well as tour and travel agencies in assessing and determining information accuracy levels.

ABSTRAK

Industri pelancongan merupakan sektor perkhidmatan yang pesat berkembang dan penyumbang utama kepada ekonomi dunia. Walaupun industri pelancongan mencapai pertumbuhan yang besar, ketepatan maklumat pelancongan adalah isu semasa yang membimbangkan industri ini. Banyak kes penipuan pelancongan di Malaysia, termasuk pakej Umrah, penipuan kad keahlian dan isu pematuhan garis panduan maklumat pelancongan yang menanggung berjuta-juta kerugian telah dilaporkan. Selanjutnya kajian telah mengesahkan bahawa maklumat pelancongan amat mengalakkan dan banyak maklumat yang kurang tepat. Oleh itu, tujuan kajian ini adalah untuk menangani isu ketepatan maklumat pelancongan dengan mencadangkan Kerangka Penilaian Ketepatan Maklumat bagi Industri Pelancongan Malaysia. Dengan merujuk kepada keprihatinan ketepatan maklumat pelancongan, objektif berikut telah dikenal pasti. Pertama untuk mengenal pasti amalan ketepatan maklumat pelancongan yang sedia ada dengan memanfaatkan faktor-faktor yang mempengaruhi isu ketepatan maklumat pelancongan. Kedua untuk membangunkan Kerangka Penilaian Ketepatan Maklumat yang dicadangkan bagi Industri Pelancongan Malaysia. Ketiga, untuk mengesahkan kerangka kerja yang dicadangkan. Dalam fasa pertama kajian, wawancara separa berstruktur dengan lima belas responden dari industri pelancongan telah dijalankan untuk mengenal pasti amalan ketepatan maklumat pelancongan. Amalan ketepatan maklumat pelancongan yang dikenal pasti adalah pengumpulan maklumat pelancongan, sumber maklumat, ketepatan kandungan dan kredibiliti, langkah-langkah kawalan ketepatan maklumat, prosedur maklumat, keterangan maklumat dan rekod pengemaskinian maklumat. Ketepatan maklumat pelancongan yang mempengaruhi faktor adalah sumber dan kandungan maklumat, keperluan maklumat institusi pelancongan, komitmen kualiti dan kualiti maklumat. Oleh itu, kerangka Penilaian Ketepatan Maklumat bagi Industri Pelancongan Malaysia telah dibangunkan. Kerangka kerja ini terdiri daripada ketepatan maklumat sebagai faktor utama dan faktor persekitaran pelancongan, dan maklumat sebagai faktor kedua. Dimensi kerangka kerja adalah maklumat organisasi dan perniagaan, dan kualiti maklumat yang terdiri daripada ciri-ciri ketepatan, proses dan penilaian ketepatan serta keputusan penilaian maklumat. Pendekatan holistik terhadap kerangka ini adalah untuk menilai maklumat pelancongan menggunakan penunjuk ketepatan dan penilaian maklumat. Proses penilaian kerangka kerja meliputi dua belas penunjuk penilaian dalam menentukan peringkat dan tahap ketepatan maklumat. Kadar dan tahap ketentuan maklumat diklasifikasikan ke dalam lima tahap ketepatan maklumat, di mana tahap pertama adalah tahap terendah dan tahap lima adalah klasifikasi ketepatan maklumat tertinggi. Dalam fasa kedua, kerangka ini telah disahkan oleh lima orang pakar pelancongan mengenai kebolehgunaan kerangka kerja dan kerangka kerja yang disahkan telah diperbaiki dari segi keberkesanan penilaian maklumat, kejelasan penilaian, proses metodologi penilaian, senarai semak penilaian, terminologi kerangka kerja, definisi maklumat pelancongan, keperluan institusi dan maklumat. Umumnya, kerangka ini berguna untuk penilaian ketepatan maklumat pusat pelancongan maklumat serta agensi pelancongan dalam menilai dan menentukan tahap ketepatan maklumat pelancongan.

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LIST OF ABBREVIATIONS

A	-	Assessment Indicators
ACM	-	Association Computing Machinery
AIMQ	-	A Methodology for Information Quality Assessment
AMEQ	-	Activity-based Measuring and Evaluating of product Information Quality
C	-	Conference proceeding
C.A.R.S	-	Credibility, Accuracy, Responsibility and Support
CDQ	-	Comprehensive Data Quality
CMMI	-	Capability Maturity Model Integrated
COLDQ	-	Loshin Methodology (Cost-effect of Low Data Quality)
CRD	-	Centre of Reviews and Dissemination
DaQuinCIS	-	Data Quality in Cooperative Information Systems
DARE	-	Database of Abstract of Reviews of Effects
DQA	-	Data Quality Assessment
DWQ	-	Datawarehouse Quality Methodology
FAQ	-	Frequently Asked Question
IA	-	Information Accuracy
ICT	-	Information and Communication Technology
IEC	-	International Electrotechnical Commission
IEEE	-	IEEEXplore
IQ	-	Information Quality
IQM	-	Information Quality Measurement
ISTAT	-	ISTAT Methodology
J	-	Journal
MATTA	-	Malaysia Association Tour and Travel Agents
MoTAC	-	Ministry if Tourism and Culture, Malaysia
OQuaRE	-	Ontology quality evaluation
PDCA	-	Plan-Do-Check-Act
PSP/IQ	-	Product Service Performance Information Quality
QA	-	Quality Assessment

QAFD	-	Quality Assessment of Financial Data
QMS	-	Quality Management System
SLR	-	Systematic Literature Review
SD	-	Science Direct
SP	-	SpringerLink
SQuaRE	-	Standard for Software Product Quality
TB	-	Tourism Business
TDQM	-	Total Data Quality Management
TDQM	-	Total Data Quality Management
TF	-	Taylor & Francis Online
TIAA	-	Tourism Information Accuracy Assessment
TIQM	-	Total Information Quality Management

LIST OF SYMBOLS

%	-	Percentage
<	-	Less than
=	-	Equivalent
>	-	Greater than
*fx*STDEV	-	Standard Deviation
M	-	Median
'ΣX_i'		Mean
Nx	-	Total numbers of counts
Rs	-	Total numbers of respondents
S*x*	-	Stage

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CHAPTER 1

INTRODUCTION

1.1 Overview

Information accuracy is vital and it is the most important element in obtaining quality information. In any organization, the stakeholders are concerned particularly with the information that is disseminated to them for decision-making. For organizations and businesses, the availability of accurate information is of paramount importance because such information is needed before the stakeholders can analyse the current business situation in order for them to make decisions.

In many organizations, information accuracy processes or practices are implemented to ensure information accuracy. Globally, regardless of the nature of the business, information is processed as per the organization's Standard Operating Procedures (SOP), quality policy, quality objectives, quality commitments, and streamlined according to the organization's Quality Management System (QMS) (Li, Hu, Huang, & Duan, 2017a; Drosos, Skordoulis, Chalikias, Kalantonis, & Papagrigoriou, 2017; Kourouthanassis, Mikalef, Pappas, & Kostagiolas, 2017; Rao, Ragu-Nathan, & Solis, 2010; Wang & Tsai, 2009). The rationale for the enforcement of the SOP and QMS in an organization is to ensure that all the available information is as per the organization's needs. Also, it ensures that the information is not misleading and is accurate. Hence, the process flows and practices of information accuracy are closely monitored in order to ensure that accurate, meaningful and valuable information is available to the stakeholders for their decision making at all times.

The vast and varied development of information, particularly in tourism, has changed the tourism institution and information requirements in sourcing accurate information (Saifullin & Lomovtseva, 2019; Höpken, Ernesti, Fuchs, Kronenberg, & Lexhagen, 2017). The development and growth of tourism information has offered a

great opportunity for the tourism information providers to improve information accuracy. Furthermore, in the context of the information environment, information accuracy needs to be continuously monitored to avoid any misleading information for tourism purposes (Mukherjee, 2019; Law, Qi, & Buhalis, 2010; Xujuan, Yuefeng, Bruza, Sheng-Tang, Yue, & Lau, 2007). With the growth of the tourism industry, tourism stakeholders today seek and expect quality information to be channelled through reliable mediums (Herrera, Sasidharan, Hernández, & Herrera, 2018; Höpken *et al.*, 2017; Sheldon, 2016). Hence, in modern tourism industry and with the growth of social media, all matters relating to tourism information is gradually being attended to ensure that the tourism industry remains competitive and responsive in terms of information accuracy (Herrera *et al.*, 2018; Ben-Elia, Di Pace, Bifulco, & Shiftan, 2013).

The tourism industry, specifically in Malaysia, has shown positive growth in 2019 compared with 2018. According to the Tourism Performance Report released in Malaysian Tourism Data portal, for the period January 2019 to March 2019, Malaysia had acknowledged a positive growth of tourist arrivals compared with the same period in 2018. The tourist arrivals in Malaysia from January 2019 to March 2019 had recorded a growth of +2.7% to 6.70 million, whereby for the same period for the year 2018, the tourist arrivals in Malaysia was at 6.52 million ("Tourism Performance Report," 2019). With reference to the same Tourism Performance Report, the main sources of tourism information in Malaysia were as follows: 62.8% were from travel agency blogs, travel review websites, social media, online travel providers such as trivago or booking.com, 37.9% were from travel guide books and 32.3% were from travel agents ("Tourism Performance Report," 2019).

With the huge growth and the latest development in tourism information, there are a handful of available repositories that can provide reliable information to the tourism stakeholders for their decision-making (Xiang & Fesenmaier, 2017; Ţîţu, Răulea, & Ţîţu, 2016; Lam & McKercher, 2013). The tourism information sources and mediums have grown to be one of the most effective means of providing information on tourism related services. Although the available tourism information sources are highly integrated, information accuracy still seems to be an issue in the tourism

information environment (Li *et al.*, 2017a; Molina, Fernández, Gómez, & Aranda, 2017; Pan & Fesenmaier, 2006). Hence, tourism information requires assessments to determine its accuracy level before it is made available to the tourism stakeholders.

1.2 Background of the Research

Accuracy can be defined as the ability of the information systems to reduce the discrepancy between estimated travel times and the actual ones experienced by the traveller (Ben-Elia *et al.*, 2013). The quality of the information at tourism information centres or visitor information centres are determined by the accuracy of furnished information to the users, as such the quality of the tourism information is associated with the accuracy levels as the tourism information centres provision of information service (Mistilis & D'Ambra, 2008). Tourism information in information communication technology highly depends on the accuracy of tourism information and access to such information (Benckendorff, Xiang, & Sheldon, 2019; Buhalis & O'Connor, 2005). According to Li *et al.* (2017a), the tourism information systems provide access to tourism information through systems offering accuracy, convenience and the ubiquity of tourism information applications with systematic and detailed interaction between physical tourism resources and tourism information resources.

The tourism industry has always been the most important financial intermediary in all economies. As the global tourism industry continues to evolve and accelerate in the new millennium, the tourism information systems will face monetary pressure to become more efficient, competitive, technology driven and strategically focused in managing tourism related information (Wanagos & Studzieniecki, 2018; Lam & McKercher, 2013). Similarly, the Malaysian tourism industry will continue to accelerate and with reference to tourism statistics released by Department of Statistics Malaysia on Domestic Tourism Survey 2018, in 2018, the domestic tourism in Malaysia had achieved a higher record in the number of visitor arrivals and tourism expenditure. A total of 221.3 million domestic visitors were recorded in 2018 with a growth of 7.7 %. Domestic tourism expenditure had registered a double-digit growth of 11.4% in 2018 compared with 11.1% in 2017. A total of RM 92,561 million was

spent in domestic tourism during 2018 compared with RM 83, 103 million in 2017 ("Domestic Tourism Survey," 2018). To support the growth of the tourism industry in Malaysia, there were 4897 registered travel agencies with the Ministry of Tourism, Arts and Culture Malaysia, at the time of study ("List of Travel Operating Business and Travel," 2019).

In the current tourism information environment, there is always room for improvement in its information accuracy. Although there are numerous tourism organizations providing the required information, there is a grave possibility that the available tourism information is misleading and lacks credibility due to inaccurate tourism information (Saifullin & Lomovtseva, 2019; Wanagos & Studzieniecki, 2018). Taking into consideration the accuracy of the available information through conventional and online mediums, the accuracy of information that is being disseminated and retrieved by tourism stakeholders is uncertain (Li *et al.*, 2017a; Lam & McKercher, 2013).

According to Lam and McKercher (2013), tourism information gaps in terms of the type and quality of information provided by over 110 National Tourism Organizations (NTOs) had indicated that the tourism industry was overwhelmed by existing information and the information source credibility had caused the world at large to worry. Both the quality and credibility of the information sources had created doubts within the industry. The accuracy of tourism information and information sources provided by tourism agencies, tourism commissions and tourism information centres were doubtful (Lam & McKercher, 2013).

Tourism stakeholders have always requested for accurate information (Saifullin & Lomovtseva, 2019). Today in the digital age, both regional and global tourism have grown so rapidly that the dissemination of information that is related to tourism is shared via social media, web repositories, travel agencies and international or local authorities and tourism centres (Saifullin & Lomovtseva, 2019; Li *et al.*, 2017a; Sotiriadis & van Zyl, 2013). Such rapid growth in tourism information dissemination may neglect the information accuracy element and this may affect the quality of the tourism information.

There are many issues concerning information accuracy in tourism. Some of the major concerns are the inaccuracies of the available information, overwhelming information, lack of a structured process or flow of available information in the digital age and unfiltered information which may affect and influence the tourism stakeholders' decision making (Saifullin & Lomovtseva, 2019; Herrera *et al.*, 2018; Lam & McKercher, 2013; Jacobsen & Munar, 2012). The majority of tourism information studies have sought to identify information assessments for tourism information and the ways in which information accuracy can be improved. However, the development of tourism information assessments is still in its infancy and this requires further research and new inventions to address the information accuracy issues in tourism (Liang, Zhang, Zhang, Law, & Sun, 2017; Yoo, Goo, Huang, Nam, & Woo, 2017; Ukpabi & Karjaluoto, 2017; Ben-Elia *et al.*, 2013).

In this digital age, tourism information inflow and outflow from information sources and channels have shown significant growth (Yuan, Xu, Qian, & Li, 2016). Widespread information flow policies have allowed the flow of information to be disseminated to all parties, but the accuracy of such disseminated information cannot be assured (Hassani, Silva, Antonakakis, Filis, & Gupta, 2017; Yi & Panda, 2007). According to Jovicic (2013), the lack of SOP regarding information formation and its dissemination via existing platforms in tourism is critical. Today, the possibility of sharing information using the latest technology is without any barriers and this may create its own drawbacks in the tourism business context because such information may be inaccurate (Höpken *et al.*, 2017; Jovicic, 2013).

Another concern that requires attention is the trustworthiness of the information obtained. Information credibility and completeness can affect information accuracy in disseminating tourism information. Generally, information inaccuracy in tourism is primarily due to the lack of trustworthiness of the information obtained due to inaccurate information that has been obtained from various technological sources. This has contributed to poor decision making amongst the tourism stakeholders (Herrera *et al.*, 2018; Munar & Jacobsen, 2013; Lam & McKercher, 2013).

Information accuracy in tourism should contain high interoperability of trusted information. As defined in ISO 9000, quality information increases the information accuracy level of information regardless of the business nature (Kresse, Danko, & Fadaie, 2011; Rao *et al.*, 2010; Wang & Tsai, 2009). One of the key issues in implementing sustainable tourism is the information quality, particularly the accuracy of the available information. To support the sustainability of tourism information, the "World Tourism Organization" has indicated the need to evaluate specific information in tourism in order to eliminate poor information practices in tourism (Casanueva, Gallego, & García-Sánchez, 2014; Jovicic, 2013).

According to Liu, Shan, Glassey Balet, and Fang (2016), regarding tourism related information obtained from the growing social networks, significant disadvantages had been noted. Some of the major concerns were that the tourism information obtained had lacked trustworthiness, could not be obtained in a timely manner and had lacked descriptiveness (Liu *et al.*, 2016; Harding, Finney, Davies, Rouncefield, & Hannon, 2013). Further to Liu *et al.* (2016), the need to ensure good information accuracy is extremely important and it is a requirement that only quality and accurate information can be disseminated publicly for decision making.

As far as in the Malaysian tourism context is concerned, 30 tourism related cheating cases concerning tourism matters were reported in a period of 6 months in 2007. Some of the reported cheating cases had involved tourism information issues such as inaccurate information on the membership cards (10 cases), tour packages (9 cases) and Umrah packages (3 cases) ("Tour Cheating 30 Cases," 2007). Further to the issue pertaining bogus Umrah packages, this issue has increased in terms of the number of reported cases and based on the statistics for the period of 2012 until May 2018, about 359 cases were reported. 106 cases were fined RM 610,000 and had resulted in RM 12.4 million losses. Regarding the Umrah cheating cases, fraudulent information was highlighted as the main reason behind this issue as reported by the Ministry of Tourism and Culture (MOTAC) (Fara Aisyah, 2018).

According to Hasan and Abdullah (2014), there were many concerns and complaints against the tour and travel agencies in Malaysia. The main complaint had centred on the travel agencies' failure to perform the tour packages as contracted, failure to adhere to the tour itinerary, last-minute cancellations and failure to account for money due to tour cancellation by the company and dismal service quality.

In addition, several travel agencies were found to have committed various offences against the Tourism Industry Act 1992 and its accompanying regulations. Actions taken against the travel agencies had included revocation of business licenses and the issuance of compounds in respect of fraud, operating a business without a license, operating a business outside the permitted scope of the license, non-compliance with the terms and conditions of tour brochures and the engagement of unlicensed tour guide in the package tour. Hence, in 2019 there were 160 offence cases which had led to the revocation of tourist guide licences at the time of study ("Revoked Tourist Guide Licence," 2019).

Further, Wan Farahiyah (2019) had highlighted that there had been many consumer complaints related to Umrah service in Malaysia. According to Wan Farahiyah (2019) , the Ministry of Tourism and Culture had received 214 complaints involving Umrah travel fraud between 2012 to 2016. During the same period, 3,482 tourism cases involving over RM 21 million had been referred to the Tribunal for Consumer Claims Malaysia.

Further to Wan Farahiyah (2019), cases of Malaysians becoming victims of Umrah travel fraud are not new. Like a recurrent disease, they have resurfaced every year in the last 10 years. The increasing number of complaints against Umrah travel packages have confirmed the assertion that their businesses are vulnerable to fraudulent practices. This study has collected relevant materials, data and information on Umrah service matters, especially those involving pilgrims issues.

The tragedy is that although reports of such fraudulent practices are often published, the cases continue to pile. There is a long list of reasons, the most common being a combination of ignorance, a too trusting attitude of the pilgrims and

compounded by the authorities' lack of seriousness and consistency in resolving the cases. Information fraudulent practices in travel packages are common amongst travel agents in Malaysia (Wan Farahiyah, 2019).

Despite the Umrah cases, there have been many tourism related scams reported in Malaysia. The unvalidated information available and disseminated in social medias and tourism blogs are often used by travellers in their decision making. For example, a group of 27 holidaymakers were cheated by travel scam packages in Johor Baharu. The total lost reported was RM 69, 151, and since then, the group of holidaymakers had not heard from the travel agency concern ("Holidaymakers cheated by scam travel packages," 2015).

The trust level of information disseminated and travel agency authentication are the major concerns for travellers and this had led to scam issue. Another reported case was in July 2018. A tour company had collected deposits from the travellers. The travel company used its website and Facebook information to attract travellers. It was believed that the travellers had lost of thousands of ringgit between them. The tour company took flight after collecting deposits from its customers (Rahim, 2018).

As per studies and references, the need for information accuracy is vital in tourism (Li *et al.*, 2017a; No & Kim, 2015; Emhmed & Chellapan, 2010). Information accuracy standards or information assessment frameworks are able to limit information deficiencies and increase the accuracy level of the available information (Lam & McKercher, 2013). Thus, tourism information accuracy is necessary in order to ensure that the information that is provided to tourism stakeholders can be trusted and accurate for decision making.

1.3 Statement of the Problem

Information accuracy is a very important aspect in the tourism information environment in order to assist the tourism stakeholders in their decision making process. The tourism information issues such as information inaccuracy, information trustworthiness, information source credibility, information reliability and information deficiency need to be addressed for accurate tourism information as the accurate information is essential for the decision making process. The current tourism information environment does not have a clear mechanism to ensure tourism information accuracy. If the information accuracy issues are not being addressed, the tourism information obtained will lacks of accuracy and will not be reliable for decision making. The purpose of this research is to find a solution for tourism information accuracy issues by proposing the Information Accuracy Assessment Framework for Malaysia Tourism Industry in order to determine the tourism information accuracy levels.

1.4 Research Objectives

This research is guided by the following research questions:

i. What are the components that can be considered when designing the information accuracy assessment framework?

ii. How accuracy of tourism information is assured?

iii. How the proposed framework for the tourism organizations is evaluated?

Based on the research questions, the following are the research objectives:

i. To identify the existing information accuracy practices in the tourism organization.

ii. To develop the Information Accuracy Assessment Framework for Malaysia Tourism Industry.

iii. To validate the usability of the proposed framework for the tourism information providers.

1.5 Scope of Research

The research is focused on the tourism information accuracy in the Malaysian tourism information environment context. The research will address the tourism information accuracy issues through the proposed framework. The existing tourism information accuracy practices will be analysed to identify the information accuracy influencing factors in proposing the framework components for the information accuracy assessment. Since the tourism information accuracy problems are also common problems in Malaysia, the majority of respondents and experts involved in this research were selected from Malaysia. The proposed framework consists of information quality dimensions, tourism institution and information environments requirements. The accuracy assessment in the framework covers the accuracy indicators, assessment indicators, assessment stages, assessment process and determining the information accuracy levels. The proposed framework will be able to assist the tourism information providers in Malaysia for assessing the tourism information accuracy levels.

1.6 Significance of the Research

The research contributions are divided into theoretical, methodological and practical aspects. This research theoretically contributes to the tourism information literature dealing with information accuracy essentials. The theoretical significance relates to information requirement fundamentals, the requirement process and method information practices towards information accuracy assurances. The tourism information accuracy practices which had emerged from the literature had helped to

explain the tourism information accuracy situations within this research and had highlighted the critical role of the tourism information institutions and information requirements. The research has shown the significance of the importance of accuracy in tourism information in helping to shape tourism information accuracy needs. Thus, the theoretical significance of the research has sought to bring together tourism information accuracy, to provide a strong theoretical background to the study and to enrich the research on tourism information accuracy.

Regarding methodological significance, the research has also served as an example by using the grounded theory techniques for data analysis in order to identify the factors impacting the tourism information accuracy. According to Glaser (1992), for data analysis, the results had shown how the data had helped to explain the phenomena in drawing the research findings and conclusion. Furthermore, with the emerged research findings, the study has provided the best explanation of the data including the significance of the tourism information accuracy needs which can shape the tourism information accuracy needs in Malaysia. The methodological impact was able to ease the current problems faced by the tourism stakeholders, tourism organizations and associations, travel and tour agencies and tourists in obtaining accurate information for their decision making process. The ISO/IEC 9126 standard is referred for tourism information resources, environment, assessment and quality process. Further, the ISO/IEC 15504 standard is used during the assessment process in assigning accuracy indictors, assessment indicators and accuracy levels for the proposed framework.

On the practical level, this research has helped to understand the needs of tourism information accuracy in the decision making process. Tourism information accuracy is a critical factor to the tourism information providers such as tourism organizations and associations and travel and tour agencies in ensuring the accuracy of tourism related information. In the tourism institutional environment, tourism information organizational and business characteristics must be able to guide the direction of the tourism information accuracy and tourism information needs in the future.

1.7 Definition of Terms

This section explain several key terms that have been used throughout this research. Before starting the research, it is important to understand the underlying key terms used in this research. The identified key terms are explained below.

(a) Tourism Information

Tourism information consists of statistical data, travelling details, promotion regulation standards, reports and surveys (Saifullin & Lomovtseva, 2019; Li *et al.*, 2017a; Kourouthanassis *et al.*, 2017; Sheldon, 2016, 1997). The essential information from tourism is basically statistical in nature. It also involves reports and survey results that are related to information, such as the number of tourists who had visited a specific place or state or country, tourism climate surveys, income generated and profitability of project reports and an estimation of the tourism industry's revenue and future industry climate for the upcoming years (Li *et al.*, 2017a; Braunhofer & Ricci, 2017; Tremblay & Sheldon, 2000).

(b) Tourism Information Sources

Tourism information sources are the information channels which are responsible for tourism information such as tourism government agencies, tourism organizations, tourism associations, tourism consultants and tourism market researchers who are collectively responsible for tourism information (Saifullin & Lomovtseva, 2019; Wanagos & Studzieniecki, 2018; Kourouthanassis *et al.*, 2017; Sheldon, 2016, 1997).

(c) Tourism Information Exchange

Tourism information exchange refers to the information which is disseminated by tourism suppliers, intermediaries and travellers through their own preferred platforms, such as tourism blogs, social networks, websites, flyers, brochures, pamphlets, booklets, guides and tourism institutions conventional methods (Leung, Law, van Hoof, & Buhalis, 2013; Valdes & Cubillos, 2009; Luo, Feng, & Cai, 2004; Tremblay & Sheldon, 2000).

(d) Tourism Information Accuracy Practices

Accurate information is necessary in any organization and the information accuracy practices are about processes that generate accurate information for quality maintenance (Rao *et al.*, 2010). In tourism, it is important for tourism organizations to ensure that the information is accurate as tourism information changes frequently (Benckendorff *et al.*, 2019; Shahrivar, 2012).

(e) Practice of Methods, Activities and Procedures

According to Fonseca (2015) and Tricker (2014), generally, practices can be considered as a set of activities, procedures and methodologies that are implemented to ensure that the organization's internal and external information quality aspects are managed well.

i. Method

Defined as a procedure for completing specific tasks in a systematic or established approach (methods, methodology, framework, models and procedures) (Baggio, 2019; Walliman, 2017; Céret, Dupuy-Chessa, Calvary, Front, & Rieu, 2013).

ii. Activities

Activities are the predefined conditions where certain tasks or practices can be executed (Saifullin & Lomovtseva, 2019; Dillman, 2013).

iii. Procedures

Procedures are referred to as established or official way whereby tasks or practices are executed (Saifullin & Lomovtseva, 2019; Laddha, Koli, & Jawandhiya, 2018; Greyson, 2016).

(f) Information Decision Support

In tourism, the information decision support refers to the existing information supply and the mechanisms for analysis and decision making (Li *et al.*, 2017a; Braunhofer & Ricci, 2017; Sheldon, 2016).

(g) Information Management

Information management involves systematic processes and procedures to ensure that the information is in a receptive manner and can support the decision making exercise (Li *et al.*, 2017a; Redman, Fox, & Levitin, 2009; Detlor, 2009).

(h) Information Quality (IQ) Dimensions

Quality of information conceptualized in terms of dimensions. Quality relates to how well data meets the needs of use or fitness for use. In other words, quality relates to how well data meets specifications (Alshikhi & Abdullah, 2018; Batini & Scannapieco, 2016; Redman *et al.*, 2009). Information Quality (IQ) is commonly thought of as a multi-dimensional concept and the term IQ is defined as information that complies and meets the quality dimensions (Batini & Scannapieco, 2016; Zhu, Lee, & Rosenthal, 2016; Lillrank, 2003).

Generally, the IQ dimensions are 20 and Table 1.1 illustrates the definitions of each IQ dimensions (Knight & Burn, 2005; Wang & Strong, 1996).

Table 1.1 Information Quality (IQ) Dimensions (Knight & Burn, 2005; Wang & Strong, 1996)

Dimension	Definition
Accuracy	Information is correct, reliable and certified free of error
Consistency	Information is presented in the same format and is compatible
Security	Access to information is restricted appropriately
Timeliness	Information is sufficiently up-to-date
Completeness	Information is not missing and is of sufficient breadth and depth
Concise	Information is compactly represented without being overwhelming
Reliability	Information is correct and reliable
Accessibility	Information is available, or easily and quickly retrievable
Availability	Information is physically accessible
Objectivity	Information is unbiased, unprejudiced and impartial
Relevancy	Information is applicable and helpful
Usability	Information is clear and easily used
Understandability	Information is clear and is easily understood without any ambiguity
Amount of data	Quantity or volume of available information is appropriate
Believability	Information is regarded as true and credible
Navigation	Information is easily found and linked to
Reputation	Information is highly regarded in terms of its source or content
Useful	Information is applicable and helpful for the task at hand
Efficiency	Information is able to quickly meet the information needs
Value-Added	Information is beneficial and provides advantages from its use

(i) Information Quality Characteristics

The information characteristics refer to information attributes, entities and elements for a specific use (Batini & Scannapieco, 2016; Lillrank, 2003; Naumann & Rolker, 2000).

(j) Information Accuracy in Tourism

Accuracy can be defined as the ability of the information systems to reduce the discrepancies between estimated travel times and the actual ones experienced by the traveller (Ben-Elia *et al.*, 2013). According to Benckendorff *et al.* (2019), tourism information systems with intense information should contain the key elements of information accuracy in the tourism information typologies to ensure that the tourism information can be trusted. The quality of the information at tourism information centres or visitor information centres can be determined by the accuracy of the furnished information to the users. Such quality tourism information is associated with the accuracy levels that the tourism information centres provide as part of the information services (Mistilis & D'Ambra, 2008). Tourism information in information communication technology highly depends on the accuracy of tourism information and it can enable access to accurate information (Buhalis & O'Connor, 2005).

(k) Information Assessments Frameworks

The information assessment frameworks refer to the assessments requirements and their characteristics regarding the classifications of the dimensions of quality or attributes or indicators, assessment classes, criteria and factors (Daramola, 2010; Stvilia, Gasser, Twidale, & Smith, 2007; Knight & Burn, 2005).

1.8 Organization of the Thesis

This thesis has 6 chapters. To facilitate access to the thesis, a brief description of the contents of each chapter is provided below:

Chapter 1 is the fundamental part of this research. It highlights a brief understanding about the various sections such as the overview of the research,

background of the research, statement of the problem, research questions, research objectives, significance of the research and research key terms.

Chapter 2 covers the literature review of the thesis. The research literature review provides the relevant literature and reviews of information accuracy practices and methods, activities and procedures that are related to information accuracy in the tourism industry. To perform the reviews, the Systematic Literature Review (SLR) method has been adapted.

Chapter 3 explains the research methodologies of the research and the research phases. In this chapter, the research tasks are described. This chapter provides details of the methodologies that were used to achieve the research objectives and to answer the research questions.

Chapter 4 covers the details of the Information Accuracy Assessment Framework for Malaysia Tourism Industry in terms of framework development, framework architecture, scope of the framework, framework elements and framework accuracy assessments.

Chapter 5 detailed the results of the qualitative method. The chapter is divided into 2 parts. The first part of the chapter details the evaluation analysis and results of the information accuracy practices identified in tourism. The second part of this chapter explains the evaluation of the proposed framework in a tourism information environment covering the framework suitability, efficiency, satisfaction, adaptability and safety.

Chapter 6 provides the summary and conclusion of the research that was carried out. In this chapter, the research's achievements, the research's contributions, the research's limitation and the research's future directions are discussed.

REFERENCES

Aaberge, T., Grøtte, I. P., Haugen, O., Skogseid, I., & Ølnes, S. (2004) *Evaluation of Tourism Web Sites: A Theoretical Framework*. *Information and Communication Technologies in Tourism 2004*. New York: Springer, pp.305-317.

Adam, M. S., & Urquhart, C. (2007) 'IT capacity building in developing countries: a model of the Maldivian tourism sector', *Information Technology for Development,* 13(4), 315-335. doi:10.1002/itdj.20065.

Ahmed, F. F., Hussain, S. F., Hameed, S., & Ali, S. M. (2012) Semantic web E-portal for tourism. *2012 2nd International Conference on Digital Information and Communication Technology and it's Applications (DICTAP)*. 16-18 May. Bangkok, Thailand: IEEE, 154-158.

Akehurst, G. (2008) 'User generated content: the use of blogs for tourism organisations and tourism consumers', *Service Business,* 3(1), 51-61. doi:10.1007/s11628-008-0054-2.

Al-Elaimat, A., & Al-Ghuwairi, A. R. (2015) Procedural Assessment Process of Software Quality Models Using Agility. *Proceedings of the International Conference on Intelligent Information Processing, Security and Advanced Communication - IPAC 2015*. 23-25 November. Batna, Algeria: ACM, 1-5.

Al-Kilidar, H., Cox, K., & Kitchenham, B. (2005) The use and usefulness of the ISO/IEC 9126 quality standard. *2005 International Symposium on Empirical Software Engineering*. 17-18 November. Queensland, Australia: IEEE, 126-132.

Al-Sharawneh, J., Sinnappan, S., Williams, M. A., Ishikawa, Y., Jianzhong, L., Wei, W., Wenjie, Z., & Rui, Z. (2013) Credibility-based Twitter Social Network Analysis. *2013 15th Asia-Pacific Web Conference - APWeb 2013*. 4-5 April. Sydney, Australia: Springer, 323-331.

Alexander, J. E., & Tate, M. A. (2000) 'Web Wisdom: How to Evaluate and Create Information Quality on the Web (Book Review)', *Journalism and Mass Communication Quarterly,* 77(1), 211.

Alshikhi, O. A., & Abdullah, B. M. (2018) 'Information Quality: Definitions, Measurement, Dimensions, And Relationship With Decision Making', *European Journal of Business and Innovation Research,* 6(5), 36-42.

Amaro, S., & Duarte, P. (2017) 'Social media use for travel purposes: a cross cultural comparison between Portugal and the UK', *Information Technology & Tourism,* 17(2), 161-181. doi:10.1007/s40558-017-0074-7.

Andereck, K. L. (2005) 'Evaluation of a Tourist Brochure', *Journal of Travel & Tourism Marketing,* 18(2), 1-13. doi:10.1300/J073v18n02_01.

Angskun, T., & Angskun, J. (2009) A Travel Planning Optimization under Energy and Time Constraints. *In 2009 International Conference on Information and Multimedia Technology.* 16-18 December. Jeju Islan, South Korea: IEEE, 131-134.

Aramendia-Muneta, M. E., & Ollo-Lopez, A. (2013) 'ICT Impact on tourism industry', *International Journal of Management Cases,* 15(2), 87-98.

Arsal, I., Backman, S., & Baldwin, E. (2008) *Influence of an Online Travel Community on Travel Decisions*. *Information and Communication Technologies in Tourism 2008*. Switzerland: Springer, pp.82-93.

Atilgan, E., Akinci, S., & Aksoy, S. (2003) 'Mapping service quality in the tourism industry', *Managing Service Quality: An International Journal,* 13(5), 412-422. doi:10.1108/09604520310495877.

Ayyub, B. M. (2001) 'A Practical Guide on Conducting Expert-Opinion Elicitation of Probabilities and Consequences for Corps Facilities', *Institute for Water Resources*.

Azhar, D., Mendes, E., & Riddle, P. (2012) A systematic review of web resource estimation. *Proceedings of the 8th International Conference on Predictive Models in Software Engineering*. 21-22 September. Lund, Sweden: ACM, 49-58.

Baggio, R. (2019) *Measuring tourism: methods, indicators, and needs*. *The Future of Tourism*. Cham, Switzerland: Springer, pp.255-269.

Baggio, R., & Sainaghi, R. (2016) 'Mapping time series into networks as a tool to assess the complex dynamics of tourism systems', *Tourism Management,* 54, 23-33. doi:10.1016/j.tourman.2015.10.008.

Ballantyne, R., Hughes, K., & Ritchie, B. W. (2009) 'Meeting the Needs of Tourists: The Role and Function of Australian Visitor Information Centers', *Journal of Travel & Tourism Marketing,* 26(8), 778-794. doi:10.1080/10548400903356178.

Ballou, D. P., & Tayi, G. K. (1996) Managerial issues in data quality. *Information Quality*. 186-206.

Bargh, M. S., Choenni, S., & Meijer, R. (2015) Privacy and information sharing in a judicial setting. *Proceedings of the 16th Annual International Conference on Digital Government Research.* 27-30 May. Phoenix, Arizona: ACM, 97-106.

Batini, C., Cappiello, C., Francalanci, C., & Maurino, A. (2009) 'Methodologies for data quality assessment and improvement', *ACM Computing Surveys (CSUR),* 41(3), 1-52.

Batini, C., & Scannapieco, M. (2016) *Data Quality Dimensions*. *Data and Information Quality*. Heidelberg, New York: Springer, pp.21-51.

Becerra, M. A., Alvarez-Uribe, K. C., & Peluffo-Ordoñez, D. H. (2018) Low Data Fusion Framework Oriented to Information Quality for BCI Systems. *International Conference on Bioinformatics and Biomedical Engineering*. 25-27 April. Granada, Spain: Springer, 289-300.

Ben-Elia, E., Di Pace, R., Bifulco, G. N., & Shiftan, Y. (2013) 'The impact of travel information's accuracy on route-choice', *Transportation Research Part C: Emerging Technologies,* 26, 146-159.

Benckendorff, P. J., Xiang, Z., & Sheldon, P. J. (2019) *Tourism Information Technology.* Boston, USA: CABI.

Benetka, J. R., Balog, K., & Norvag, K. (2017) Anticipating Information Needs Based on Check-in Activity. *Proceedings of the 10th ACM International Conference on Web Search and Data Mining - WSDM 2017*. 6-10 February. Cambridge, United Kingdom: ACM, 41-50.

Beritelli, P., Bieger, T., & Laesser, C. (2007) 'The Impact of the Internet on Information Sources Portfolios', *Journal of Travel & Tourism Marketing,* 22(1), 63-80. doi:10.1300/J073v22n01_05.

Berne, C., Garcia-Gonzalez, M., & Mugica, J. (2012) 'How ICT shifts the power balance of tourism distribution channels', *Tourism Management,* 33(1), 205-214. doi:10.1016/j.tourman.2011.02.004.

Bethell, C. (2011) ‘Data and Information Quality Strategic Plan’, *Quality Assurance,* 9(2), 63-97. doi:10.1080/10529410290116829.

Bhat, S. A., & Shah, M. A. (2014) ‘Diffusion of Internet Technology in the Tourism Sector: An Empirical Study’, *Journal of Transnational Management,* 19(2), 152-164. doi:10.1080/15475778.2014.904674.

Bifulco, G. N., Cantarella, G. E., De Luca, S., & Di Pace, R. (2011) Analysis and modelling the effects of information accuracy on travellers' behaviour. *2011 14th International IEEE Conference on Intelligent Transportation Systems (ITSC)*. 5-7 October. Washington, DC, USA: IEEE, 2098-2105.

Bilgihan, A., Barreda, A., Okumus, F., & Nusair, K. (2016) ‘Consumer perception of knowledge-sharing in travel-related Online Social Networks’, *Tourism Management,* 52, 287-296. doi:10.1016/j.tourman.2015.07.002.

Blake, R., & Mangiameli, P. (2011) ‘The Effects and Interactions of Data Quality and Problem Complexity on Classification’, *Journal of Data and Information Quality,* 2(2), 1-28. doi:10.1145/1891879.1891881.

Boracchia, M., & Pesado, P. (2018) Assistant for the Evaluation of Software Product Quality Characteristics Proposed by ISO/IEC 25010 Based on GQM-Defined Metrics. *23rd Argentine Congress Computer Science – CACIC 2017*. 9-13 October. La Plata, Argentina: Springer, 164-175.

Braunhofer, M., & Ricci, F. (2017) ‘Selective contextual information acquisition in travel recommender systems’, *Information Technology & Tourism,* 17(1), 5-29. doi:10.1007/s40558-017-0075-6.

Brillouin, L. (2013) *Science and Information Theory.*New York: Academic Press.

Buhalis, D., & O'Connor, P. (2005) ‘Information communication technology revolutionizing tourism’, *Tourism Recreation Research,* 30(3), 7-16.

Butts, C. T. (2003) ‘Network inference, error, and informant (in)accuracy: a Bayesian approach’, *Social Networks,* 25(2), 103-140. doi:10.1016/s0378-8733(02)00038-2.

Camprubí, R., & Coromina, L. (2017) *The Influence of Information Sources on Tourist Image Fragmentation*. *Co-Creation and Well-Being in Tourism*. Cham, Switzerland: Springer, pp.105-118.

Casanueva, C., Gallego, Á., & García-Sánchez, M. R. (2014) ‘Social network analysis in tourism’, *Current Issues in Tourism,* 19(12), 1190-1209. doi:10.1080/13683500.2014.990422.

Céret, E., Dupuy-Chessa, S., Calvary, G., Front, A., & Rieu, D. (2013) 'A taxonomy of design methods process models', *Information and Software Technology,* 55(5), 795-821. doi:10.1016/j.infsof.2012.11.002.

Chalkiti, K., & Sigala, M. (2008) 'Information sharing and idea generation in peer to peer online communities: The case of `DIALOGOI'', *Journal of Vacation Marketing,* 14(2), 121-132. doi:10.1177/1356766707087520.

Charmaz, K. (2011) 'Grounded Theory as an Emergent Method', *Handbook of Emergent Methods,* 4, 155-172.

Chen, K., Hellerstein, J. M., & Parikh, T. S. (2010) Designing adaptive feedback for improving data entry accuracy. *Proceedings of the 23rd annual ACM Symposium on User Interface Software and Technology - UIST 2010*. 3-6 October. New York, USA: ACM, 239-248.

Chongfu, H. (2004) An anti-accuracy rule rooting in information diffusion techniques. *2004 Annual Meeting of the North American Fuzzy Information Processing Society (NAFIPS 2004)*. 27-30 June. Alberta, Canada: IEEE, 496-501.

Chorus, C. G., Walker, J. L., & Ben-Akiva, M. E. (2010) 'The Value of Travel Information: A Search-Theoretic Approach', *Journal of Intelligent Transportation Systems,* 14(3), 154-165. doi:10.1080/15472450.2010.484746.

Chung, N., & Koo, C. (2015) 'The use of social media in travel information search', *Telematics and Informatics,* 32(2), 215-229. doi:10.1016/j.tele.2014.08.005.

Chung, N., Nam, K., & Koo, C. (2016) 'Examining information sharing in social networking communities: Applying theories of social capital and attachment', *Telematics and Informatics,* 33(1), 77-91. doi:10.1016/j.tele.2015.05.005.

Coelho, A., & Rodrigues, A. (2011) Personalized travel suggestions for tourism websites. *2011 11th International Conference on Intelligent Systems Design and Applications (ISDA)*. 22-24 November. Córdoba, Spain: IEEE, 118-123.

Connell, J., & Lowe, A. (1997) 'Generating grounded theory from qualitative data: The application of inductive methods in tourism and hospitality management research', *Progress in Tourism and Hospitality Research,* 3(2), 165-173.

Coromina, L., & Camprubí, R. (2016) 'Analysis of tourism information sources using a Mokken Scale perspective', *Tourism Management,* 56, 75-84. doi:10.1016/j.tourman.2016.03.025.

Cox, C., Burgess, S., Sellitto, C., & Buultjens, J. (2009) 'The Role of User-Generated Content in Tourists' Travel Planning Behavior', *Journal of Hospitality Marketing & Management,* 18(8), 743-764. doi:10.1080/19368620903235753.

Creswell, J. W., & Clark, V. L. P. (2017) *Designing and conducting mixed methods research.* Newbury Park, USA: SAGE.

Creswell, J. W., & Creswell, J. D. (2017) *Research design: Qualitative, quantitative, and mixed methods approaches.* Newbury Park, USA: SAGE

Daftary, A., & Craig, G. (2018) 'Analyzing Qualitative Data', *TB Stigma*, 358.

Daniel, G., & Adrian, G. (2008) 'Methods of Getting Information in Tourism', *Annals of the University of Oradea, Economic Science Series,* 17(4), 890-894.

Daramola, O. J. (2010) *A Process Framework for Semantics-Aware Tourism Information Systems*. *Current Trends in Web Engineering*. Berlin Heidelberg: Springer pp.521-532.

Das, A., Gollapudi, S., Kıcıman, E., & Varol, O. (2016) Information dissemination in heterogeneous-intent networks. *Proceedings of the 8th ACM Conference on Web Science - WebSci 2016*. 22-25 May. Hannover, Germany: ACM, 259-268.

Decrop, A., & Snelders, D. (2005) 'A grounded typology of vacation decision-making', *Tourism Management,* 26(2), 121-132.

Dedeke, A. (2000) A Conceptual Framework for Developing Quality Measures for Information Systems. *Proceedings of the 2000 Conference on Information Quality*. 20-22 October. MIT: Prentice Hall, 126-128.

Deery, M., Jago, L., Mistilis, N., Richards, F., & Carson, D. (2007) 'Visitor information centres: Best practice in information dissemination', *Sustainable Tourism*, 1- 47.

Del Chiappa, G. (2011) *Trustworthiness of Travel 2.0 applications and their influence on tourist behaviour: an empirical investigation in Italy*. *Information and Communication Technologies in Tourism 2011*. Innsbruck, Austria: Springer, pp.331-342.

Detlor, B. (2009) *Information Management*. *Encyclopedia of Library and Information Sciences*. New York: Taylor & Francis, pp.2445-2451.

Dickinger, A. (2010) 'The Trustworthiness of Online Channels for Experience and Goal-Directed Search Tasks', *Journal of Travel Research,* 50(4), 378-391. doi:10.1177/0047287510371694.

Dillman, L. M. (2013) 'Comparing evaluation activities across multiple theories of practice', *Evaluation and Program Planning,* 38, 53-60. doi:10.1016/j.evalprogplan.2012.03.014.

Domestic Tourism Survey. 2018. Retrieved from https://dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=320&bul_id=cUJybTRyNWZYd05qY2xlSmJFQXhYdz09&menu_id=b0pIV1E3RW40VWRTUkZocEhyZ1pLUT09).

Dredge, D., & Jenkins, J. (2003) 'Destination place identity and regional tourism policy', *Tourism Geographies,* 5(4), 383-407. doi:10.1080/1461668032000129137.

Drosos, D., Skordoulis, M., Chalikias, M., Kalantonis, P., & Papagrigoriou, A. (2017) *The Impact of ISO 9001 Quality Management System Implementation in Tourism SMEs*. *Tourism, Culture and Heritage in a Smart Economy*. Cham, Switzerland: Springer, pp.145-157.

Drozdowska, M., & Duda-Seifert, M. (2016) 'Travel Websites: A Relevant Source of Statistical Information?', *Turyzm,* 26(2), 7-13.

Duque-Ramos, A., Fernández-Breis, J. T., Iniesta, M., Dumontier, M., Egaña Aranguren, M., Schulz, S., Aussenac-Gilles, N., & Stevens, R. (2013) 'Evaluation of the OQuaRE framework for ontology quality', *Expert Systems with Applications,* 40(7), 2696-2703. doi:10.1016/j.eswa.2012.11.004.

Edelen, A., & Ingwersen, W. W. (2017) 'The creation, management, and use of data quality information for life cycle assessment', *The International Journal of Life Cycle Assessment,* 23, 1-14.

Eichhorn, V., Miller, G., Michopoulou, E., & Buhalis, D. (2008) 'Enabling access to tourism through information schemes?', *Annals of Tourism Research,* 35(1), 189-210. doi:10.1016/j.annals.2007.07.005.

Elliot, S., Li, G., & Choi, C. (2013) 'Understanding service quality in a virtual travel community environment', *Journal of Business Research,* 66(8), 1153-1160. doi:10.1016/j.jbusres.2012.03.011.

Elo, S., & Kyngäs, H. (2008) 'The qualitative content analysis process', *Journal of Advanced Nursing,* 62(1), 107-115. doi:10.1111/j.1365-2648.2007.04569.x.

Emhmed, A. A., & Chellapan, K. (2010) GIS-based mobile tourism architecture prototype for Libya (A case study). *Proceedings of the 2010 International Symposium on Information Technology (ITSim 2010)*. 15-17 June. Kuala Lumpur, Malaysia: IEEE, 1-3.

Eppler, M. J., & Muenzenmayer, P. (2002) Measuring Information Quality in the Web Context: A Survey of State-of-the-Art Instruments and an Application Methodology. *Proceedings of the 7th International Conference on Information Quality (ICIQ-02)*. 8-10 November. MIT: Citeseer, 187-196.

Erawan, T., Krairit, D., & Esichaikul, V. (2010) Development of tourist information search behavior model: The case of Thailand. *2010 International Conference on Technology Management for Global Economic Growth (PICMET)*. 18-22 July. Phuket, Thailand: IEEE, 1-7.

Fara Aisyah. 2018. Government considers higher fines for bogus Umrah operators. Retrieved from https://themalaysianreserve.com/2018/07/03/govt-considers-higher-fines-for-bogus-umrah-operators/.

Fardous, J., Du, J. T., Choo, K. K. R., & Huang, S. (2017) Investigating Mobile Social Media Users? Behaviors in Tourism Collaborative Information Seeking. *Proceedings of the 2017 Conference on Human Information Interaction and Retrieval - CHIIR 2017*. 7-11 March. Oslo, Norway: ACM, 395-397.

Feinstein, A. (1954) 'A new basic theorem of information theory', *Technical Report,* 282, 1-28.

Feng, W., Haiyan, W., & Kuai, X. (2012) Diffusive Logistic Model Towards Predicting Information Diffusion in Online Social Networks. *2012 32nd International Conference on Distributed Computing Systems Workshops*. 18-21 June. Macau, China: IEEE, 133-139.

Ferro, N. (2017) 'Reproducibility Challenges in Information Retrieval Evaluation', *Journal of Data and Information Quality,* 8(2), 1- 4. doi:10.1145/3020206.

Fesenmaier, D. R., Xiang, Z., Pan, B., & Law, R. (2010) 'A Framework of Search Engine Use for Travel Planning', *Journal of Travel Research,* 50(6), 587-601. doi:10.1177/0047287510385466.

Fisher, C., Lauria, E. J., & Matheus, C. (2009) 'An accuracy metric: Percentages, randomness, and probabilities', *Journal of Data and Information Quality (JDIQ),* 1(3), 1-21.

Fisher, C., Lauría, E. J., & Matheus, C. (2007) In Search of an Accuracy Metric. *Proceedings of the 12th International Conference on Information Quality, MIT, Cambridge* 9 - 11 November. MA, USA: Academia, 379-392.

Fisher, M. (2017) *Qualitative computing: using software for qualitative data analysis.*New York, USA: Routledge.

Fonseca, L. M. (2015) 'From Quality Gurus and TQM to ISO 9001: 2015: a review of several quality paths', *International Journal for Quality Research (IJQR),* 9(1), 167-180.

Frew, A. J. (2000) *A Critical Analysis of Tourism Information Technology Research*. *Information and Communication Technologies in Tourism 2000*. Springer, pp.39-52.

Garay, L., Font, X., & Pereira-Moliner, J. (2017) 'Understanding sustainability behaviour: The relationship between information acquisition, proactivity and performance', *Tourism Management,* 60, 418-429. doi:10.1016/j.tourman.2016.12.017.

García-Rosell, J. C., & Mäkinen, J. (2013) 'An integrative framework for sustainability evaluation in tourism: applying the framework to tourism product development in Finnish Lapland', *Journal of Sustainable Tourism,* 21(3), 396-416. doi:10.1080/09669582.2012.708038.

Garrity, E. J., & Sanders, G. L. (1998) 'Dimensions of information systems success', *Information Systems Success Measurement,* 1(1), 13-45.

Gelman, I. A. (2010) 'Setting priorities for data accuracy improvements in satisficing decision-making scenarios: A guiding theory', *Decision Support Systems,* 48(4), 507-520. doi:10.1016/j.dss.2009.11.001.

Gilad-Bachrach, R., Navot, A., & Tishby, N. (2003) *An Information Theoretic Tradeoff between Complexity and Accuracy*. *Learning Theory and Kernel Machines*. Berlin Heidelberg, New York: Springer, pp.595-609.

Glaser, B. (1992). Emergence vs forcing: basics of grounded theory analysis. Emergence vs forcing: basics of grounded theory analysis. In. Mill Valley, USA: Sociology Press.

Glass, R. L., Vessey, I., & Ramesh, V. (2002) 'Research in software engineering: an analysis of the literature', *Information and Software Technology,* 44(8), 491-506. doi:10.1016/s0950-5849(02)00049-6.

Glickman, M. E., Gray, J. R., & Morales, C. J. (2005) 'Combining speed and accuracy to assess error-free cognitive processes', *Psychometrika,* 70(3), 405-425. doi:10.1007/s11336-002-0999-3.

Golder, S., Loke, Y. K., & Zorzela, L. (2013) 'Some improvements are apparent in identifying adverse effects in systematic reviews from 1994 to 2011', *Journal of Clinical Epidemiology,* 66(3), 253-260. doi:10.1016/j.jclinepi.2012.09.013.

Goldner, S. (2012) 'A Guide to Social Media', *EContent*, 30-31.

Gregori, N., Daniele, R., & Altinay, L. (2014) 'Affiliate marketing in tourism: determinants of consumer trust', *Journal of Travel Research,* 53(2), 196-210. doi:10.1177/0047287513491333.

Gretzel, U. (2011) 'Intelligent systems in tourism', *Annals of Tourism Research,* 38(3), 757-779. doi:10.1016/j.annals.2011.04.014.

Greyson, D. (2016) Evolution of information practices over time. *Proceedings of the 79th ASIS&T Annual Meeting: Creating Knowledge, Enhancing Lives through Information & Technology*. 14-18 October. Copenhagen, Denmark: ACM, 1-8.

GrØnflaten, Ø. (2009) 'The Tourist Information Matrix – Differentiating Between Sources and Channels in the Assessment of Travellers' Information Search', *Scandinavian Journal of Hospitality and Tourism,* 9(1), 39-64. doi:10.1080/15022250902761280.

Guzzo, T., D'Andrea, A., Ferri, F., & Grifoni, P. (2013) *A Framework to Promote and Develop a Sustainable Tourism by Using Social Media*. *On the Move to Meaningful Internet Systems: OTM 2013 Workshops*. Berlin, Heidelberg: Springer, pp.656-665.

Happ, É., & Ivancsó-Horváth, Z. (2018) 'Digital tourism is the challenge of future–a new approach to tourism', *Knowledge Horizons - Economics,* 10(2), 9-16.

Harbord, R. M., Whiting, P., Sterne, J. A., Egger, M., Deeks, J. J., Shang, A., & Bachmann, L. M. (2008) 'An empirical comparison of methods for meta-analysis of diagnostic accuracy showed hierarchical models are necessary', *Journal of Clinical Epidemiology,* 61(11), 1095-1103. doi:10.1016/j.jclinepi.2007.09.013.

Harding, M., Finney, J., Davies, N., Rouncefield, M., & Hannon, J. (2013) Experiences with a social travel information system. *Proceedings of the 2013 ACM international joint conference on Pervasive and Ubiquitous Computing*. 8-12 September. Zurich, Switzerland: ACM, 173-182.

Hartson, H. R., Andre, T. S., & Williges, R. C. (2001) 'Criteria for evaluating usability evaluation methods', *International Journal of Human - Computer Interaction,* 13(4), 373-410.

Hasan, A. A., & Abdullah, N. C. (2014) 'Tourism Industry Compensation Fund (TICF) in Malaysia: Some Legal and Policy Considerations', *Theory and Practice in Hospitality and Tourism Research*, 217-223.

Hassani, H., Silva, E. S., Antonakakis, N., Filis, G., & Gupta, R. (2017) 'Forecasting accuracy evaluation of tourist arrivals', *Annals of Tourism Research,* 63, 112-127. doi:10.1016/j.annals.2017.01.008.

Hauser, J. R. (1978) 'Testing the Accuracy, Usefulness, and Significance of Probabilistic Choice Models: An Information-Theoretic Approach', *Operations Research,* 26(3), 406-421. doi:10.1287/opre.26.3.406.

He, M., Qiu, H.P., Hu, A.Q., & Quan, J. C. (2009) Quantification and Evaluation of Survivability on Information Systems. *2009 International Conference on Computer Engineering and Technology.* 22-24 January. Singapore: IEEE, 385-389.

Herrera, M. R. G., Sasidharan, V., Hernández, J. A. Á., & Herrera, L. D. A. (2018) 'Quality and sustainability of tourism development in Copper Canyon, Mexico: Perceptions of community stakeholders and visitors', *Tourism Management,* 27, 91-103. doi:10.1016/j.tmp.2018.05.003.

Higgins, M. (1999) 'Meta-information and time: Factors in human decision making', *Journal of the American Society for Information Science,* 50(2), 132-139. doi:10.1002/(SICI)1097-4571(1999)50:2<132::AID-ASI4>3.0.CO;2-N.

Ho, C. I., & Lee, Y. L. (2007) 'The development of an e-travel service quality scale', *Tourism Management,* 28(6), 1434-1449. doi:10.1016/j.tourman.2006.12.002.

Ho, C. I., Lin, M. H., & Chen, H. M. (2012) 'Web users' behavioural patterns of tourism information search: From online to offline', *Tourism Management,* 33(6), 1468-1482. doi:10.1016/j.tourman.2012.01.016.

Holidaymakers cheated by scam travel packages. 2015. Retrieved from https://www.thestar.com.my/metro/community/2015/09/14/holidaymakers-cheated-by-scam-travel-packages.

Hopewell, S., Wolfenden, L., & Clarke, M. (2008) 'Reporting of adverse events in systematic reviews can be improved: survey results', *Journal of Clinical Epidemiology,* 61(6), 597-602. doi:10.1016/j.jclinepi.2007.10.005.

Höpken, W., Ernesti, D., Fuchs, M., Kronenberg, K., & Lexhagen, M. (2017) *Big Data as Input for Predicting Tourist Arrivals*. *Information and Communication Technologies in Tourism 2017*. Cham, Switzerland: Springer, pp.187-199.

Huberman, M., & Miles, M. B. (2002) *The qualitative researcher's companion.*California, USA: SAGE.

Ishak, S. A., Hua, A. K., & Ping, O. W. (2018) 'Grounded Model in Accessible Tourism Case Study: Kuala Lumpur Metropolitan City', *International Journal of Academic Research in Environment and Geography,* 5(1), 49-58. doi:10.6007/IJAREG/v5-i1/4215.

Jacobsen, J. K. S., & Munar, A. M. (2012) 'Tourist information search and destination choice in a digital age', *Tourism Management Perspectives,* 1, 39-47. doi:10.1016/j.tmp.2011.12.005.

Jaewon, Y., & Leskovec, J. (2010) Modeling Information Diffusion in Implicit Networks. *2010 IEEE International Conference on Data Mining*. 13-17 December. Sydney, NSW, Australia: IEEE, 599-608.

Jang, S. (2004) 'The Past, Present, and Future Research of Online Information Search', *Journal of Travel & Tourism Marketing,* 17, 41-47. doi:10.1300/J073v17n02-04.

Jennings, G., & Junek, O. (2007) *Grounded Theory: Innovative Methodology or a Critical Turning from Hegemonic Methodological Praxis in Tourism Studies*. *The Critical Turn in Tourism Studies: Innovative research methodologies*. Linacre House, Jordan Hill, Oxford: Elsevier, pp.197-210.

Jiachen, H., Gang, X., Dong, F., & Nyberg, T. R. (2012) Modeling and analysis of information dissemination mechanism of social media. *In Proceedings of 2012 IEEE International Conference on Service Operations and Logistics and Informatics.* 8-10 July. Beijing, China: IEEE, 377-382.

Jovicic, D. Z. (2013) 'Key issues in the implementation of sustainable tourism', *Current Issues in Tourism,* 17(4), 297-302. doi:10.1080/13683500.2013.797386.

Jung, H., Lee, G., Hur, K., & Kim, T. T. (2017) 'Online travel information value and its influence on the continuance usage intention of social media', *Service Business,* 12(1), 85-120. doi:10.1007/s11628-017-0339-4.

Jung, H. W., Kim, S. G., & Chung, C. S. (2004) 'Measuring software product quality: A survey of ISO/IEC 9126', *IEEE software,* 21(5), 88-92.

Kanellopoulos, Y., Antonellis, P., Antoniou, D., Makris, C., Theodoridis, E., Tjortjis, C., & Tsirakis, N. (2010) 'Code quality evaluation methodology using the ISO/IEC 9126 standard', *International Journal of Software Engineering & Applications (IJSEA),* 1(3), 17-36.

Kang, J. H., & Lerman, K. (2017) 'Effort mediates access to information in online social networks', *ACM Transactions on the Web (TWEB),* 11(1), 1-19. doi:10.1145/2990506.

Kang, M., & Schuett, M. A. (2013) 'Determinants of Sharing Travel Experiences in Social Media', *Journal of Travel & Tourism Marketing,* 30(1-2), 93-107. doi:10.1080/10548408.2013.751237.

Kaplanidou, K., & Veogt, C. (2006) 'A Structural Analysis of Destination Travel Intentions as a Function of Web Site Features', *Journal of Travel Research,* 45(2), 204-216. doi:10.1177/0047287506291599.

Kasunic, M. (2005). *Designing an Effective Survey* (No.CMU/SEI-2005-HB-004). Carnegie-Mellon Univ Pittsburgh PA Software Engineering Institute.

Khan, K. S., Ter Riet, G., Glanville, J., Sowden, A. J., & Kleijnen, J. (2001) *Undertaking systematic reviews of research on effectiveness: CRD's guidance for carrying out or commissioning reviews.* York, England: NHS Centre for Reviews and Dissemination.

Kim, N., & Schwartz, Z. (2013) 'The Accuracy of Tourism Forecasting and Data Characteristics: A Meta-Analytical Approach', *Journal of Hospitality Marketing & Management,* 22(4), 349-374. doi:10.1080/19368623.2011.651196.

Kim, S. E., Lee, K. Y., Shin, S. I., & Yang, S. B. (2017) 'Effects of tourism information quality in social media on destination image formation: The case of Sina Weibo', *Information & Management,* 54(6), 687-702. doi:10.1016/j.im.2017.02.009.

Kim, W. G., & Lee, H. Y. (2004) 'Comparison of Web Service Quality Between Online Travel Agencies and Online Travel Suppliers', *Journal of Travel & Tourism Marketing,* 17(2-3), 105-116. doi:10.1300/J073v17n02_09.

Kitchenham, B., & Brereton, P. (2013) 'A systematic review of systematic review process research in software engineering', *Information and Software Technology,* 55(12), 2049-2075. doi:10.1016/j.infsof.2013.07.010.

Knight, S. A., & Burn, J. (2005) 'Developing a framework for assessing information quality on the World Wide Web', *Informing Science: International Journal of an Emerging Transdiscipline,* 8(5), 159-172.

Kourouthanassis, P. E., Mikalef, P., Pappas, I. O., & Kostagiolas, P. (2017) 'Explaining travellers online information satisfaction: A complexity theory approach on information needs, barriers, sources and personal characteristics', *Information and Management,* 54(6), 814-824. doi:10.1016/j.im.2017.03.004.

Kresse, W., Danko, D. M., & Fadaie, K. (2011) *Standardization*. *Springer Handbook of Geographic Information*. Berlin Heidelberg: Springer, pp.245-271.

La Toile, Q. D. N. S. (2004) 'Database of Abstracts of Reviews of Effects (DARE)', *Douleurs,* 5(2).

Laddha, S. S., Koli, N. A., & Jawandhiya, P. M. (2018) 'Indian Tourism Information Retrieval System: An Onto-Semantic Approach', *Procedia Computer Science,* 132, 1363-1374.

Lam, C., & McKercher, B. (2013) 'The tourism data gap: The utility of official tourism information for the hospitality and tourism industry', *Tourism Management Perspectives,* 6, 82-94. doi:10.1016/j.tmp.2012.12.003.

Larusdottir, M. K. (2011) Usability evaluation in software development practice. *IFIP Conference on Human-Computer Interaction*. 5-9 September. Lisbon, Portugal: Springer, 430-433.

Law, R., Qi, S., & Buhalis, D. (2010) 'Progress in tourism management: A review of website evaluation in tourism research', *Tourism Management,* 31(3), 297-313. doi:10.1016/j.tourman.2009.11.007.

Lawrence, T. F. (1999) Quality of service (QoS): a model for information. *1999 Proceedings of 4th International Workshop on Object-Oriented Real-Time Dependable Systems*. 27-29 January. Santa Barbara, CA, USA: IEEE, 180-183.

Lee, H. A., Law, R., & Murphy, J. (2011) 'Helpful Reviewers in TripAdvisor, an Online Travel Community', *Journal of Travel & Tourism Marketing,* 28(7), 675-688. doi:10.1080/10548408.2011.611739.

Lee, Y. W., Strong, D. M., Kahn, B. K., & Wang, R. Y. (2002) 'AIMQ: a methodology for information quality assessment', *Information & Management,* 40(2), 133-146.

Leung, D., Law, R., van Hoof, H., & Buhalis, D. (2013) 'Social Media in Tourism and Hospitality: A Literature Review', *Journal of Travel & Tourism Marketing,* 30(1-2), 3-22. doi:10.1080/10548408.2013.750919.

Lewis, S. (2015) 'Qualitative inquiry and research design: Choosing among five approaches', *Health Promotion Practice,* 16(4), 473-475.

Li, N. (2016) 'Information Visualization Analysis of Tourism Management Research Based on Web', *Journal of Residuals Science & Technology,* 13(5), 281- 285. doi:10.12783/issn.1544-8053/13/5/28.

Li, X., Pan, B., Law, R., & Huang, X. (2017b) 'Forecasting tourism demand with composite search index', *Tourism Management,* 59, 57-66. doi:10.1016/j.tourman.2016.07.005.

Li, Y., Hu, C., Huang, C., & Duan, L. (2017a) 'The concept of smart tourism in the context of tourism information services', *Tourism Management,* 58, 293-300. doi:10.1016/j.tourman.2016.03.014.

Li, Y., Zobel, C. W., & Russell, R. S. (2017) 'Value of supply disruption information and information accuracy', *Journal of Purchasing & Supply Management,* 23(3), 191-201. doi:https://doi.org/10.1016/j.pursup.2016.12.001.

Liang, S., Schuckert, M., Law, R., & Masiero, L. (2016) 'The relevance of mobile tourism and information technology: an analysis of recent trends and future research directions', *Journal of Travel & Tourism Marketing,* 34(6), 732-748. doi:10.1080/10548408.2016.1218403.

Liang, S., Zhang, Z., Zhang, Z., Law, R., & Sun, W. (2017) 'Consumer motivation in providing high-quality information: building toward a novel design for travel guide websites', *Asia Pacific Journal of Tourism Research,* 22(6), 693-707. doi:10.1080/10941665.2017.1310119.

Liburd, J. J. (2012) 'Tourism research 2.0', *Annals of Tourism Research,* 39(2), 883-907. doi:10.1016/j.annals.2011.10.006.

Lillrank, P. (2003) 'The quality of information', *International Journal of Quality & Reliability Management,* 20(6), 691-703.

Lin, S. W. (2016) 'The critical success factors for a travel application service provider evaluation and selection by travel intermediaries', *Tourism Management,* 56, 126-141. doi:10.1016/j.tourman.2016.03.028.

List of Travel Operating Business and Travel. 2019. Retrieved October 15, 2019 from http://www.motac.gov.my/en/check/tobtab.

Liu, J., Wang, C., Fang, S., & Zhang, T. (2019) 'Scale development for tourist trust toward a tourism destination', *Tourism Management Perspectives,* 31, 383-397. doi:https://doi.org/10.1016/j.tmp.2019.07.001.

Liu, J., & Wang, Y. (2016) Information Worth Spreading: An Exploration of Information Sharing from Social Q&A to other Social Media Platforms. *Proceedings of the 79th ASIS&T Annual Meeting: Creating Knowledge, Enhancing Lives through Information & Technology*. Copenhagen, Denmark: ACM, 1-5.

Liu, Z., Shan, J., Glassey Balet, N., & Fang, G. (2016) 'Semantic social media analysis of Chinese tourists in Switzerland', *Information Technology & Tourism,* 17(2), 183-202. doi:10.1007/s40558-016-0066-z.

Lucassen, T., & Schraagen, J. M. (2011) 'Factual accuracy and trust in information: The role of expertise', *Journal of the American Society for Information Science and Technology,* 62(7), 1232-1242. doi:10.1002/asi.21545.

Luo, M., Feng, R., & Cai, L. A. (2004) 'Information Search Behavior and Tourist Characteristics', *Journal of Travel & Tourism Marketing,* 17(2-3), 15-25. doi:10.1300/J073v17n02_02.

Macropol, K., & Singh, A. (2011) Content-based modeling and prediction of information dissemination. *2011 International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*. 25-27 July. Kaohsiung, Taiwan: IEEE, 21-28.

Malaysia Tourism Data. 2019. Retrieved from http://mytourismdata.tourism.gov.my/?page_id=437.

Mamaghani, F. (2009) 'Impact of E-commerce on Travel and Tourism: An Historical Analysis', *International Journal of Management,* 26(3), 365-375.

Marschak, J. (1971) 'Economics of information systems', *Journal of the American Statistical Association,* 66(333), 192-219.

Matteucci, X., & Gnoth, J. (2017) 'Elaborating on grounded theory in tourism research', *Annals of Tourism Research,* 65, 49-59. doi:https://doi.org/10.1016/j.annals.2017.05.003.

Melnyk, S. A., Bititci, U., Platts, K., Tobias, J., & Andersen, B. (2014) 'Is performance measurement and management fit for the future?', *Management Accounting Research,* 25(2), 173-186.

Merkel, C. M. (2012) *Article 19: Exchange, Analysis and Dissemination of Information*. *The UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions*. Berlin,Heidelberg: Springer, pp.481-515.

Mesquida, A. L., Mas, A., Amengual, E., & Calvo-Manzano, J. A. (2012) 'IT Service Management Process Improvement based on ISO/IEC 15504: A systematic review', *Information and Software Technology,* 54(3), 239-247. doi:10.1016/j.infsof.2011.11.002.

Miles, M. B., & Huberman, A. M. (1994) *Qualitative data analysis: An expanded sourcebook.*USA: SAGE.

Miles, M. B., Huberman, A. M., & Saldana, J. (2013) *Qualitative data analysis.* USA: SAGE.

Minazzi, R. (2015) *Social Media Impacts on Travelers*. *Social Media Marketing in Tourism and Hospitality*. Cham, Switzerland: Springer, pp.47-76.

Mistilis, N., & D'Ambra, J. (2008) 'The Visitor Experience and Perception of Information Quality at the Sydney Visitor Information Centre', *Journal of Travel & Tourism Marketing,* 24(1), 35-46. doi:10.1300/J073v24n01_03.

Molina, A., Fernández, A. C., Gómez, M., & Aranda, E. (2017) 'Differences in the city branding of European capitals based on online vs. offline sources of information', *Tourism Management,* 58, 28-39. doi:10.1016/j.tourman.2016.10.005.

Moody, D. L. (2003) 'Measuring the quality of data models: an empirical evaluation of the use of quality metrics in practice', *European Conference on Information Systems (ECIS) 2003 Proceedings*, 78.

Mukherjee, S. P. (2019) *Quality of Information and Quality System in an Information Industry*. *Quality*. Singapore: Springer, pp.255-268.

Munar, A. M. (2015) *Social media, tourism*. *Encyclopedia of Tourism*. Cham, Switzerland: Springer, pp.1-3.

Munar, A. M., & Jacobsen, J. K. S. (2013) 'Trust and Involvement in Tourism Social Media and Web-Based Travel Information Sources', *Scandinavian Journal of Hospitality and Tourism,* 13(1), 1-19. doi:10.1080/15022250.2013.764511.

Munar, A. M., & Jacobsen, J. K. S. (2014) 'Motivations for sharing tourism experiences through social media', *Tourism Management,* 43, 46-54. doi:10.1016/j.tourman.2014.01.012.

Närman, P., Holm, H., Johnson, P., König, J., Chenine, M., & Ekstedt, M. (2011) 'Data accuracy assessment using enterprise architecture', *Enterprise Information Systems,* 5(1), 37-58. doi:10.1080/17517575.2010.507878.

Naumann, F., & Rolker, C. (2000) 'Assessment methods for information quality criteria', *Information Quality*, 1-18.

No, E., & Kim, J. K. (2015) 'Comparing the attributes of online tourism information sources', *Computers in Human Behavior,* 50, 564-575. doi:10.1016/j.chb.2015.02.063.

O'Leary, J. T. (2000) *Data Management in Tourism: Chaotic and Quixotic*. *Information and Communication Technologies in Tourism 2000*. Springer, pp.157-166.

Oishi, S. M. (2003) *How to conduct in-person interviews for surveys.*USA: SAGE.

Osti, L., Turner, L. W., & King, B. (2009) 'Cultural differences in travel guidebooks information search', *Journal of Vacation Marketing,* 15(1), 63-78.

Özkan, S. (2006) 'A Process Capability Approach to Information Systems Effectiveness Evaluation', *Electronic Journal of Information Systems Evaluation,* 9(1), 7-14.

Padayachee, I., Kotze, P., & van Der Merwe, A. (2010) 'ISO 9126 external systems quality characteristics, sub-characteristics and domain specific criteria for evaluating e-Learning systems', *The Southern African Computer Lecturers' Association, University of Pretoria, South Africa*.

Palakvangsa-Na-Ayudhya, S., Sriarunrungreung, V., Thongprasan, P., & Porcharoen, S. (2011) Nebular: A sentiment classification system for the tourism business. *2011 8th International Joint Conference on Computer Science and Software Engineering (JCSSE)*. 11-13 May. Nakhon Pathom, Thailand: IEEE, 293-298.

Pan, B., & Fesenmaier, D. R. (2006) 'Online Information Search - Vacation Planning Process', *Annals of Tourism Research,* 33(3), 809-832. doi:10.1016/j.annals.2006.03.006.

Papathanassis, A., & Knolle, F. (2011) 'Exploring the adoption and processing of online holiday reviews: A grounded theory approach', *Tourism Management,* 32(2), 215-224.

Pare, G., Cameron, A. F., Poba-Nzaou, P., & Templier, M. (2013) 'A systematic assessment of rigor in information systems ranking-type Delphi studies', *Information & Management,* 50(5), 207-217.

Parssian, A. (2006) 'Managerial decision support with knowledge of accuracy and completeness of the relational aggregate functions', *Decision Support Systems,* 42(3), 1494-1502.

Pawlak, Z. (1998) 'Rough set theory and its applications to data analysis', *Cybernetics & Systems,* 29(7), 661-688.

Pessemier, T. D., Dhondt, J., & Martens, L. (2016) 'Hybrid group recommendations for a travel service', *Multimedia Tools and Applications,* 76(2), 2787-2811. doi:10.1007/s11042-016-3265-x.

Petticrew, M., Song, F., Wilson, P., & Wright, K. (1999) 'Quality-assessed reviews of health care interventions and the database of abstracts of reviews of effectiveness (DARE)', *International Journal of Technology Assessment in Health Care,* 15(4), 671-678.

Piattini, M., Moraga, M. A., & Calero, C. (2008) *Handbook of Research on Web Information Systems Quality.* Hershey, USA: IGI Global.

Pollmann, M. M. H., & Scheibehenne, B. (2015) 'An information theory account of preference prediction accuracy', *Journal of Consumer Psychology,* 25(2), 286-295. doi:https://doi.org/10.1016/j.jcps.2014.10.002.

Price, R., & Shanks, G. (2004) A semiotic information quality framework. *Proceedings of the International Conference on Decision Support Systems DSS04*. 658-672.

Pyke, S., Hartwell, H., Blake, A., & Hemingway, A. (2016) 'Exploring well-being as a tourism product resource', *Tourism Management,* 55, 94-105. doi:10.1016/j.tourman.2016.02.004.

Pyo, S. (2000) 'Quality Research in Tourism and Hospitality', *Journal of Quality Assurance in Hospitality & Tourism,* 1(1), 1-12. doi:10.1300/J162v01n01_01.

Racherla, P., Connolly, D. J., & Christodoulidou, N. (2013) 'What Determines Consumers' Ratings of Service Providers? An Exploratory Study of Online Traveler Reviews', *Journal of Hospitality Marketing & Management,* 22(2), 135-161. doi:10.1080/19368623.2011.645187.

Rahim, R. 2018. Tour company takes flight after collecting deposits from customers. Retrieved from https://www.thestar.com.my/news/nation/2018/07/23/anything-but-a-dream-holiday-tour-company-takes-flight-after-collecting-deposits-from-customers.

Ramos, C. M. Q., & Rodrigues, P. M. M. (2013) *The Importance of ICT for Tourism Demand: A Dynamic Panel Data Analysis*. *Quantitative Methods in Tourism Economics*. Heidelberg, New York: Springer, pp.97-111.

Rao, S. S., Ragu-Nathan, T. S., & Solis, L. E. (2010) 'Does ISO 9000 have an effect on quality management practices? An international empirical study', *Total Quality Management,* 8(6), 335-346. doi:10.1080/0954412979352.

Rasool, P. A., Memon, N., Wiil, U. K., & Karampelas, P. (2010) Filtering the open-source information. *2010 IEEE International Conference on Software Engineering and Service.* 16-18 July. Beijing, China: IEEE, 217-220.

Razali, M. N., Tan Soo, F., Razak, F. H. A., & Hanapi, R. (2010) Online information sharing issues in website personalization. *2010 International Conference on User Science and Engineering*. 13-15 December. Shah Alam, Malaysia: IEEE, 278-283.

Redman, T. C., Fox, C., & Levitin, A. (2009) *Data and Data Quality*. *Encyclopedia of Library and Information Sciences*. Boca Raton: Taylor & Francis, pp.1420-1431.

Revoked Tourist Guide Licence. 2019. Retrieved October 15, 2019 from http://www.motac.gov.my/en/check/tg-batal.

Riihiaho, S. (2000) 'Experiences with usability evaluation methods', *Licentiate thesis. Helsinki University of Technology. Laboratory of Information Processing Science*.

Rimmington, M., & Kozak, M. (1997) 'Developments in Information Technology: Implications for the Tourism Industry and Tourism Marketing', *Anatolia: An International Journal of Tourism and Hospitality Research Journal,* 8(3), 59-80. doi:10.1080/13032917.1997.9687121.

Romero-Rodríguez, L. M., de-Casas-Moreno, P., & Torres-Toukoumidis, Á. (2016) 'Dimensions and Indicators of the Information Quality in Digital Media', *Comunicar,* 24(49), 91-100. doi:10.3916/c49-2016-09.

Rosselló, J., & Sansó, A. (2017) 'Yearly, monthly and weekly seasonality of tourism demand: A decomposition analysis', *Tourism Management,* 60, 379-389. doi:10.1016/j.tourman.2016.12.019.

Runeson, P., & Höst, M. (2008) 'Guidelines for conducting and reporting case study research in software engineering', *Empirical Software Engineering,* 14(2), 131-164. doi:10.1007/s10664-008-9102-8.

Sabou, M., Brașoveanu, A. M. P., & Önder, I. (2015) *Linked Data for Cross-Domain Decision-Making in Tourism*. *Information and Communication Technologies in Tourism 2015*. Cham, Switzerland: Springer, pp.197-210.

Saha, R., & Bansal, H. (2018) 'Wave of Social Media-fuelled Tourism: Soul of Sight', *Siddhant-A Journal of Decision Making,* 18(2), 169-174.

Saifullin, T., & Lomovtseva, M. (2019) *Information Services Industry in Tourism*. *Caring and Sharing: The Cultural Heritage Environment as an Agent for Change*. Cham, Switzerland: Springer, pp.63-72.

Sainaghi, R., Phillips, P., & Zavarrone, E. (2017) 'Performance measurement in tourism firms: A content analytical meta-approach', *Tourism Management,* 59, 36-56. doi:10.1016/j.tourman.2016.07.002.

Salim, J., Arifin, A. B., & Puade, O. A. (2010) Mobile tourism directory. *Proceedings of the 2010 International Symposium on Information Technology (ITSim 2010)*. 15-17 June. Kuala Lumpur, Malaysia: IEEE, 1-5.

Sautter, E. T., & Leisen, B. (1999) 'Managing stakeholders a Tourism Planning Model', *Annals of Tourism Research,* 26(2), 312-328. doi:10.1016/s0160-7383(98)00097-8.

Scannapieco, M., Missier, P., & Batini, C. (2005) 'Data quality at a glance', *Datenbank-Spektrum,* 14, 6-14.

Shackel, B. (2009) 'Usability–Context, framework, definition, design and evaluation', *Interacting with Computers,* 21(5-6), 339-346.

Shahrivar, R. B. (2012) 'Factors that influence tourist satisfaction', *Journal of Travel and Tourism Research,* 12(1), 61.

Shanks, G., & Corbitt, B. (1999) Understanding data quality: Social and cultural aspects. *Proceedings of the 10th Australasian Conference on Information Systems*. 1-3 December. Wellington, New Zealand: Victoria University of Wellington, New Zealand, 785-797.

Shanks, G., & Darke, P. (1998) Understanding data quality in a data warehouse: a semiotic approach. *Conference on Information Quality*. 1 Jan. Massuchusetts, USA: University of Massachusetts Lowell, 292-309.

Shannon, C. E. (1949) 'A Mathematical Theory of Communication (Part I)', *The Bell System Technical Journ*al (*BSTJ),* 27, 379-423.

Shanshan, Q., Cristal, I., Leung, R., & Law, R. (2010) A New Framework on Website Evaluation. *2010 International Conference on E-Business and E-Government*. 7-9 May Guangzhou, China: IEEE, 78-81.

Sharma, M. P. (2016) Factors Affecting the Adoption of ICT in Hospitality & Tourism Industry. *Proceedings of the 2nd International Conference on Information and Communication Technology for Competitive Strategies - ICTCS 2016*. 4-5 March. Udaipur, India: ACM, 1-5.

Sheldon, P. J. (1997) *Tourism information technology.*Wallingford, UK: CABI.

Sheldon, P. J. (2016) *TRINET: Tourism Research Information Network. Encyclopedia of Tourism*. Cham, Switzerland: Springer, pp.971-972.

Sherif, Y. S., Ng, E., & Steinbacher, J. (1985) 'Computer software quality measurements and metrics', *Microelectronics Reliability,* 25(6), 1105-1150. doi:10.1016/0026-2714(85)90486-x.

Sinanović, S., & Johnson, D. H. (2007) 'Toward a theory of information processing', *Signal Processing,* 87(6), 1326-1344. doi:10.1109/ISIT.2000.866791.

Söderlund, C., & Lundin, J. (2017) 'What is an information source?', *Communication Design Quarterly Review,* 4(3), 12-19. doi:10.1145/3071078.3071081.

Soma, K., Termeer, C. J. A. M., & Opdam, P. (2016) 'Informational governance – A systematic literature review of governance for sustainability in the Information Age', *Environmental Science & Policy,* 56, 89-99. doi:10.1016/j.envsci.2015.11.006.

Sotiriadis, M. D., & van Zyl, C. (2013) 'Electronic word-of-mouth and online reviews in tourism services: the use of twitter by tourists', *Electronic Commerce Research,* 13(1), 103-124. doi:10.1007/s10660-013-9108-1.

Stamper, R. K. (1992) Signs, organisations, norms and information systems. *Proceedings of the 3rd Australian Conference on Information Systems: Information Systems as Organisational Processes (ISOP 1992)*. 5-8 October. 21-65.

Strauss, A., & Corbin, J. (1994) 'Grounded theory methodology', *Handbook of qualitative research,* 17, 273-285.

Strong, B. K. K. D. M., & Wang, R. Y. (1997) 'A Model for Delivering Quality Information as Product and Service', *Information Quality*, 80-94.

Stumpf, T. S., Sandstrom, J., & Swanger, N. (2016) 'Bridging the gap: grounded theory method, theory development, and sustainable tourism research', *Journal of Sustainable Tourism,* 24(12), 1691-1708. doi:10.1080/09669582.2016.1149183.

Stvilia, B., Gasser, L., Twidale, M. B., & Smith, L. C. (2007) 'A framework for information quality assessment', *Journal of the American Society for Information Science and Technology,* 58(12), 1720-1733.

Styrin, E., & Dmitrieva, N. (2015) Information Services Quality Measurement. *Proceedings of the 2015 2nd International Conference on Electronic Governance and Open Society: Challenges in Eurasia - EGOSE 2015*. 24-25 November. St. Petersburg, Russian Federation: ACM, 228-231.

Tabibian, B., Valera, I., Farajtabar, M., Song, L., Schölkopf, B., & Gomez-Rodriguez, M. (2017) Distilling Information Reliability and Source Trustworthiness from Digital Traces. *Proceedings of the 26th International Conference on World Wide Web - WWW '17*. 03 - 07 April. Perth, Australia: ACM, 847-855.

Tan, W. K., & Chen, T. H. (2012) 'The usage of online tourist information sources in tourist information search: an exploratory study', *The Service Industries Journal,* 32(3), 451-476. doi:10.1080/02642069.2010.529130.

Tan, W. K., & Tang, C. Y. (2013) 'Does personality predict tourism information search and feedback behaviour?', *Current Issues in Tourism,* 16(4), 388-406. doi:10.1080/13683500.2013.766155.

Tanti, A., & Buhalis, D. (2017) 'The influences and consequences of being digitally connected and/or disconnected to travellers', *Information Technology & Tourism,* 17(1), 121-141. doi:10.1007/s40558-017-0081-8.

Tayi, G. K., & Ballou, D. P. (1998) 'Examining data quality', *Communications of the ACM,* 41(2), 54-57.

Taylor, R. S., & Taylor, R. S. (1986) *Value-added processes in information systems.*Greenwood Publishing Group.

Thomas, D. R. (2006) 'A general inductive approach for analyzing qualitative evaluation data', *American Journal of Evaluation,* 27(2), 237-246.

Tishby, N., Pereira, F. C., & Bialek, W. (2000) 'The information bottleneck method', *arXiv preprint physics/0004057*.

Ţîţu, M. A., Răulea, A. S., & Ţîţu, Ş. (2016) 'Measuring Service Quality in Tourism Industry', *Procedia - Social and Behavioral Sciences,* 221, 294-301. doi:10.1016/j.sbspro.2016.05.118.

Tour Cheating 30 Cases. 2007. Retrieved from https://www.thestar.com.my/news/nation/2007/07/13/30-tour-cheating-cases.

Tourism Performance Report. 2019. Retrieved from http://mytourismdata.tourism.gov.my/wp-content/uploads/2019/06/Tourism-Fast-Facts-Q1-2019.pdf.

Tremblay, P., & Sheldon, P. J. (2000) *Industrial Mapping of Tourism Information Technologies*. *Information and Communication Technologies in Tourism 2000*. Springer, pp.218-231.

Tricker, R. (2014) *ISO 9001: 2008 for Small Businesses.*London: Routledge.

Ukpabi, D. C., & Karjaluoto, H. (2017) 'Consumers' acceptance of information and communications technology in tourism: A review', *Telematics and Informatics,* 34(5), 618-644. doi:10.1016/j.tele.2016.12.002.

Valdes, M., & Cubillos, C. (2009) A Multiagent System for Touristic Travel Planning. *2009 4th International Conference on Computer Sciences and Convergence Information Technology*. 24-26 November. Seoul, Korea: IEEE, 11-14.

Viera, A. J., & Garrett, J. M. (2005) 'Understanding interobserver agreement: The Kappa Statistic', *Fam Med,* 37(5), 360-363.

Walliman, N. (2017) *Research methods: The basics.*London, United Kingdom: Routledge.

Wan Farahiyah, B. W. A. R. (2019) 'Consumer Protection of Umrah Pilgrims in Malaysia', *Asia Proceedings of Social Sciences,* 4(1), 168-170.

Wanagos, M., & Studzieniecki, T. (2018) The Development of the Tourist Product of the City and the Information Needs of Tourism Entities. *Economic and Social Development (Book of Proceedings), 32nd International Scientific Conference on Economic and Social*. 21-22 June. Odessa, Ukraine Varazdin Development and Entrepreneurship Agency, 262-268.

Wand, Y., & Wang, R. Y. (1996) 'Anchoring data quality dimensions in ontological foundations', *Communications of the ACM,* 39(11), 86-95.

Wang, C. H., & Tsai, D. R. (2009) Integrated installing ISO 9000 and ISO 27000 management systems on an organization. *43rd Annual 2009 International Carnahan Conference on Security Technology*. 5-8 October. Zürich, Switzerland: IEEE, 265-267.

Wang, R., & Strong, D. (1996) 'Beyond accuracy: What data quality means to data consumers', *Journal of Management Information Systems,* 12(4), 5-33.

Werthner, H., Alzua-Sorzabal, A., Cantoni, L., Dickinger, A., Gretzel, U., Jannach, D., Neidhardt, J., Pröll, B., Ricci, F., Scaglione, M., Stangl, B., Stock, O., & Zanker, M. (2015) 'Future research issues in IT and tourism', *Information Technology & Tourism,* 15(1), 1-15. doi:10.1007/s40558-014-0021-9.

Wingate, L. A. (2010) *Meta-evaluation: Purpose, Prescription, and Practice*. *International Encyclopedia of Education*. Oxford: Elsevier, pp.765-774.

Xiang, Z., Du, Q., Ma, Y., & Fan, W. (2017) *Assessing Reliability of Social Media Data: Lessons from Mining TripAdvisor Hotel Reviews*. *Information and Communication Technologies in Tourism 2017*. Cham, Switzerland: Springer, pp.625-638.

Xiang, Z., & Fesenmaier, D. R. (2017) *Big Data Analytics, Tourism Design and Smart Tourism*. *Analytics in Smart Tourism Design*. Cham, Switzerland: Springer, pp.299-307.

Xiang, Z., & Gretzel, U. (2010) 'Role of social media in online travel information search', *Tourism Management,* 31(2), 179-188.

Xujuan, Z., Yuefeng, L., Bruza, P., Sheng-Tang, W., Yue, X., & Lau, R. Y. K. (2007) Using Information Filtering in Web Data Mining Process. *IEEE/WIC/ACM International Conference on Web Intelligence (WI'07)*. 2-5 November. Fremont, CA, USA: IEEE, 163-169.

Yang, Z., Cai, S., Zhou, Z., & Zhou, N. (2005) 'Development and validation of an instrument to measure user perceived service quality of information presenting Web portals', *Information & Management,* 42(4), 575-589. doi:10.1016/s0378-7206(04)00073-4.

Yi, H., & Panda, B. (2007) A Web of Trust Oriented Information Flow Network. *2007 International Conference on Integration of Knowledge Intensive Multi-Agent Systems*. 30 April - 3 May. Waltham, MA, USA: IEEE, 336-341.

Yi, Z., & Limei, Z. (2012) The Effects of ICT Innovation and Industry Regulation on Chinese Travel Website's Marketing Logic. *2012 IEEE 14th International Conference on Commerce and Enterprise Computing*. 9-11 September. Hangzhou, China: IEEE, 86-93.

Yoo, C. W., Goo, J., Huang, C. D., Nam, K., & Woo, M. (2017) 'Improving travel decision support satisfaction with smart tourism technologies: A framework of tourist elaboration likelihood and self-efficacy', *Technological Forecasting and Social Change,* 123, 330-341. doi:10.1016/j.techfore.2016.10.071.

Yu, X., Roy, S. K., Quazi, A., Nguyen, B., & Han, Y. (2017) 'Internet entrepreneurship and the sharing of information in an Internet-of-Things context', *Internet Research,* 27(1), 74-96. doi:10.1108/IntR-02-2015-0060.

Yuan, H., Xu, H., Qian, Y., & Li, Y. (2016) 'Make your travel smarter: Summarizing urban tourism information from massive blog data', *International Journal of Information Management,* 36(6), 1306-1319. doi:10.1016/j.ijinfomgt.2016.02.009.

Yuan, Y., Tseng, Y. H., & Ho, C. I. (2019) 'Tourism information technology research trends: 1990-2016', *Tourism Review,* 74(1), 5-19. doi:10.1108/tr-08-2017-0128.

Yung, C. (2015) Mining Massive Web Log Data of an Official Tourism Web Site as a Step towards Big Data Analysis in Tourism. *Proceedings of the ASE BigData & SocialInformatics 2015*. 7-9 October. Kaohsiung, Taiwan: ACM, 1- 4.

Zabel, D. (2003) 'The Best of the Web: Hospitality and Tourism Web Sites', *Journal of Business & Finance Librarianship,* 8(3/4), 167.

Zadeh, L. A. (1978) 'Fuzzy sets as a basis for a theory of possibility', *Fuzzy Sets and Systems,* 1(1), 3-28.

Zeiss, B., Vega, D., Schieferdecker, I., Neukirchen, H., & Grabowski, J. (2007) 'Applying the ISO 9126 Quality Model to test specifications', *Software Engineering,* 15(6), 231-242.

Zhang, L., & Sun, X. (2017) *Can Travel Information Websites Do Better? Facilitating the Decision-Making Experience for Tourists*. *Human Interface and the Management of Information: Supporting Learning, Decision-Making and Collaboration*. Cham, Switzerland: Springer pp.302-313.

Zhang, Q., & Jiang, W. (2013) *Research on Tourism Industry Based on SWTO Analysis*. *Information Engineering and Applications*. London: Springer, pp.715-722.

Zhu, H., Lee, Y. W., & Rosenthal, A. S. (2016) 'Data Standards Challenges for Interoperable and Quality Data', *Journal of Data and Information Quality,* 7(1-2), 1-3. doi:10.1145/2903723.

Zuo, R. (2010) Information Theory, Information View, and Software Testing. *2010 7th International Conference on Information Technology: New Generations*. 12-14 April. Las Vegas, Nevada, USA: ACM, 998-1003.

Appendix A Permission Letter for Data Collection

UTM UNIVERSITI TEKNOLOGI MALAYSIA | Advanced Informatics School (AIS)

Advanced Informatics School
Level 5, Menara Razak
Universiti Teknologi Malaysia
Jalan Semarak
54100 Kuala Lumpur, Malaysia

Tel: +(6)03-21805192 Fax: +(6)03-21805370 http://www.ais.utm.my Email: enquiry_ais@ic.utm.my

OUR REF.: UTM.K.38/13.11/1/4 Jld. 14 (99)

21st Mei 2015

MALAYSIA TOURISM CENTER
109, Jalan Ampang
50450 Kuala Lumpur
(Attn: **Ms. Noor Lunar bt Md Salleh**)
MATIC

Dear Sirs/Madam,

PERMISSION TO CONDUCT RESEARCH & SURVEY

STUDENT NAME : SIVAKUMAR PERTHEBAN
MATRIC NO. : PN113010

With reference to the above matter.

1. I am pleased to inform you that **Mr. Sivakumar Pertheban** is a student of Advanced Informatics School (UTM AIS), Universiti Teknologi Malaysia Kuala Lumpur.

2. For your information, he needs your permission to do research and collect data from you for research purposes. This research is important and required among students enrolled in the Doctor of Philosophy (Research) program at UTM AIS.

3. Should you have any enquiries please do not hesitate to call the undersigned or directly contact our office at 03-2180 5217.

Your cooperation is very much appreciated. Thank you.

' BERKHIDMAT UNTUK NEGARA'

Yours sincerely,

DR. ROSLINA BINTI IBRAHIM
Academic Manager (Research)
Advanced Informatics School (UTM AIS)
Universiti Teknologi Malaysia, Kuala Lumpur
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Appendix B Publication Conferences

Conferences	Title of the paper	Year
International Conference on Human Information Interaction and Retrieval	Investigating mobile social media users? Behaviours in tourism collaboration information seeking	2017
International Conferences on World Wide Web	Distilling information reliability and source trustworthiness from digital traces	2017
International Conference on Information and Communication Technology for Competitive Strategies	Factors affecting the adopting of ICT in hospitality & tourism industry	2016
International Conference on Web Search and Data Mining	Anticipating information needs based on check-in activity	2017
Asia-Pacific Web Conference	Credibility-based twitter social network analysis	2013
ACM international joint conference on Pervasive and Ubiquitous Computing	Experiences with a social travel information system	2013
International Conference on Digital Information and Communication Technology and It's Applications (DICTAP)	Semantic web E-Portal for tourism	2012
International IEEE Conference on Intelligent Transportation Systems (ITSC)	Analysis and modelling the effects of information accuracy on travellers behaviour	2011
International Joint Conference on Computer Science and Software Engineering	Nebular: A Sentiment classification system for the tourism business	2011
International Conference on Intelligent Systems Design and Applications (ISDA)	Personalized travel suggestions for tourism websites	2011
International Conference on User Science and Engineering	Online information sharing issues in website personalization	2010
International Conference on Software Engineering and Service	Filtering the Open-Source Information	2010
International Conference on Information and Multimedia Technology	A Travel Planning Optimization Under Energy And Time Constraints	2009

Appendix C Publication Source Journals

Journal	Title of the paper	Year
Technology Forecasting and Social Change	Improving travel decision support satisfaction with smart tourism technology: A framework of tourist elaboration likelihood and self-efficacy	2017
Tourism Management	The concept of smart tourism in the context of tourism information services	2017
	Understanding sustainability behaviour: The relationship between information acquisition, proactivity and performance	2017
	Yearly, monthly and weekly seasonality of tourism demand: A decomposition analysis	2017
	Analysis of tourism information Sources using a Mokken Scale perspective	2016
Information Management	Explaining travellers online information satisfaction: A complexity theory approach on information needs, barriers, sources and personal characteristics	2017
Telematic and Informatic	Consumers' acceptance of information and communications technology in tourism: A review	2016
Social and Behavioural Sciences	Measuring Service Quality in Tourism Industry	2016
Journal of Sustainable Tourism	Bridging the gap: grounded theory method, theory development and sustainable tourism research	2016
International Journal of Information Management	Make your travel smarter: Summarizing urban tourism information from massive blog data	2016
Journal of Travel & Tourism Marketing	The relevant of mobile tourism and information technology: an analysis of recent trends and future research directions	2016
	Evaluating of a Tourist Brochure	2005
	The impact of the Internet on Information Sources Portfolio	2007
	Comparison of Web Service Quality Between Online Travel Agencies and Online Travel Suppliers	2004
Current Issues in Tourism	Social network analysis in tourism Key issues in the implementation of sustainable tourism	2016 2013
Information Technology & Tourism	Future research issues in IT and tourism	2015
Computer in Human Behaviour	Comparing the attributes of online tourism information sources	2015
Telematic and Informatic	The use of social media in travel information search	2015

Journal	Title of the paper	Year
International Journal of Management Cases	ICT impact on tourism industry	2013
Transportation Research	The impact of travel information's accuracy on route-choice	2013
Annals of Tourism Research	Intelligent systems in tourism	2011
	Tourism research 2.0	2012
	Enabling access to tourism through information schemes?	2008
	Online Information Search - Vacation Planning Process	2006
Scandinavian Journal of Hospitality & Tourism	Trust and Involvement in Tourism Social Media and Web-Based Travel Information Sources	2013
Tourism Management Perspective	The tourism data gap: The utility of official tourism information for the hospitality and tourism industry	2013
	Tourist information search and destination choice in digital age	2012
Journal of Hospitality Marketing & Management	The accuracy of Tourism Forecasting and Data Characteristics: A Meta-Analytical Approach	2012
The Service Industries Journal	The usage of online tourist information sources in tourist information search : an exploratory study	2012
Information and Communication Technologies in Tourism	Affiliate Marketing in Tourism: Determinants of Consumers'	2011
Journal of Travel Research	The Trustworthiness of Online Channels for Experience and Goal Directed Search Tasks	2011
	A Framework of Search Engine Use for Travel Planning	2010
Service Business	User generated content: the use of blogs for tourism organisations and tourism consumers	2008
International Journal of Management	Impact of E-commerce on Travel and Tourism: An Historical Analysis	2009
Journal of Travel & Tourism Marketing	The Past, Present and Future Research of Online Information Search	2004
	Information Search Behaviour and Tourist Characteristics	2004
	The Impact of the Internet on Information Sources Portfolios	2007
Journal of Managing Service Quality	Mapping service quality in the tourism	2003
Journal of Transnational Management	Diffusion of Internet Technology in the Tourism Sector: An Empirical Study	2014

Appendix D Semi-Structured Questionnaire

Dear Respondents

There are many limitations to the current tourism information accuracy practices. In the current digital age, tourism related information is available without good practices of information accuracy assurance. The problems defined in this research were assessed based on current tourism related information and were expected to provide better and workable solutions towards accurate tourism information. The evaluated information accuracy practices in tourism could be used to overcome the accuracy issues pertaining to tourism information and to ease the tourism stakeholders' decision making capabilities. The proposed Tourism Information Accuracy Assessment (TIAA) framework could be used to act as a remedy in eliminating inaccurate information, increasing information quality and optimizing customer service and systematic procedures, thereby enabling the tourism stakeholders to make informed decisions. The interview sessions with the tourism stakeholders were able to provide valuable inputs and their feedback were taken into consideration in proposing a TIAA framework for the purpose of obtaining accurate tourism information.

This interview was conducted by Universiti Teknologi Malaysia's post graduate students. The main objective of this interview was to identify the limitations and to find out the preferences of participants in tourism related information accuracy.

We would be grateful if you could take a few minutes of your time to answer the questions below. The objective of this questionnaire is to improve the existing tourism information accuracy problems**.** All information given is strictly confidential. Thank you.

1. What is your age range and gender

a. { } 20 – 30 M F
b. { } 30 – 35 M F
c. { } 35 – 40 M F
d. { } more then 40 M F

2. Which of the following tourism services functionalities is most difficult to do?

a. { } Retrieving or gathering accurate tourism information
b. { } Browse for services or resources or accurate tourism information
c. { } Guides/information on pertaining tourism industry
d. { } Others: please specify_____

3. How would you grade the tourism services/organization/agencies in terms of sharing and providing accurate information?

a. { } Poor
b. { } Average
c. { } Good
d. { } Excellent

4. How do you grade the trustworthiness of tourism information ?

a. { } Poor
b. { } Average
c. { } Good
d. { } Excellent

5. Did tourism services/organization/agencies help you to ease efficiency in terms of accuracy of available information?

a. { } Yes
b. { } No

6. What is your satisfaction level towards tourism services/organization/agencies' information?

a. { } Poor
b. { } Average
c. { } Good
d. { } Excellent

7. How would you rate your confidence and satisfaction/trust level regarding accepting tourism information via social media or other conventional medium?

a. { } Poor
b. { } Average
c. { } Good
d. { } Excellent

8. Which of the following tools were used to gather tourism related information for your purpose? You may choose more than one answer.

a. { } World Wide Web
b { } Newspapers
c. { } Magazines
d. { } Others: please specify_____

9. How would you rate the performance of efficiency in tourism services/organization/agencies in terms of accurate tourism information dissemination?

a. { } Poor
b. { } Average
c. { } Good
d. { } Excellent

10. How did tourism services/organization/agencies' services, functions or resources guide you in retrieving accurate tourism information?

a. { } Poor
b. { } Average
c. { } Good
d. { } Excellent

11. How did you get information about the tourism data/statistics?
(More than one answer allowed)
Travel agency
Internet
Family/friends
Newspapers/magazines
Travel brochures
Travel guides
TV
Radio
Tourist fairs
Other:
.....

12. How did you get the accurate tourism information?
(More than one answer is allowed)
In person at a travel agency in your own country
By phone at a travel agency in your own country
Through the internet at a travel agency in your own country
In person at a travel agency
By phone at an accommodation
Through the internet at an accommodation
Through the internet at another place
Directly at the hotel
Other:
.....

13. Did your on hand tourism information meet the initial accuracy level of the information's main source?
Completely
For the greater part
Partly
Not really
Absolutely not
If the answer is " not really" or "absolutely not", please state your reason:
.....

14. Please evaluate the quality of the current tourism information :
    1: Poor
    2: Average
    3: Good
    4: Very Good
    5: Excellent

15. What is the first word that comes to mind when you intended to gather tourism related information?
    .....

16. Which factor would reduce your likelihood of trust in the tourism related information ?
    .....

17. In general, when you go to the tourism information centre, what is the first thing that you look for ? (More than one answer is allowed)

a. { } Maps
b. { } Brochures
c. { } Pictures of areas of attractions
d. { } Others, please specify

18. Which of the following is the main method in which you would prefer information to be presented to you (More than one answer is allowed)

a. { } Verbal and Written with brief description
b. { } Visual poster
c. { } Digital
d. { } Others, please specify
    ……

19. What are the three most important websites that you would use for tourism related information?
    .....

20. Please list three suggestions to increase information accuracy in tourism information
    .....

Appendix E Evaluation Checklist

Tourism Information Accuracy (IA) Evaluation Checklist

Checklist for problems, opportunities and directive identification uses IA practices for improvements in tourism.

PERFORMANCE Problems, Opportunities, and Directives
A. Throughput-- the amount of IA practices performed over some period of time.
B. Response time-- the average delay between practices or request and a response time to that practices or request.

INFORMATION (and Data) Problems, Opportunities, and Directives
A. Outputs

1. Lack of any information
2. Lack of necessary information
3. Lack of relevant information
4. Too much information -- "information overload"
5. Information that is not in a useful format
6. Information that is not accurate
7. Information that is difficult to produce
8. The information is not timely to its subsequent use

B. Inputs

1. Information is not captured
2. Information is not captured in time to be useful
3. Information is not accurately captured -- contains errors
4. Information is difficult to capture
5. Information is captured redundantly -- same data captured more than once
6. Too much information is captured
7. Illegal information is captured

C. Stored data

1. Information is stored redundantly in multiple files and/or databases
2. Information data is not accurate
3. Information is not secure to accident or vandalism (optional)
4. Information is not well organized
5. Information is not flexible -- not easy to meet new information needs from stored data
6. Information is not accessible

CONTROL (and Security) Problems, Opportunities, and Directives
A. Too little security or control

1. Input data is not adequately edited
2. Ethics are breached on data or information : refers to data or information that is obtained by unauthorized people
3. Redundantly stored information is inconsistent in different files or databases
4. Data privacy regulations or guidelines are being (or can be) violated
6. Processing errors are occurring (either by people, machines, or software)
7. Decision - making errors are occurring

B. Too much control or security
    1. Bureaucratic red tape slows the system
    2. Controls inconvenience customers or employees
    3. Excessive controls cause processing delays

EFFICIENCY Problems, Opportunities, and Directives
A. People, machines, or computers waste time
    1. Information is redundantly input or copied
    2. Information is redundantly processed
    3. Information is redundantly generated
B. People, machines, or computers waste materials and supplies
C. The effort required for tasks is excessive
D. Materials required for tasks is excessive

SERVICE Problems, Opportunities, and Directives
A. The practices produce inaccurate results
B. The practices produce inconsistent results
C. The practices produce unreliable results
D. The practices are not easy to learn
E. The practices are not easy to use
F. The practices are awkward to use
G. The practices are inflexible to new or exceptional situations
H. The practices are inflexible to change
I. The practices are incompatible with other practices
J. The practices are not coordinated with other practices

Target Category of evaluation

Target Category	Evaluation Criteria	Document Required/Reviewed/source of evidence
Tourism information formulation/ processing	Information coverage (source & content)	Information references Information source coverage Existent of procedures Information Error mismatch Consistency of error Consistency of imputation
	Information capture (collect & gathering)	
	Information or document currency (date)	
Tourism information management	Comparability (historical changes – date)	Information validation Information processing Information storage Information currency Internal accuracy control Information standard Information originality/Information changes audit trails Information usage analysis/User feedback

Appendix F Sample of Semi-Structured Interview Script

Respondent	Organization / Company	Position	Date of interview	Interview Start time	Interview End time
R2	Malaysia Tourist Information Centre (MATIC)	Tourism Officer	Wednesday, 5 August 2015	3.00pm	4.30pm

Interviewer :
Good afternoon Mr. (R2), my name is (interviewer name) and I am Phd candidate perusing my studies at UTM AIS KL Campus. The purpose of the interview is to get information on Information Accuracy practices in Tourism Business. This interview information will be valuable inputs towards to us in proposing a Framework Information Accuracy Assessment for tourism. Without further delay let us begin our interview session.

Q1. To start the interview can you please share with me your background in servicing Malaysia Tourist Information Centre (MATIC)?

R2:
My name (R2) and I am Tourism Officer in MATIC. I have been working with MATIC for 5 years. I deals with the tourism related information in MATIC.

Interviewer:
The main objective of this interview is to identify the existing practice of Information Accuracy in Tourism Business and how accurate Tourism Business information disseminated to tourism stakeholders.
Q2. Can you share what types of Tourism Business related information is made available from your organization?

R2:
MATIC is normally to provide travelling information on accommodation information, transportation information and attraction places information. In addition to this we do provide other services such as touring guide.

Interviewer:
Q3. Can you explain how the tourism business information being gathered in your organization for information dissemination. Having said the information gathered and furnished by Tourism Malaysia to MATIC?

R2 :
We normally received information from Tourism Malaysia and tourism industry players and they furnished the tourism information to MATIC. The modes of received information are brochures, pamphlets and any printed materials. These information's are made available and shared thru our web sites and hard copy do available in our information centre.
Interviewer:

Q4. What the types of inquires does MATIC handle at MATIC centres?
R2 :
80% inquiries of attraction places, we normally provide brochures, template, web site address, hrhrhrhrhrh, mmmm and advise them to look at the given materials and visit web sites

Interviewer:
Q5. Does MATIC evaluate or validate the accuracy level of received information before disseminate this information to public?

R2 :
Not at all. MATIC only the organization to advertise the received information and FYI the main source of information is Tourism Malaysia.

Interviewer:
Q6. Do you encounter any in-accurate information?

R2 :
Yes, Boucher's published in 2013, we give to tourist in 2015, price and other information provided was not up to date and in accurate. I think there will vast changes in the tourism information if you compared the information changes in the year 2013 vs 2015.

Interviewer:
Q7. How frequent do you received information from tourism Malaysia and industry players?

R2 :
Monthly thru emails, printed materials, newsletters and many more…

Interviewer:
Q8. Do you have any filtering system or processes to see any in- accurate of information based on received information from industry player or Tourism Malaysia?

R2 :
No, No we don't have that. We just receive the information and display it for travellers or tourist view. Normally the information, received we just store and display and filtering is very brief and FYI for the travellers still go to www to check the available information accuracy. That's all.

Interviewer:
Q9. Can you rate the efficiency of Tourism Malaysia based on the information supplied to you, Average, Poor or Excellent?

R2 :
No comments but Average, May be, I am not sure!!! Information not up to date. i.e annual events, information is not accurate. This is not my role to look into. Sometime the tourism related websites play very important role to disseminate tourism information. The tourism players need to ensure their websites are updated with correct tourism business information to avoid any information misleading or in-correct information.
Interviewer:

Q10. Does MATIC discuss this Tourism Malaysia on this in accurate information issue?

R2 :
Last year, we had discussion about this in accurate information issues but not sure what is the outcome.

Interviewer:
Q11. When found out the inaccurate or misleading information, what is MATIC action? And what is your opinion on the information credential if this problem was not able to address with solution?

R2 :
Email to Tourism Malaysia to inform them about this in accuracy of information problem and this based on add-hoc basis and there is no structure methods. Every state in Malaysia we have the MATIC and this normally we do. MATIC is under MOTAC and the travelling agencies are under Tourism Malaysia. So MOTAC and Tourism Malaysia need to advise us what need to be done if any issues in tourism business information. If the information problem not being solved, I think we will have issue on the tourism information credibility, people may not trust our information.

Interviewer:
Q12. What are the different between MOTAC and Tourism Malaysia?

R2 :
Tourism Malaysia does the promotion activities about Malaysia and Tourism Malaysia staffs are more than MOTAC. Tourism Malaysia is main body that play important role in promoting tourism industry in Malaysia.

Interviewer:
Q13. Do you receive any feedback from tourist after their post visit?

R2 :
Yes, there is a feedback form for this and normally the feedbacks are positive. “Presented sample of feedback form”.

Interviewer:
Q14. Is there are any factors the travellers that fail to trust information?

R2 :
Normally they trust our information, they have no choice and we need to make sure the information's are correct and accurate.

Interviewer:
Q15. In your experience which of the tourism functionality like information, information dissemination, information structure and etc more difficult part in dealing in tourism business?

R2:
I think getting information and transferring to tourist or travellers bit difficult. Since MATIC is not the owner of the given information, we trust information that what we received. Hope for the best.

Interviewer:
Q16. How does MATIC disseminate the tourism related information?

R2 :
Thru web sites and printed digital ways, information, Tourism Malaysia also does the marketing part here to disseminate information.

Interviewer:
Q17. Do you have processes, diagram of tourism business information dissemination?

R2 :
No, we just receive the information and disseminate to travellers or tourist. That's it.

Interviewer:
Q18. Is there any validation or verification process that normally you do upon receive of tourism related information?

R2:
No, no as I am aware.
Interviewer:
Q19. Normally when you receive tourism related information what is your action and how do you address of tourism related information complexity?

R2 :
To display to users, we share and list and display the information. As I said MATIC is not the owner of the tourism information, we are just disseminating to travellers or tourist. If complexity than it is too technical for me answer. Yes, the tourism information's are complex. Information Accuracy, we do not produce information so I am not sure on this complexity information

Interviewer:
Q20. What are the rules you apply when you disseminate tourism business information via social media like Facebook or twitter?

R2 :
Rules, is there any rules, I am not sure, as I know no rules. We just disseminate what we have.

Interviewer:
Q21. As you aware of this purpose of the interview and to propose end product. If you were given opportunity to participate in framework testing, do like to do so?

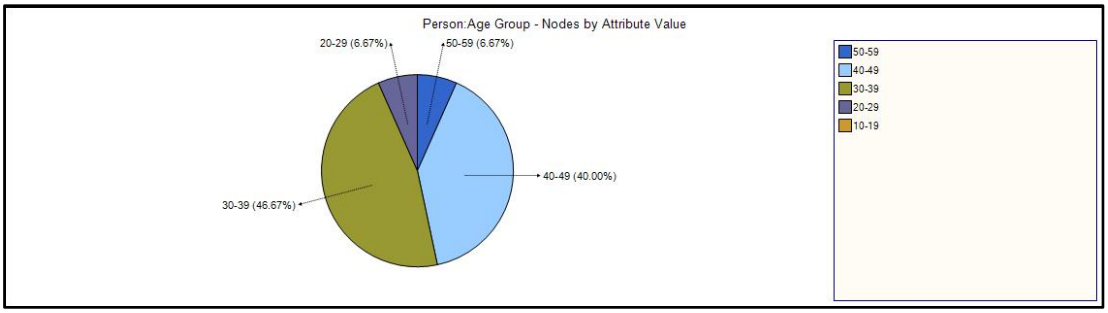
R2 :
Sure, good I will give my support.

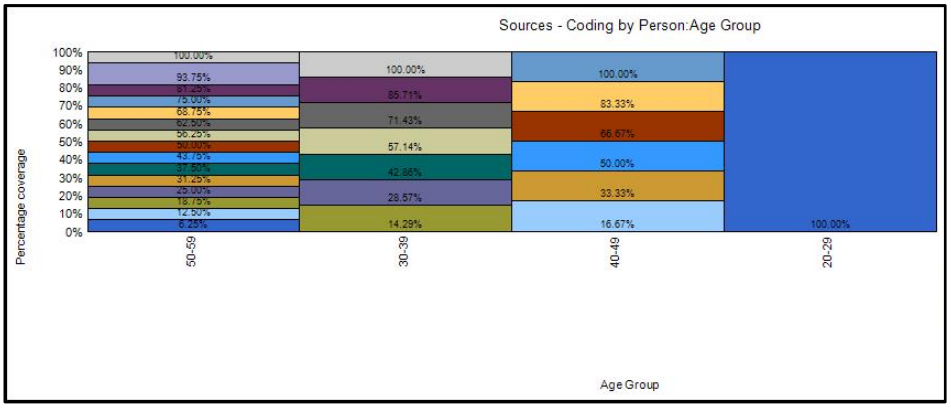
Interviewer:
Thank you for your time and valuable feedback, hope to meet you soon

R2 :
Thanks you, bye.

Appendix G NVIVO 10 Analysis Report

Respondents Profiling and Demography



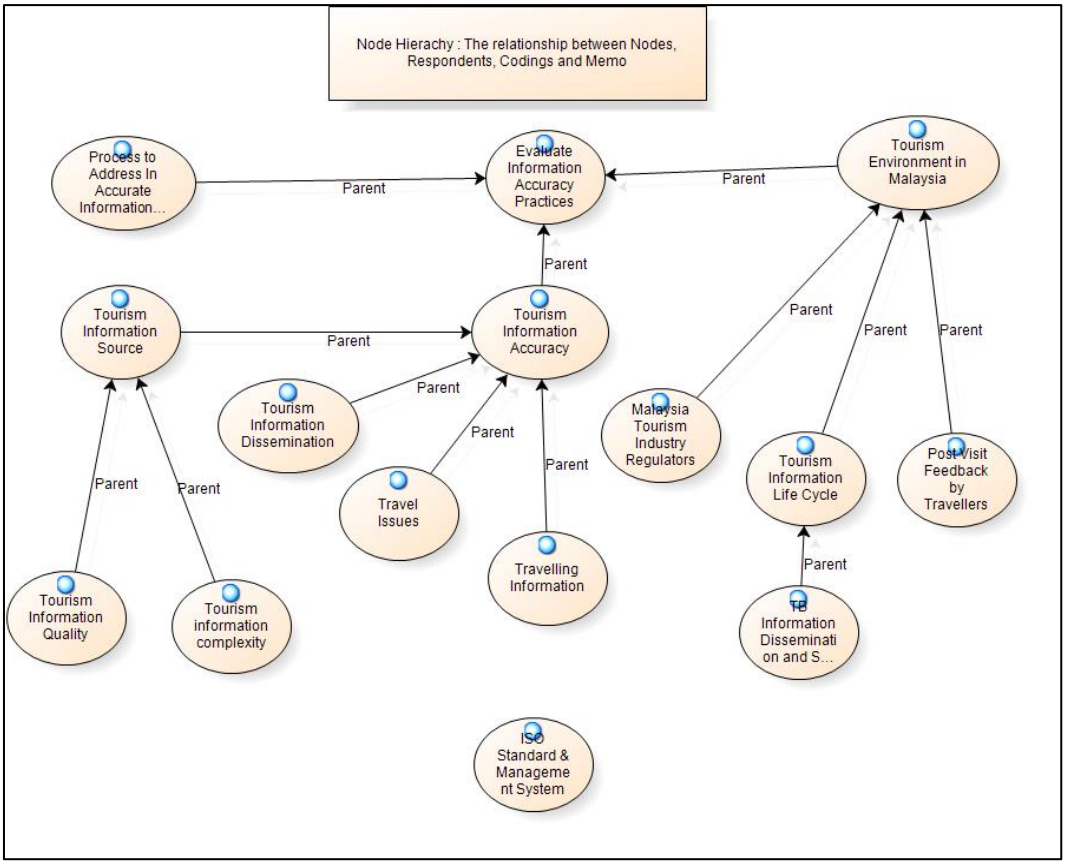


Summary of Nodes Analysis

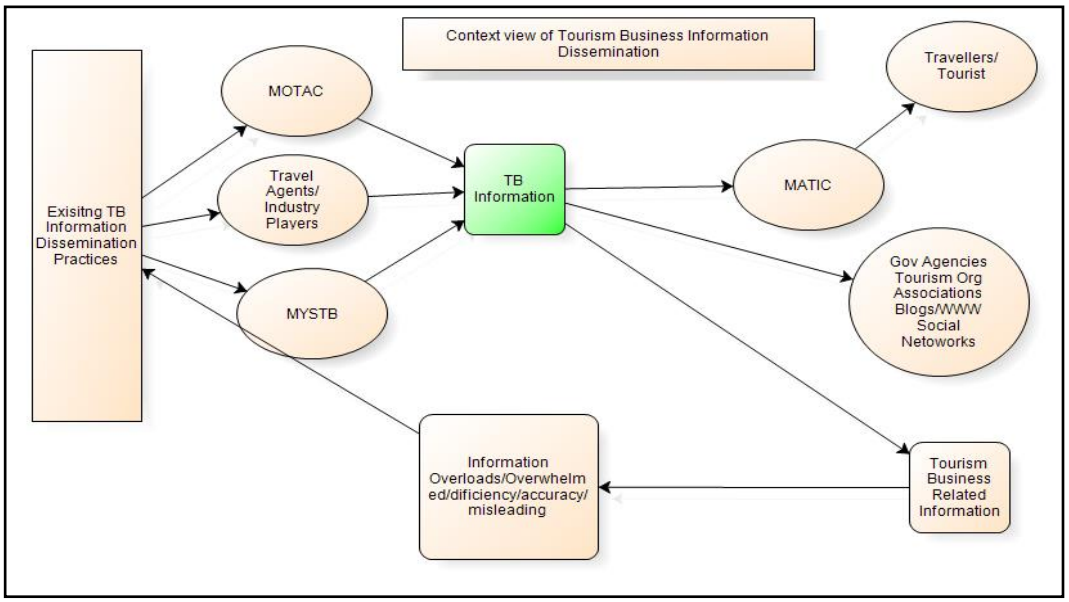
Nodes

Name	Sources	References
Demography Data	25	56
Demography Data Back Up	0	0
Evaluate Information Accuracy Practices	24	220
Process to Address In Accurate Information Issues	19	100
Tourism Environment in Malaysia	3	12
Malaysia Tourism Industry Regulators	15	38
Post Visit Feedback by Travellers	5	11
Tourism Information Life Cycle	5	16
TB Information Dissemination and Search Framework	1	1
Tourism Information Accuracy	21	100
Tourism Information Dissemination	19	67
Tourism Information Source	16	59
Tourism information complexity	15	44
Tourism Information Quality	17	61
Travel Issues	5	13
Travelling Information	15	63
ISO Standard & Management System	1	12

Nodes Hierarchy



Context view of Tourism Business (TB) information



Appendix H Comparison and Memoing Details

Information Accuracy Factors	Information Accuracy Categorization	Characteristics	Re-Categorization	Reason of Modification
Resources	Tourism institution environment	Adequacy of resources	-	-
Professional independence	Information environment	Integrity constrains	Tourism institution environment	Information providers producing information are independent or dependent from other tourism policy, regulatory or administrative departments and bodies and potential conflict of interest
Information for business	Information for organization needs	Information free of error purpose of information	Tourism institutional environment	Information for tourism well defined with fairness and objective of the information to be presented
Commitment	Quality	Procedures, processes and facilities	Quality commitment	Procedures, processes and required resources to assist the internal quality measures
Information quality	Quality dimensions	information quality characteristics	Information environment	Information with quality characteristics and free of error

Appendix I Tourism Information Accuracy Assessment Checklist

Instructions on how to complete the Tourism Information Accuracy Assessments Checklist
1.With the Information Accuracy Assessment Framework, the gathering of tourism information and the assessments of the collected tourism information will be conducted as per the information accuracy assessment (Preliminary, Administration, Measurement and Verification). 2. Assessors are recommended to perform the information assessments in sequential order by following the information accuracy assessments and the assessments of each characteristics. 3. The gathered tourism information will be assessed using the information accuracy assessment checklist and rated as met (Yes), not met (No) or partially met (P). 4. The measurement values for the assessments are rated in the range of 1 for (Yes), 0 for (No) and 0.5 for (P). 5. Assessors are only allowed to select or rate the assessments by selecting one measurement value per assessment. 6. Assessors are to complete all the assessments for tabulation of final information accuracy score, information accuracy rate (%), information accuracy classification and information accuracy level. Please take note of the supporting documents upload requirement because this is optional. Upon completion of the assessment exercise, assessors can view the summary report. All information accuracy scores have been automated tabulation purpose.

	Characteristics	Assessments	Assessment Rating			*Remarks/ Document Source	Assessment Benchmark	Full Score	Doc.Uploads Required (optional)
			Yes (1)	No (0)	Partial (0.5)				
Preliminary	Tourism Information Capture and Collection	1. Existent of information gathering & submission procedures.				*Existent of procedures/documentation for information gathering and submission.	60%	1	Yes
		2. Existent of accuracy control measures by information providers.				*Measures taken to ensure information is recorded properly, existent of procedures of measures to monitor or to take corrective action to address in-accuracy to enhance information capture at the information provider level.	60%	1	Yes
	Tourism Information Coverage	3. References information or source clearly stated.				*Information content or source references are explicitly stated in all releases of tourism information.	60%	1	Yes
		4. Availability of information source documentation.				*Historical information of information source or content (preferably 1-6 months records).	60%	1	Yes
Total Score			0						
Average information accuracy rate (%)			0%						
Result interpretation and classification			Poor						
Information accuracy level			LEVEL 1						

	Characteristics	Assessments	Assessment Rating			*Remarks/ Document Source	Assessment Rating Benchmark	Full Score	Doc.Uploads Required (optional)
			Yes (1)	No (0)	Partial (0.5)				
Administration	Tourism Information Processing	5. Documentation of tourism information processing activities maintained.				*Existent of procedures for information processing, information regarding ongoing review and ability to produce timely info. and updates of ongoing review process.	60%	1	Yes
		6. Raw tourism information saved and secured location.				*Existent of procedures for information saving and storing and prevented save keeping approach.	60%	1	Yes
	Tourism Information Edit and Imputation	7. Information edit and imputation rules exist and applied consistently.				*Information validity check versus the original information source or content and any authority or compliance concerns exist. Procedure for follow-up invalid information for correction with information providers. *Information origination or human action to originate "free of error" information to observe information consistency.	60%	1	Yes
		8. Consistency of imputation with edit rule.					60%	1	-
		Total Score	0						
		Average information accuracy rate (%)	0%						
		Result interpretation and classification	Poor						
		Information accuracy level	LEVEL 1						

	Characteristics	Assessments	Assessment Rating			*Remarks/ Document Source	Assessment Rating Benchmark	Full Score	Doc.Uploads Required (optional)
			Yes (1)	No (0)	Partial (0.5)				
Measurment	Tourism Inaccurate Information Measurement	9. None of cases/ No ("0") error of information mismatch.				*Cases of information inaccurate information thru comparison made with information source/content with existing information. *Frequency of errors, likelihood of this occurs.	60%	1	-
	Tourism information Currency at the Time of Release	10. Differences of date of actual information release stated.				*Existent of procedures for information plan and actual release date.	60%	1	Yes
		11. The official date of information release was recorded before release.					60%	1	-
		12. The official date of information release was met compared with the agreed date (if any).					60%	1	-
		13. Information processing regularity recorded to improve information release timelines.					60%	1	-
	Tourism Information Documentation Currency	14. Availability of information accuracy document.				*Existent of information accuracy guide document as the reference.	60%	1	Yes
		15. Availability of tourism information/document released date.				*Existent of procedures for information/document plan and actual release date.	60%	1	Yes
		Total Score	0						
		Average information accuracy rate (%)	0%						
		Result interpretation and classification	Poor						
		Information accuracy level	LEVEL 1						

	Characteristics	Assessments	Assessment Rating			*Remarks/ Document Source	Assessment Rating Benchmark	Full Score	Doc.Uploads Required (optional)
			Yes (1)	No (0)	Partial (0.5)				
Verification	Tourism Information Standard	16. None of the information was excluded or rejected compared to information quality characteristics.				*Excluded or rejected information that fails to meet information quality characteristics.	60%	1	-
		17. Information source and content verified and compared with actual information source and content for accuracy.				*Comparison of source of information or content with existing information. Number of invalid information records (if any)	60%	1	-
		18. No ("0") existent of invalid information records.					60%	1	-
		19. Information conformity with information quality characteristics.				* Tourism information that meet information quality characteristics.	60%	1	-
	Tourism Information Standardization	20. Information finest level or completeness of information.				*Completeness of information and confirmation procedures.	60%	1	-
		21. Accessible of information originality/updates				*Final information and confirmation procedures.	60%	1	Yes
	Tourism Information Historical Comparability	22. Information historical changes documentation exists and accessible.				*Historical information of information source or content (preferably 1-6 months records).	60%	1	Yes
		23. Trend analysis to examine information changes is available and conducted.					60%	1	Yes
	Tourism Info. Accessibility & Adaptability	24. Information modification traceability exists and modification has been made according to the information needs.				*Historical information of information source or content (preferably 1-6 months records) and information/source modification procedures and needs existent.	60%	1	Yes
		25. Final information is made available as planned.				*Tourism information final release copy.	60%	1	Yes
		26. Mechanisms are in place to keep tourism stakeholders informed of developments in tourism information field.				*Existent of procedures or practices to inform/update tourism stakeholders on tourism related information and development.	60%	1	Yes
	Tourism Information Value/ Monitoring	27. Information gap able to trace.				*Existent of procedures for information gap	60%	1	Yes
		28. Information usage monitored.				*User feedbacks or information evaluation report or information climate survey report.	60%	1	Yes
		29. Assessment of user satisfaction on tourism information available.					60%	1	Yes
		30. Verification checks of information are done and no invalid information is flagged.				*Final information and confirmation procedures.	60%	1	Yes
		Total Score	0						
		Average information accuracy rate (%)	0%						
		Result interpretation and classification	Poor						
		Information accuracy level	LEVEL 1						

Overall Result Analysis and Interpretation				
Information Accuracy	Information Accuracy Assessments			
Assessment Score	Preliminary	Administration	Measurement	Verification
Total Score	0	0	0	0
Average information accuracy rate (%)	0%	0%	0%	0%
Result interpretation and classification	Poor	Poor	Poor	Poor
Information accuracy level	LEVEL 1	LEVEL 1	LEVEL 1	LEVEL 1
Total average score (%)	0%			
Overall information accuracy classification and level	Poor LEVEL 1			
Recommendation	Information Rejection			

Final Score					
Information Accuracy Assessments	Maximum Score	Score Obtained	Percentage	Info.Accuracy Classification	Information Accuracy Level
Preliminary	4	0	0%	Poor	LEVEL 1
Administration	4	0	0%	Poor	LEVEL 1
Measurement	7	0	0%	Poor	LEVEL 1
Verification	15	0	0%	Poor	LEVEL 1

Information Accuracy Reference Table					
Information Accuracy Rate (%)	Kappa Statistic	Kappa Agreement	Suggested Rating of Information Accuracy Classifications	Information Accuracy Level	Description Information Accuracy Level
80% to 100%	0.80 to 1.00	Very good	Very good	Level 5	The information accuracy (Level 5, Very Good) is the level meets the information accuracy measures, tourism information, organizational, business and data quality characteristics. The assessed tourism information resources in tourism institution is well presented and managed in terms of documentation requirements, information records management and information records traceability. The institutional quality commitment, responsibility and adequacy of information management procedures well observed and managed systematically.
60% to 80%	0.60 to 0.80	Good	Good	Level 4	The information accuracy (Level 4, Good), is the level meets the information accuracy and consistent with the accuracy measures. There is no a major concern or major none-conformity in terms of tourism information, organizational, business and data quality characteristics in producing accurate information.
40% to 60%	0.40 to 0.60	Moderate	Moderate	Level 3	The information accuracy (Level 3, Moderate), the accuracy measures are not well performed and managed at a sensible level with insufficient evidences of tourism information, organizational, business and data quality characteristics in producing accurate information.
20% to 40%	0.20 to 0.40	Fair	Fair	Level 2	The information accuracy (Level 2, Fair), none existence of evidences of information accuracy measures and tourism information, organizational, business and data quality characteristics are not available and not tracked systematically in producing accurate information.
Less than 20%	Less than 0.20	Poor	Poor	Level 1	The information accuracy (Level 1, Poor), there is a general failure to accomplish the tourism information, organizational, business and data quality characteristics. There are insignificant or no certainly existent of any evidences to produce accurate information measures. Detection of number of major concerns or major none-conformity in producing accurate information. There is a major breakdown in generating accurate information.

Appendix J Expert's Review Evaluation Form

Expert Review

Tourism Information Accuracy Assessment Framework (TIAA) Usability Assessment

The objective of this survey is to seek information and recommendations from tourism information experts in performing the Tourism Information Accuracy Assessment Framework's (TIAA) usability assessment and to suggest the framework's improvements (if any).

Expert's Detail	
Name	
Age	
Gender	
Current position	
Years of service	
Job specialization	
Experience in information management	
E-mail address	
Name of Ministry/Organization	
Ministry/Organization URL address	
Telephone number	
Fax number	

Researcher
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Instruction

Based on the options (Likert-type scale) given below, please fill in the likelihood of the usability potential risk of Tourism Information Accuracy Assessment Framework (TIAA). Based on your expertise and the potential risk given i.e. the likelihood of these risks occuring, please suggest the mitigation plan that could be implemented in addresing the identiifed risk.

Likert-type scale					
Point	1	2	3	4	5
Option	Very Low	Low	Average	High	Very High

Likert-type scale					
Point	1	2	3	4	5
Option	Very Low	Low	Average	High	Very High

No	Assessment	Likelihood of incidence	Suggested Mitigation Plan	Comment /Remark
A 1	**SUITABILITY** *It is the degree to which the TIAA framework assists the tourism information providers in determining the information accuracy level.*			
2	High percentage of determining information accuracy levels			
3	Appropriateness of information accuracy levels and measurement			
4	Complete and sufficient information accuracy assessments depth and categories to determine the information accuracy levels			
5	Information accuracy relevancy and needs with the developed information accuracy assessments categories and details			
6	Ability of the TIAA framework to adapt to the mass and complex tourism information changes			

No	Assessment	Likelihood of incidence	Suggested Mitigation Plan	Comment /Remark
B 7	**EFFICIENCY** *The evaluation of the TIAA framework in accurately and successfully meeting the tourism institutional and information environments requirements.*			
8	Free of error information and result produced			
9	Relevancy of information accuracy assessments in determining the information accuracy levels			
10	Minimum execution time of information accuracy assessments or lacks of time constraints of information accuracy assessment categories implementation			
11	High requirements and adequacy of resources required for implementation of TIAA framework			

No	Assessment	Likelihood of incidence	Suggested Mitigation Plan	Comment /Remark
C 12	**SATISFACTION** *It is defined as the extent to which the developed TIAA framework is accurately producing the result and gaining trust among the information providers in implementing the framework.*			
13	The TIAA framework is likely preferred to be implemented by the information providers			
14	Good depth in information accuracy assessments details			
15	The developed information accuracy assessments provides professional independence such as the extent to which the information providers producing information is independent or dependent from other tourism policies, regulatory or administrative departments and bodies and potential conflict of interest			
16	Trust with TIAA framework			
17	Enthusiasm by the information providers in implementing the TIAA framework			
18	The TIAA framework is able to fulfil the tourism institutional and information needs			
19	The TIAA framework is well structured in terms of determining if information accuracy levels and in line with the objective and aim of tourism institutional and information requirements			

No	Assessment	Likelihood of incidence	Suggested Mitigation Plan	Comment /Remark
D 20	**ADAPTABILITY** *It is defined as the intensity level to which the TIAA framework has clarity, is easy to understand, easy to be implemented in tourism institutional and information environments*			
21	Clarity in information accuracy assessments			
22	Complexity low in performing information accuracy assessments and result interpretation			
23	Able to understand the TIAA framework			
24	Easy to learn and implement the TIAA framework with minimum time constraints			
25	Able to follow the information accuracy assessments of the framework			
26	Complete and adequate documentation			
27	Sufficient support in implementing the TIAA framework			

No	Assessment	Likelihood of incidence	Suggested Mitigation Plan	Comment /Remark
E 28	**SAFETY** *It is defined as the degree to which risk/damage derived from the use of the TIAA framework can be avoided.*			
29	Lack of information traceability issues (loss of information/data) in implementing the TIAA framework			
30	Low vulnerability threat of information accuracy determination			
31	Low risk of existing tourism institutional and information accuracy assessment or evaluation methodology failure			
32	Low risk of TIAA framework implementation failure			
33	Tourism institutional and information environment not prone to danger in terms of information management (information confidentiality and quality commitment)			
34	Low percentage of change in working culture and environment of existing information management system			

Thank You

Appendix K Sample of Expert's Review Assessment

Expert Review

Tourism Information Accuracy Assessment Framework (TIAA) Usability Assessment

The objective of this survey is to seek information and recommendations from tourism information experts in performing the Tourism Information Accuracy Assessment Framework's (TIAA) usability assessment and to suggest the framework's improvements (if any).

Expert's Detail	
Name	R2
Age	Not specified
Gender	Female
Current position	Senior Assistant Secretary
Years of service	7 Years
Job specialization	Tourism Policy & International Affairs Division
Experience in information management	Yes
E-mail address	vvvvv@motac.gov.my
Name of Ministry/Organization	Ministry of Tourism and Culture Malaysia
Ministry/Organization URL address	http://www.motac.gov.my
Telephone number	603 8891 7000/GL
Fax number	603 8891 7365

Researcher
Sivakumar Pertheban
Universiti Teknologi Malaysia (UTM), Kuala Lumpur
sivakumar84972709@gmail.com
012-686 1900

Instruction : Based on the options (Likert-type scale) given below, please fill in the likelihood of the usability potential risk of Tourism Information Accuracy Assessment Framework (TIAA). Based on your expertise and the potential risk given i.e. the likelihood of these risks occuring, please suggest the mitigation plan that could be implemented in addresing the identiifed risk.

Likert-type scale					
Point	1	2	3	4	5
Option	Very Low	Low	Average	High	Very High

No	Assessment	Likelihood of incidence	Suggested Mitigation Plan	Comment /Remark
A 1	**SUITABILITY** *It is the degree to which the TIAA framework assists the tourism information providers in determining the information accuracy level.*	2	Provide clear terminologies & cite examples. Indication to whom and how information providers can disseminate the accurate information.	Generally the suitability of this framework in tourism environment is at average level.
2	High percentage of determining information accuracy levels	3	To precisely indicate the types of information and how to determine the information accuracy levels. Could consider to whom the accurate information to be disseminated or how the process of accurate information dissemination in tourism environment.	With the information accuracy assessment checklist, the % for determining information accuracy level might effective.
3	Appropriateness of information accuracy levels and measurement	2	-	-
4	Complete and insufficient information accuracy assessments depth and categories to determine the information accuracy levels	2	-	Good depth of accuracy assessments with information accuracy assessment checklist.
5	Information accuracy relevancy and needs with the developed information accuracy assessments categories and details	2	This need to be improved as the accuracy relevancy suggested to be in line with tourism information and information provider's needs.	Can be improved.
6	Ability of the TIAA framework to adapt to the mass and complex tourism information changes	3	With global information age, mass information and complexity is the area need to be addressed.	The information accuracy assessment checklist can provide a guide in addressing mass and complex tourism information.

No	Assessment	Likelihood of incidence	Suggested Mitigation Plan	Comment /Remark
B 7	**EFFICIENCY** *The evaluation of the TIAA framework in accurately and successfully meeting the tourism institutional and information environments requirements*	3	Tourism information requirements need to clearly identify.	The requirements of the framework can be improved.
8	Free of error information and result produced	3	Structurally not assured. Able to produce the result.	-
9	Relevancy of information accuracy assessments in determining the information accuracy levels	3	-	-
10	Minimum execution time of information accuracy assessments or lacks of time constraints of information accuracy assessment categories implementation	3	Very procedural execution, this may be addressed by introducing none procedural methods.	Yes, need longer time to decide the information accuracy
11	High requirements and adequacy of resources required for implementation of TIAA framework	3	-	-

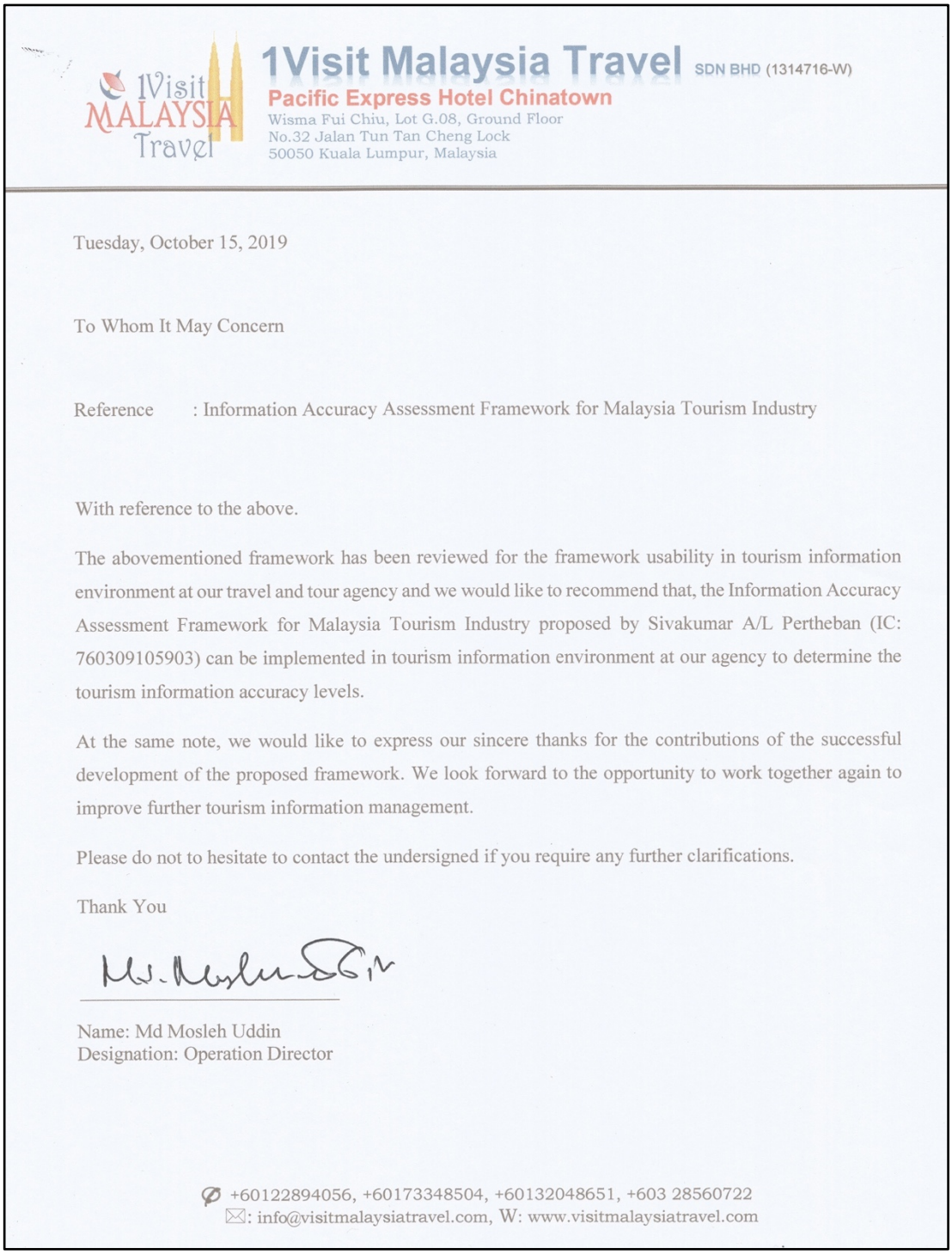
No	Assessment	Likelihood of incidence	Suggested Mitigation Plan	Comment /Remark
C 12	**SATISFACTION** *It is defined as the extent to which the developed TIAA framework is accurately producing the result and gaining trust among the information providers in implementing the framework.*	3	-	Can be implemented with changes.
13	The TIAA framework is likely preferred to be implemented by the information providers	3	Depending on the flexibility for the f/w that allow some changed or customizations to be integrated.	-
14	Good depth in information accuracy assessments details	3	Refer to (point 10)	-
15	The developed information accuracy assessments provide professional independence such as the extent to which the information providers producing information is independent or dependent from other tourism policies, regulatory or administrative departments and bodies and potential conflict of interest	4	This need to be in line with policy matters suggestion to review the f/w with existing policy	-
16	Trust with TIAA framework	3	-	-
17	Enthusiasm by the information providers in implementing the TIAA framework	3	Requires an authoritative body to promote this.	Need interested parties get involve.
18	The TIAA framework is able to fulfil the tourism institutional and information needs	3	-	Able to introduce a note of clarity when deal with tourism information.
19	The TIAA framework is well structured in terms of determining if information accuracy levels and in line with the objective and aim of tourism institutional and information requirements	3	-	Agreed, with information accuracy assessment checklist, the f/w can be implemented.

No	Assessment	Likelihood of incidence	Suggested Mitigation Plan	Comment /Remark
D 20	**ADAPTABILITY** *It is defined as the intensity level to which the TIAA framework has clarity, is easy to understand, easy to be implemented in tourism institutional and information environments*	3	Feasibility specially in the fast pace world we are living in now where quick access to information is of utmost priority.	Information Accuracy Assessments Checklist can be applied to determine the information accuracy.
21	Clarity in information accuracy assessments	3	Refer to (point 15)	-
22	Complexity low in performing information accuracy assessments and result interpretation	3	-	-
23	Able to understand the TIAA framework	4	Provide clear terminologies & cite examples	-
24	Easy to learn and implement the TIAA framework with minimum time constraints	3	Refer to point (D)	-
25	Able to follow the information accuracy assessments of the framework	2	-	-
26	Complete and adequate documentation	3	-	-
27	Sufficient support in implementing the TIAA framework	3	-	This is depends on the information providers and how they will accept this framework and implement. Overall this framework can be considered by each tourism information providers to generate accurate information.

No	Assessment	Likelihood of incidence	Suggested Mitigation Plan	Comment /Remark
E 28	**SAFETY** *It is defined as the degree to which risk/damage derived from the use of the TIAA framework can be avoided.*	3	-	No issue
29	Lack of information traceability issues (loss of information/data) in implementing the TIAA framework	3	-	-
30	Low vulnerability threat of information accuracy determination	3	-	Clear
31	Low risk of existing tourism institutional and information accuracy assessment or evaluation methodology failure	3	-	Not really, this f/w provide certain degree of clarity of tourism information accuracy levels
32	Low risk of TIAA framework implementation failure	3	-	-
33	Tourism institutional and information environment not prone to danger in terms of information management (information confidentiality and quality commitment)	2	-	-
34	Low percentage of change in working culture and environment of existing information management system	2	-	-

Thank You

Appendix L Proposed Framework Recommendation Letter from Tour and Travel Agency



1Visit Malaysia Travel SDN BHD (1314716-W)
Pacific Express Hotel Chinatown
Wisma Fui Chiu, Lot G.08, Ground Floor
No.32 Jalan Tun Tan Cheng Lock
50050 Kuala Lumpur, Malaysia

Tuesday, October 15, 2019

To Whom It May Concern

Reference : Information Accuracy Assessment Framework for Malaysia Tourism Industry

With reference to the above.

The abovementioned framework has been reviewed for the framework usability in tourism information environment at our travel and tour agency and we would like to recommend that, the Information Accuracy Assessment Framework for Malaysia Tourism Industry proposed by Sivakumar A/L Pertheban (IC: 760309105903) can be implemented in tourism information environment at our agency to determine the tourism information accuracy levels.

At the same note, we would like to express our sincere thanks for the contributions of the successful development of the proposed framework. We look forward to the opportunity to work together again to improve further tourism information management.

Please do not to hesitate to contact the undersigned if you require any further clarifications.

Thank You

Name: Md Mosleh Uddin
Designation: Operation Director

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LIST OF PUBLICATIONS

Indexed Journal

1. **Sivakumar Pertheban**, Ganthan Narayana Samy and Bharanidharan Shanmugam (2019). 'A Systematic Literature Review: Information accuracy practices in tourism'. *Journal of Quality Assurance in Hospitality & Tourism*, 20 (1), 1-30. https://doi.org/10.1080/1528008X.2018.1563016 **(Indexed by ISI).**

Non-Indexed Journal

1. **Sivakumar Pertheban**, Mohd Naz'ri Mahrin, and Bharanidharan Shanmugam (2015). 'A framework for Information Accuracy (IA) assurance practices in Tourism Business (TB)'. *Journal of Advances in Information Technology*, 6 (4), pp. 207-211. https://doi: 10.12720/Jait.6.4.207-211.

Indexed Conference Proceedings

1. **Sivakumar Pertheban**, Ganthan Narayana Samy, Bharanidharan Shanmugam, Sundresan Perumal (2018). A Proposed Tourism Information Accuracy Assessment (TIAA) Framework. In *International Conference of Reliable Information and Communication Technology* (pp. 831-839). Springer, Cham. https://doi.org/10.1007/978-3-319-99007-1_77 **(Indexed by SCOPUS).**

Book Chapter

1. **Sivakumar Pertheban** and Mohd Naz'ri Mahrin (2016) *Information Accuracy (IA) Framework For Tourism Business (TB) Information Dissemination*. *Ecotourism Potentials in Malaysia*, pp 171-190.