

E-communication and Tourist Loyalty in Travel Business: A Case Study of Nakhon Pathom, Thailand

Supaksiri Prakanchaen^a, ^aTourism Management, International College, Suan Sunandha Rajabhat University, Thailand, Email: supaksiri.pr@ssru.ac.th

This study aims to examine which factors in electronic communication (e-communication) positively affect a tourist's loyalty toward travel organisations. The sampling group in this research is 400 foreign tourists who travelled to Nakhon Pathom Province from July – September 2019. After analysing the data by the Structural Equation Model method (SEM), the most effective aspects in e-communication help increase value-added for tourist products and business as well as the timeliness of data presentation and searching. However, travel organisations need to make their content on e-communication up to date to build loyalty and increase sales volume for consumers.

Key words: *E-Communication, Tourist's Loyalty, Travel Business*

Introduction

Thailand, after facing political instability, economic recession, and natural disasters for many years, has boosted its tourism industry as one of the effective treatments to recover the nation's wealth. This action also took Thailand tourism to the world of technology and globalisation. Even though the number of tourists has increased, it is a great challenge for Thailand to maintain quality in the tourism and service sector. Adopting electronic communication technology helps travel organisations ensure accessible, fast, and accurate tourist product resources for users who potentially visit Thailand. This study therefore tackles elements in electronic communication that have a positive impact on tourist satisfaction and lead to loyalty towards the travel organisation.

In this study, Nakhon Pathom Province is the studied area and is situated in the central region of Thailand. This province offers a wide range of fascinating tourist activity such as Buddhist temples, historical traces, old palaces, agriculture, and homestays. This makes Nakhon Pathom one of the best destinations to visit. However, the impact of the technology shift currently



grounds organisational policy and demand in tourism. Electronic communication or e-communication becomes a vital key of success in travel businesses as this technology helps facilitate tourists to purchase services or tangible products online.

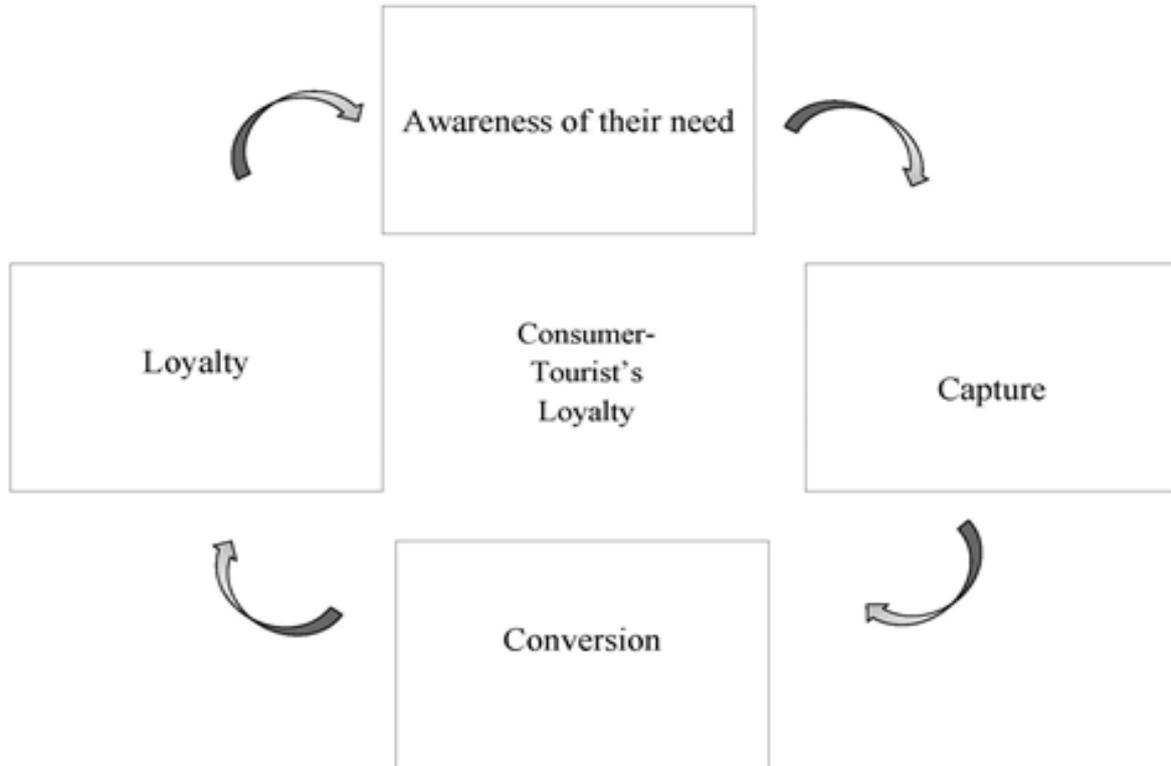
E-communication is the online channel for communication with another party especially tourists. Tourism is therefore the core in e-communication inventory and development. This quality aspect can maintain continuity in tourist loyalty. Also, it enriches long-term interaction among travel organisations and their customers (Jermstittiparsert et al., 2019).

However, there are some aspects to be improved in e-communication. Morosan and De Franco (2016) stated that e-communication cannot fulfil psychological attachment and expectation in tourists as they cannot see a clear commitment from the travel agency involving a mutual exchange of satisfaction by at least two parties (Chienwattanasook and Jermstittiparsert, 2019). The research will find out how to develop e-communication. This can help adjust e-communication strategy in terms of steadiness with tourist behaviour to build future loyalty. In this study, the whole research framework explores e-communication, which is in the administrative implementation of travel business.

Significance of E-Communication and Role in Tourist's Loyalty

Communication is the core of the tourism and service industry. Thus, tourist's loyalty is a result of well-built online relationships. Visser and Sikkenga (2012) illustrated the stage of e-communication that leads to tourist's loyalty in figure 1.

Figure 1. Tourist's Loyalty adapted from Visser and Sikkenga (2012)



In terms of the stages of a tourist's loyalty, the tourist is firstly aware of an organisation's online channels thanks to its appearance, features, and content. Tourists will or will not be attracted by online media. Clear and persuasive detail can seize a tourist's attention. The next stage is conversion. This refers to a tourist's decision whether purchase a product and service online (Pungpho and Wanarat, 2017). Loyalty is a factor that mentally engages tourists to come back and re-purchase. Word of mouth also happens in the last step.

Electronic communication or e-communication is the use of an internet-based inventory throughout the whole travel business process. Tourists represent a major player in the complex array of information requested before, during, and after the trip. Therefore, quality in e-communication builds tourist loyalty and generates superior value for the tourist (Kim and Fesenmaier 2008). The e-communication strategy functions as a tool to present products in detail and forward experience to the tourist so that they can be persuaded to buy the product. E-communication is an art that embraces the disciplines of digital communication, product design, and marketing strategy. They argue that e-communication becomes more complex in quality and performance to gain a tourist's loyalty.

Posselt and Gerstner (2005) studied practical factors in e-communication. Online tools should be easy to use and present attractive website features, as well as clear and updated product

content (Winer, 2001). Khalifa et al. (2005) additionally studied effective characteristics of e-communication. Time spent in presenting data on websites and in a fast searching system on an online platform increases cost and time savings, reduces order cycle time, and allows hi-speed service transmission (Rolph and Srinivasan, 2003). However, data on online tools should be verified for relevancy and the quality of information. Different language versions in e-communication easily navigate tourists from all over the world to interact with service providers for universal understanding. Online tools must be available, free of error during or after use, as well as be accessible for all users in different part of the world. Tourists also benefit from relevant and plentiful tourist product information to match their needs (Xu and Koronios, 2004). Wang, Park, and Fesenmaier (2012) proposed that feedback from previous customers is also vital for loyalty. Furthermore, it helps organisations adjust online communication tools for the purpose of customer's loyalty.

Information that matches user's personal interest and purchasing behaviour becomes a point of interest (Angerer, 2010, Egger and Joss, 2010). Another key of success for travel agencies in online communication is to help tourists outline their trip and offer online help for flexible trip planning (Visser & Sikkenga, 2012). Peppers and Rogers (2011) additionally featured the stage of a tourist's consumption in which the organisation helps manage their needs. Travellers are engaged in an interactive process and are surrounded with big data. E-communication offers opportunities to increase a tourist's knowledge, business value-added, and marketing strategy (George, Haas and Pentland, 2014).

To build trust for online users, entrepreneurs should be aware of data confidentiality for tourists and the travel organisation. Loyalty is the final goal in a e-communication strategy. Many tourism scholars define loyalty and e-loyalty. Oliver (1999) referred to loyalty as the stage of re-purchasing an organisation's product and trusting in their performance even though there are external influences that would result in a change in their behaviour. Consequently, Anderson and Srinivasan (2003) illustrated how the meaning of e-loyalty is a tourist's positive attitude toward an organisation and its product and service. E-loyalty towards online channels means repetitive buying behaviour and the intention to revisit the online channel. Diverse and down to point online services maintains a tourist's e-loyalty (Chaffey, 2011).

Related Studies

Effective of E-Business Adoption on Relationship Quality in Travel Agency –Supplier Relationship: the Perspective of Supply Chain Management (K. Pinyokul, 2019)

This study explored the adoption of e-business, which includes e-communication. The researcher examined the effect of e-communication on tourists. The result suggests that e-communication builds long-term loyalty. However, fast changes in technology are a major

aspect that travel organisations should be aware of. The final outcome recommends organisations to invest in technology. The implementation of new, quick, and up-to-date maintains previous tourists and increase the potential market.

New Media in Travel and Tourism Communication: Toward a New Paradigm (A. Inversini, Z. Xiang, D.R. Fesenmaier, 2015)

The study shows that communication for tourism industry significantly engages customer-tourists in interactivity and marketing strategy. An online network, clientele information in trip planning, and decision making is then generated. Travel agencies have more opportunities to increase sales volume and welcome potential tourists with direct, accurate, and practical e-communication.

Tourism and Online Communication. Interactivity and Social Web in Official Destination Website (Míguez-González, M.I. & Fernández-Cavia, J. 2015)

The study assessed the quality of online platforms with two parameters: interactivity and social web content. The researcher found that the areas of interactivity on online platform can be e.g. virtual communication with engaged parties in tourism industries, timely complaint handling, virtual tours, webcams, free download leaflets, maps, online guided tours, and tourist's loyalty programs, and significantly attract different users. The degree of interactivity increases the reliability and credibility of online content.

Drivers of a Tourism E-Business Strategy: the Impact of Information and Communication Technology (Emmanouil Stiakakis, Christos K Georgioidis, 2011)

Tourism is information-based technology. The study examines tour arrangements in which the tourist prefers self-packaged services and how this is affected by the power of social networks. Small and medium enterprises can deal with this component to customise online tools for tourists.

Research Objectives

1. To explore which components in e-communication positively affect tourist's loyalty
2. To study the effect of e-communication adoption in travel businesses for tourist's loyalty

Research Methodology

Before reaching the final outcome, the research framework can be drawn out in the following steps:

Relevant studies in e-communication and customer loyalty are gathered and analysed to find out which factors in e-communication positively and negatively affect loyalty. After listing the factors in e-communication, they were approved by tourism scholars for their relevance to the scope of study.

The research questionnaire is then formulated and the sampling group is determined. The study is quantitative and was conducted from July – September 2019. Foreign tourists who travelled to Nakhon Pathom Province are the sampling group in this research. According to the National Statistic Office, Nakhon Pathom, the total number of foreign tourists in 2018 was 46,791. Thus, the research applies Yamane's simple random sampling method to determine the number of the sampling group with an error of 0.05. The formula is as follows:

$$n = \frac{N}{1 + Ne^2}$$

Where -

n = total number of sampling group

N = total number of foreign tourists in studied area

e = error

$$n = \frac{46,791}{1 + 46,791 \times 0.05^2}$$

$$n \approx 400$$

After distributing the research questionnaire, raw data from the respondents was collected and prepared for statistical analysis. Data is divided into 2 groups; the first one is used to formulate research model, while the other is used to forecast the error of the research model. The research model is called a structural equation model and is tested by model fit testing. The process of model fit testing was run 10 times (ten folds training-testing model) to find the result of model error, and the mean magnitude of relative error (MMRE). The average error percentage of the research model is finally discovered.

Finally, the model helps find the most influential variables and their components in e-communication that build tourist loyalty toward the travel organisation.

Regarding data analysis, the research applied statistic techniques are detailed below:

Index of Item-Objective Congruence (IOC)

IOC stands for Index of item-objective congruence and was developed by Rovinelli and Hambleton in 1977. This is the method to assess content validity in the research instrument and its operation towards an accurate research outcome. Content experts rate the constructed research question from -1, 0, and 1 (from unclear to clear measuring). In this study, experts in the e-communication and tourism industry matched related items in e-communication and helped develop research questions operating to reach the objectives in the study (Turner and Laurie, 2003).

Factor Analysis

Factor analysis is used to study the relationship between related variables in e-communication and customer loyalty in relation to covariance, correlation, and data gaining. A cluster of these correlated variables will be latent or unobserved variables. They originate from a group of observed linear variables regarding their correlation and factor loading.

$$F_{a,i} = \sum_{p=1,n} [l_{ap} \cdot x_{p,i}] + e_{a,i} \quad (1)$$

Here, a represents unobserved variables (m variables) that originated from observed and merged variables. Each variable has its own sub variable (n variables) starting from variable p .

i represents the number of observation such as data collection with total number $i=r$ (research survey r)

$e_{a,i}$ represents error when evaluating value of unobserved variable i

$l_{a,p}$ represents correlation (β) originated from regression analysis in each variable. The result is regression score.

Unobserved variables can substitute a cluster of related independent variables by assessing the value of multicollinearity. The result will predict future dependent variables. Unobserved variables originating from regression analysis are accurate, correct, and trustable as they are independent variables.

Structural Equation Model (SEM)

The structural equation model or SEM explores the cause and effect (causal relationship) of two kinds of variables: observed variables and latent variables. This statistic is frequently

applied in social science and psychological study research. The results of the Structural equation model is confirmatory rather than exploratory.

The structural equation model is applied to prove the efficiency of the research equation by assessing the value of Chi-square, (Adjusted) Goodness of fit (A) (GFI), (Non) Normed Fit-Index (N) (NFI), Comparative fit index (CFI), and Root mean square error approximation (RMSEA).

Cross Validation Technique

The cross validation technique is a statistical method used in checking the performance of the research equation model, which consists of classified training data (Chirawichitchai, 2010). The effective classified model can generate an accurate outcome. The final model is called the saturated structural equation model and produces less errors in the result. This study applied the Method Mean Magnitude of Relative Error (MMRE) to test the reliability of the research equation model by proportioning ten times. The MMRE equation is as follows:

$$MMRE = \frac{1}{n} \sum_{i=1}^n \frac{|\hat{y}_i - y_i|}{y_i}$$

While n is the number of testing observations
 \hat{y}_i is estimated value of \hat{y}_i (tourist's loyalty)

Research Questions

According to the component in E-communication from the literature review, the variables in the Index of Item Objective Congruence (IOC) for this research are represented in Table 1.

Table 1: Variable in IOC for E-Communication

Variable	Variable name	Type	Range
Independent Variables Label			
Feature of website	FW	Rating scale	1-5
Updated details in product	UDP	Rating scale	1-5
Timeliness of data presentation and searching	TDPS	Rating scale	1-5
Relevancy of data/quality of information	RDQI	Rating scale	1-5
Free of error	FE	Rating scale	1-5
Accessibility	AC	Rating scale	1-5
Responsiveness/feedback from customer	RFC	Rating scale	1-5
After sale service	ASS	Rating scale	1-5
Trust/confidentiality	TC	Rating scale	1-5
Flexibility	FL	Rating scale	1-5
Universal understanding	UU	Rating scale	1-5
Value – added for product and business	VDPB	Rating scale	1-5
Class variable label			
Customer’s loyalty	CLS	Percentage	1-100

A group of five tourism scholars applied the concept of Index of Item Objective Congruence 10 (IOC 10) to check whether the variables affect tourist loyalty and satisfaction. The evaluation form for IOC 10 is as follows:

<p>Tourist’s Loyalty Attributes Evaluation Form For Tourism Scholars</p> <p>Please rate each item in e-communication from 1 to - 1 if it is related to tourist’s loyalty toward electronic communication in travel business in Nakhon Pathom province, Thailand.</p> <p>Please check “√” on each item based on your opinion. While;</p> <p>+1 it highly has congruence with topic</p> <p>0 not sure that it has congruence with topic</p> <p>-1 it does not have congruence with topic</p>

	Level of Congruence		
	-1	0	1
E-Communication Factor			
Feature of website			
Updated details in product			
Timeliness of data presentation and searching			
Relevancy of data/quality of information			
Free of error			
Accessibility			
Customer Service Factor			
Responsiveness/feedback from customer			
After sale service			
Trust/confidentiality			
Flexibility			
Universal understanding			
Value – added for product and business			
Percentage of loyalty and satisfaction			
Customer’s loyalty and satisfaction			

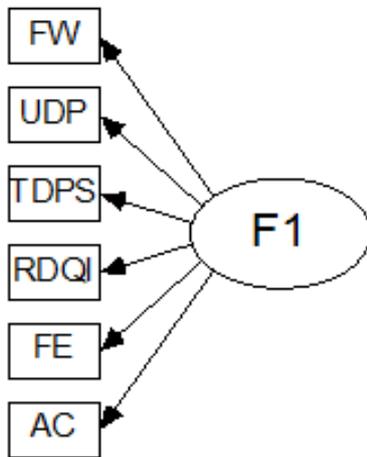
Research Hypothesis

Hypothesis in Exploratory Factor Analysis

HO-1: The following six attributes in e-communication constitute “F1”: E-Communication

- Feature of website (FW)
- Updated details in product (UDP)
- Timeliness of data presentation and searching (TDPS)
- Relevancy of data/quality of information (RDQI)
- Free of error (FE)
- Accessibility (AC)

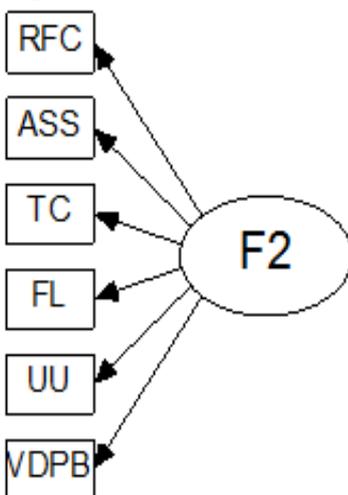
Figure 2. E-Communication Measurement Model



HO-2: The following attributes constitute “F2”: Tourist Service

- Responsiveness/feedback from customer (RFC)
- After sale service (ASS)
- Trust/confidentiality (TC)
- Flexibility (FL)
- Universal understanding (UU)
- Value – added for product and business (VDPB)

Figure 3. Tourist Service Measurement Model



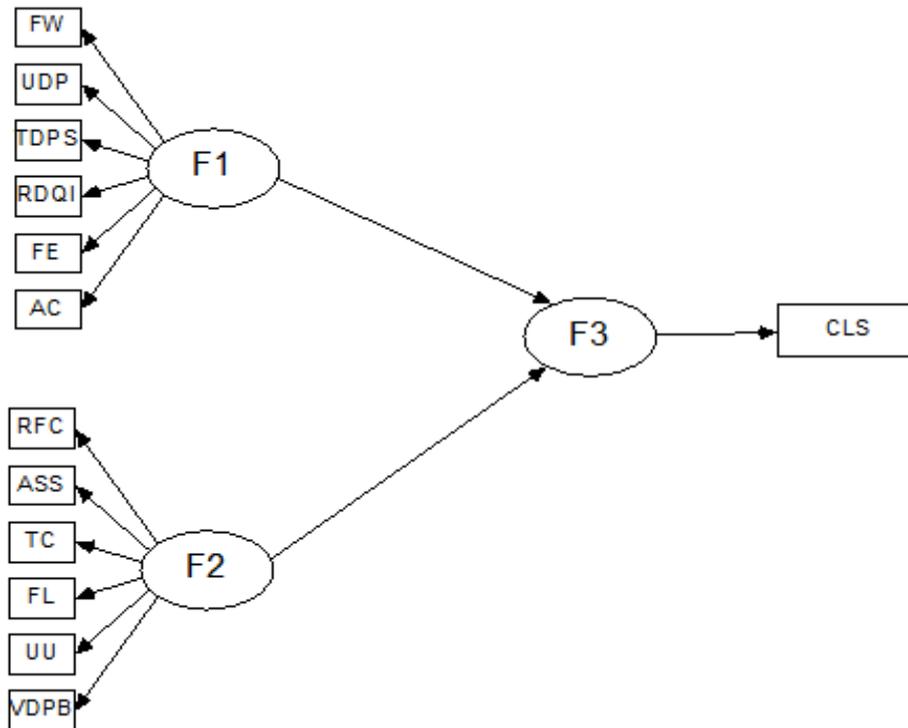
Hypothesis in Structural Equation Model (SEM)

HO-3: Factor F1 has a direct effect on the class variable of tourist loyalty and satisfaction (CLS)

HO-4: Factor F2 has a direct effect on the class variable of tourist loyalty and satisfaction (CLS)

Factor 3 or F3 refers to the most influential variables in e-communication in creating tourist loyalty and satisfaction.

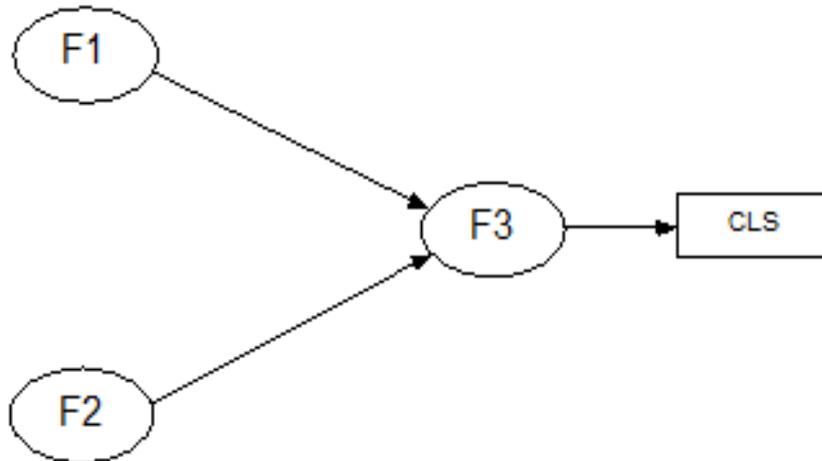
Figure 4. Structural Equation Model (SEM)



Conceptual Model

After designing and testing the efficiency of the research structural equation model, the final conceptual model to find out the effective factors and tourist's loyalty can be illustrated to prove the hypothesis:

Figure 5. Research Conceptual Model



According to the theory of e-communication in the literature review, there are 12 items that might influence a tourist's loyalty. Factor "F3" presents the most influential method of e-communication that builds loyalty.

Research Question

After revising the literature review and the result of Index of Item Objective Congruence (IOC), the research questionnaire is formulated for 400 foreign tourists in Nakhon Pathom Province.

TOURIST LOYALTY ATTRIBUTES EVALUATION FORM FOR FOREIGN TOURISTS IN NAKHON PATHOM

Part 1: Respondent Information

Gender 1. Male 2. Female

Occupation 1. Government officer 2. Private officer
 3. Student 4. Other _____

Part 2: Please rank the attributes in e-communication that affect your loyalty and satisfaction.

- 1 refers to strongly disagree with the attribute
- 2 refers to disagree with the attribute
- 3 refers to neither agree nor disagree with the attribute
- 4 refers to agree with the attribute
- 5 refers to strongly agree with the attribute

	Degree of Opinion Toward Factor in E-Communication				
	1	2	3	4	5
E-Communication Factor					
Feature of website					
Updated details in product					
Timeliness of data presentation and searching					
Relevancy of data/quality of information					
Free of error					
Accessibility					
Tourist Service Factor					
Responsiveness/feedback from customer					
After sale service					
Trust/confidentiality					
Flexibility					
Universal understanding					
Value – added for product and business					
<i>Your percentage of loyalty toward our e-communication tools</i>	_____ %				

Data Cleaning Process

All gathered data in the research is tested for normalisation and outlier to be fit for analysis. The process is run throughout skewness value and outlier data. The data which has higher skewness value will be transferred to another model until its skewness value is equal to other data.

$$-1 < \text{skewness} < +1.$$

Outlier data is one that has a lower or higher value than another. Outlier data must be replaced with the average value of the specific research variable. Another solution is to delete that from the data set.

Factor Analysis

Factor analysis is a statistical technique used to study the relationships among variables in e-communication and to group attributes together by considering their factor loading (exploratory factor analysis). Latent variables with factor loading values less than 0.30 were eliminated from the group of related variables in the study. The research model is proposed after this process according to confirmatory factor analysis by using the structural equation model.

Structural Equation Model Analysis

Exploratory factor analysis is applied to variables so to group them as one factor. The researcher developed a research structural equation model which is compatible with the research scope and hypothesis. This is called a “proposed structural equation model”. The significance value of each factor is analysed by that process. To confirm the relationship among variables in the proposed research model (confirmatory factor analysis), model fit index and criteria are used in this research as follows:

Table 2: Structural Equation Model Analysis Fit Indices

Fit indices	Acceptable threshold value
Chi-Square χ^2	$p > 0.05$
Relative χ^2 (χ^2/df)	< 2.00
Root Mean Square Error of Approximation (RMSEA)	< 0.07
AGFI	> 0.95

Model Cross Validation Analysis

Research sampling of 400 respondents are analysed through cross validation for research model training and error estimating: Mean Magnitude of Relative Error (MMRE).

Research Results

The research outcome is processed through the statistics analysis: Index of Item Objective Congruence (IOC), data cleaning by skewness value and descriptive statistics, exploratory factor analysis, and structural equation model.

Index of Item Objective Congruence (IOC)

The Table 3 shows the value of Index of Item Objective Congruence for every variable approved by five tourism scholars. Their value all passed the average IOC ($> +0.5$), thus they are fit for the research equation model.

Table 3: Index of Item Objective Congruence (IOC)

	Level of agreement			Average IOC	Result
	-1	0	1		
					(>+0.5)
E-Communication Factor					
Feature of website	0	0	5	1	Passed
Updated details in product	1	0	4	0.6	Passed
Timeliness of data presentation and searching	0	0	5	1	Passed
Relevancy of data/ quality of information	0	0	5	1	Passed
Free of error	0	1	4	0.8	Passed
Accessibility	0	0	5	1	Passed
Tourist Service Factor					
Responsiveness/feedback from customer	0	0	5	1	Passed
After sale service	1	0	4	0.6	Passed
Trust/confidentiality	1	0	4	0.6	Passed
Flexibility	1	0	4	0.6	Passed
Universal understanding	0	0	5	1	Passed
Value – added for product and business	0	0	5	1	Passed
Percentage of loyalty and satisfaction					
Tourist’s loyalty and satisfaction	0	0	5	1	Passed

Data Cleaning and Descriptive Analysis

As shown in Table 4, all variables except responsiveness/feedback (RFC) for the customer have normal distribution for analysis (between 1 to -1).

Table 4: Data Cleaning and Descriptive Analysis

Attributes	Mean	SD	Skewness	Note
E-Communication Factor				
Feature of website	3.73	0.11	-0.85	Normal
Updated details in product	3.93	0.18	-0.97	Normal
Timeliness of data presentation and searching	3.51	0.21	0.82	Normal
Relevancy of data/quality of information	4.47	0.16	-0.06	Normal
Free of error	4.18	0.33	-0.27	Normal
Accessibility	4.62	0.07	0.75	Normal
Tourist Service Factor				
Responsiveness/feedback from customer	4.55	0.41	1.13	Un normal
After sale service	4.72	0.23	0.74	Normal
Trust/confidentiality	4.55	0.35	0.86	Normal
Flexibility	4.35	0.18	-0.65	Normal
Universal understanding	4.11	0.27	0.51	Normal
Value – added for product and business	4.02	0.32	-0.91	Normal
Percentage of Loyalty				
Tourist’s loyalty	3.75	0.14	0.83	Normal

To adjust variable “responsiveness/feedback” to conform to acceptable skewness range, equation (2) is applied.

$$RFC_adj = RFC^2 \quad (2)$$

The result after being adjusted is shown in Table 5.

Table 5: Adjusted Variable

Attributes	Mean	SD	Skewness	Note
Responsiveness/feedback from customer	18.751	2.06	0.361	Normal

Exploratory Factor Analysis for E-Communication Factor

6 items in the e-communication factor are analysed by exploratory factor analysis and the result is shown in figure 6 and table 6.

Figure 6. E - Communication Exploratory Factor Analysis Model

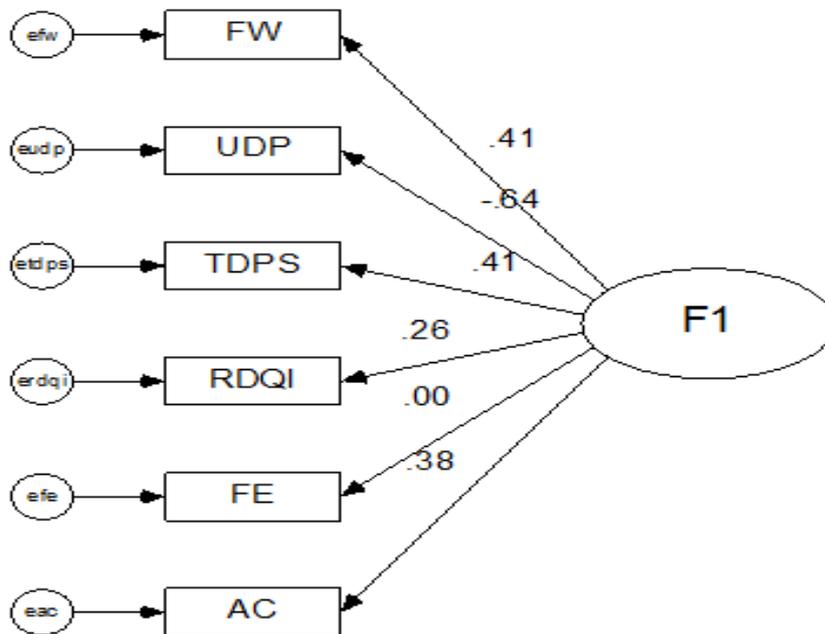


Table 6: E - Communication Exploratory Factor Analysis Factor Value

Component	
Feature of website	0.41
Updated details in product	-0.64
Timeliness of data presentation and searching	0.41
Relevancy of data/quality of information	0.26
Free of error	0.00
Accessibility	0.38

Table 7: F1-Factor Analysis Total Variance Explained Output

Component: F1	Initial Eigen values	% of variance	Cumulative %
1	3.12	69.31	69.31
2	0.87	30.68	100

Factors FE “free of error” is the least influential variable in the group of e-communication factors.

The Kaiser Meyer - Olkin measure of sampling adequacy (KMO) is 0.65, therefore the explained model variance is 69.31%. The research equation model is reliable.

Exploratory Factor Analysis for Tourist Service Factor

6 items in tourist factor are analysed through exploratory factor analysis and the result is showed in figure 8, and table 7.

Figure 7. Tourist Service Exploratory Factor Analysis

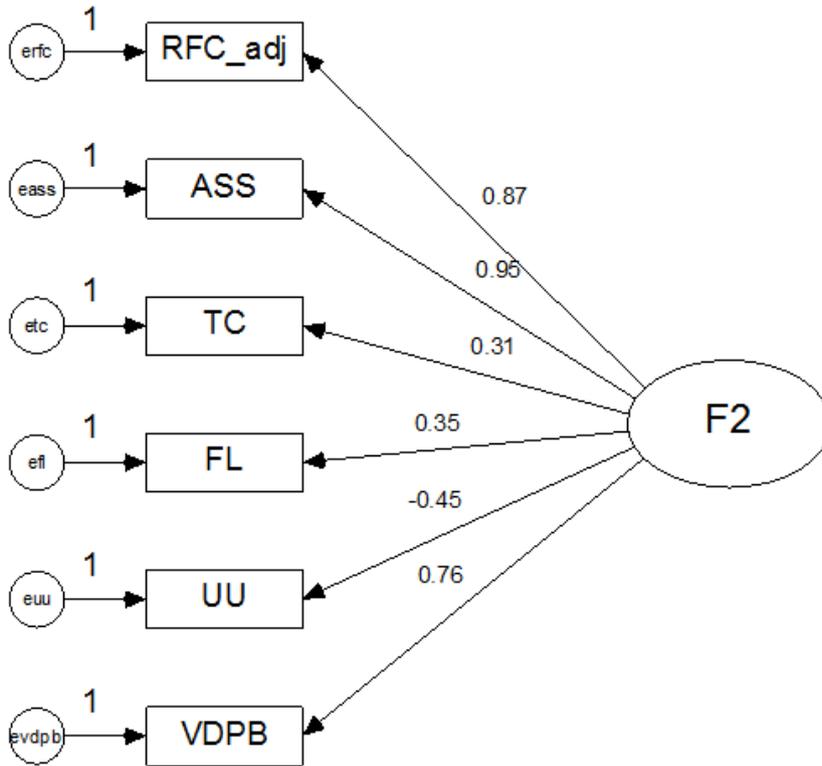


Table 8: Exploratory Factor Analysis for Tourist Service Factor Loading Value

Component	
Responsiveness/feedback from customer	0.87
After sale service	0.95
Trust/confidentiality	0.31
Flexibility	0.35
Universal understanding	0.65
Value – added for product and business	0.76

Table 9: F2-Factor Analysis Total Variance Explained Output

Component: F2	Initial Eigen values	% of variance	Cumulative %
1	4.46	75.53	75.53
2	0.69	24.46	100

The Kaiser Meyer-Olkin measure of sampling adequacy (KMO) is 0.87, therefore the explained model variance is 75.53%. The research equation model is reliable.

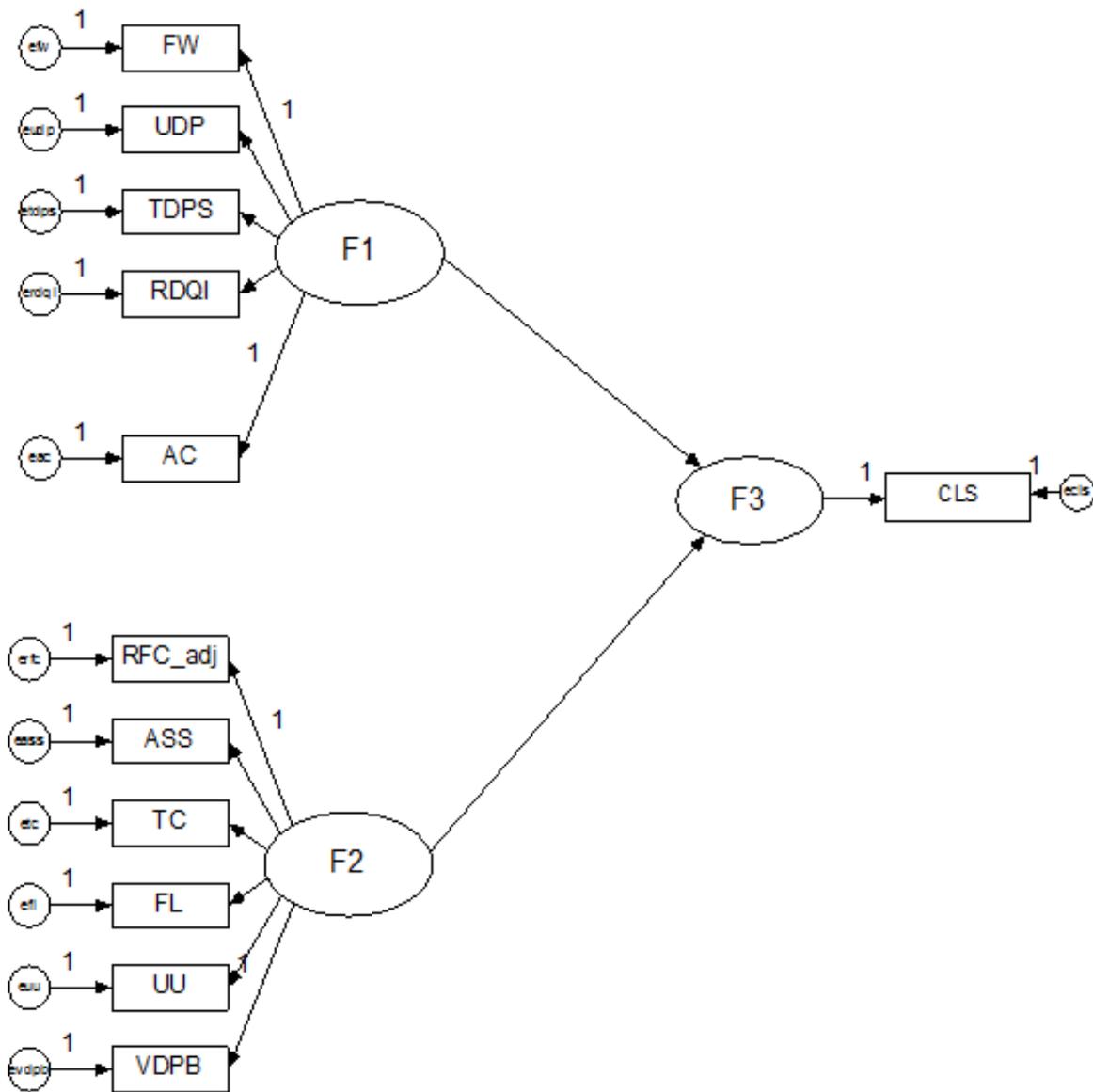
Structural Equation Model (SEM) Analysis

The structural equation model analysis is separately processed in two steps: purposed equation model and saturated structural model.

Purposed Equation Model

Figure 8 shows the relation of variables in e-communication and tourist service factors.

Figure 8. Purposed Structural Equation Model



Saturated Structural Model

This process is the final step in data analysis. The result from the saturated structural model generates weak and significant factors from the overall 6 variables in e-communication. Figure 10 and table 8 present the value of each variable.

Figure 9. Saturated Standardised Structural Equation Model

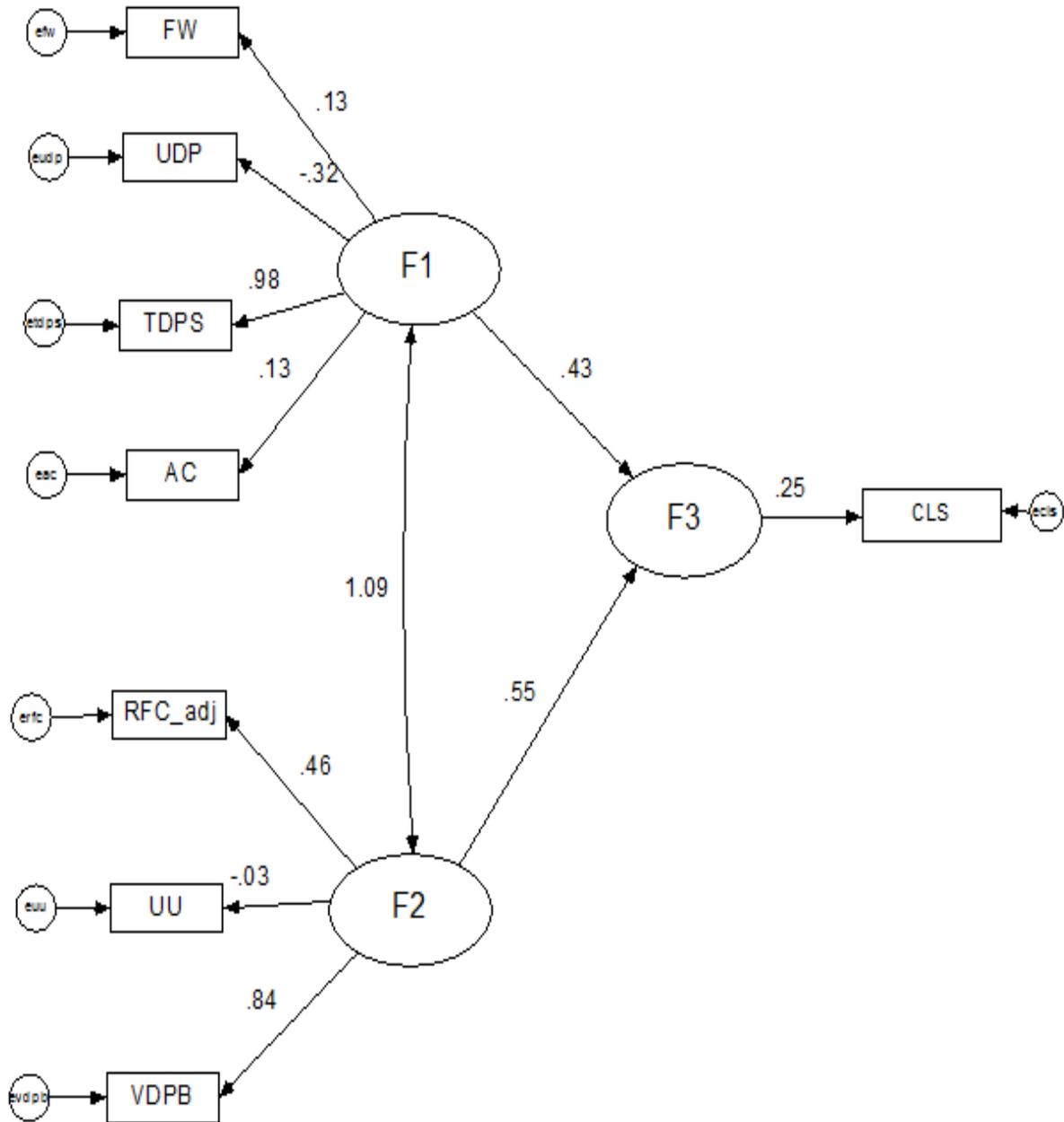


Table 10: Saturated Standardised Structural Equation Model's Fit Indices Value

Fit indices	Acceptable Threshold Value	Model's Fit Indices
Chi-Square χ^2	($p > 0.05$)	0.06
Relative χ^2 (χ^2/df)	<2.00	1.82
Root Mean Square Error of Approximation. (RMSEA)	<0.07	0.061
AGFI	>0.95	0.98

Cross Validation Analysis

According to the ten folds training-testing model, the structural equation model was proposed based on 320 of the 400 observations in the sampling group. The model is tested to predict the magnitude relative error (MRE). The other 80 observations are also used to predict that error. For the first test, the error was 0.21 or average error percentage of 21%. The second and other tests were run and the table 9 shows the result of cross validation analysis. The average value of Method Mean Magnitude of Relative Error (MMRE) is 0.184 and the average error is therefore $\pm 18.40\%$. This predicts that the error resulted from the research equation model which has an accuracy of 82.60%.

Table 11: Ten Folds Training-Testing Model Result

Model (Fold)	Relative χ^2	RMSEA	AGFI	MRE
1	1.82	0.061	0.98	0.21
2	1.91	0.063	0.99	0.15
3	0.98	0.05	1.01	0.18
4	1.98	0.068	0.96	0.24
5	0.92	0.044	1.02	0.11
6	1.73	0.05	1.15	0.25
7	1.58	0.07	0.97	0.22
8	1.88	0.069	0.98	0.19
9	1.69	0.047	0.97	0.11
10	1.44	0.056	1.12	0.18
Average	1.593	0.0578	1.015	0.184
Average Error Percentage				18.4

Research Result

After analysing the research structural equation model, the result shows that loyalty has a relationship with factor F3 due to the mean magnitude of relative error “0.25” and error value in loyalty “1.01”.

The most influential factor toward factor F3 is factor F2 (0.55) and factor F1 (0.43) respectively.

Regarding factor F2, attribute “value – added for product and business” has the highest correlation value (0.84). The attribute “adjusted responsiveness/feedback from customer” gets the second (0.46). However, attribute “universal understanding” gets -0.03, which shows its weakness and needs to be improved by travel organisation. By maximising different languages



on online communication, international tourists can conveniently use and understand the content.

For factor F1, attribute “timeliness of data presentation and searching” gets the highest correlation coefficient value (0.98). “Feature of website” and “accessibility” rank second (0.13). In contrast, the attribute “updated details in product” gets the lowest correlation coefficient value (-0.32). This aspect should be developed by adjusting online communication tools with current and up to date content. Tourists will be able to trust in and decide to purchase the product, which increases their loyalty toward organisation in the future.

Discussion and Conclusion

Regarding the literature review and related studies in e-communication, more sub-details of each variable should be added. This helps figure out specific aspects in e-communication for travel business. Furthermore, scholars in online-communication and technology can be invited to give advice for formulating better research surveys where the result will be up to date with current tourism business trends.

In terms of statistical analysis, there are many observations that share common or distinct values in some set of conditional attributes. Future research in e-communication should apply computing techniques such as Rough Set, which is another solution that can be used to construct a causal model of tourist’s loyalty. The output of the Rough Set technique gives more insights into the pattern of a tourist’s loyalty and satisfaction regarding a different set of conditional attributes. This should be further researched in order to enhance effectiveness in managing tourist loyalty.



REFERENCES

- Angerer, F. 2010. Mobile Kontextsensitive Dienste für die Freizeit. In Roman Egger & Mario Jooss (eds.), *mTourism: Mobile Dienste im Tourismus*, 45–58. Springer DE.
- Chaffey, D. (2011). Social Syndication Tools. Digital marketing strategy. Retrieved from: <http://www.smartinsights.com/blog/digital-marketing-strategy/tools-tracking-social-syndication>.
- Chienwattanasook, K. & Jermstittiparsert, K. (2019). Factors Affecting Art Museum Visitors' Behavior: A Study on Key Factors Maximizing Satisfaction, Post-Purchase Intentions and Commitment of Visitors of Art Museums in Thailand. *International Journal of Innovation, Creativity and Change*, 6(2), 303-334.
- Chirawichitchai, N. (2010). Data Mining Techniques for Automatic Disease Analysis. Retrieved from http://www.eresearch.library.ssru.ac.th/bitstream/123456789/51/3/ird_080_53%20%282%29.pdf
- Egger, R. & Mario J. 2010. *MTourism: Mobile Dienste Im Tourismus*. Springer DE.
- Jermstittiparsert, K., Joemsittiprasert, W., & Phonwattana, S. (2019). Mediating Role of Sustainability Capability in Determining Sustainable Supply Chain Management in Tourism Industry of Thailand. *International Journal of Supply Chain Management*, 8(3), 47-58.
- George, G., Haas, M. R., & Pentland, A. 2014. Big Data and Management. *Academy of Management Journal* 57(2). 321–326.
- Khalifa, M., Cheng, S. & Shen, K. 2012. Adoption of Mobile Commerce: A Confidence Model. *Journal of Computer Information Systems*. 53. 14-22.
- Kim, H., & Fesenmaier, D. R. (2008). Persuasive Design of Destination Web Sites: An Analysis of First Impression. *Journal of Travel Research*, 47(1), 3–13. <https://doi.org/10.1177/0047287507312405>
- Morosan, Cristian & Defranco, Agnes. (2016). Co-creating value in hotels using mobile devices: A conceptual model with empirical validation. *International Journal of Hospitality Management*. 52. 131-142. 10.1016/j.ijhm.2015.10.004.
- Nakhon Pathom, National Statistic Organisation (NSO). Retrieved from <http://nkpathom.nso.go.th/>.



- Oliver, R.L. 1999. Whence Consumer Loyalty. *Journal of Marketing*, 63, 33-34. <https://doi.org/10.2307/1252099>.
- Peppers, D. & Rogers, Ph.D., Martha. 2016. Managing Customer Relationships: A Strategic Framework. i-xxiv. 10.1002/9781119239833.fmatter.
- Posselt, T. & Gerstner, E. 2005. Pre-Sale vs. Post-Sale E-Satisfaction: Impact on Repurchase Intention and Overall Satisfaction. *Journal of Interactive Marketing*, Forthcoming. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=738964
- Pungpho, K., & Wanarat, S. (2017). A Structural Equation Model for Logistics Service Quality to Measurement Passenger Loyalty at Suvarnabhumi Airport, Thailand. *PSAKU International Journal of Interdisciplinary Research*, 6(1), 79-91.
- Rolph, A. & Srinivasan, K. (2003). E-Satisfaction and E-Loyalty: A Contingency Framework. *Psychology and Marketing*. 20. 123 - 138. 10.1002/mar.10063.
- Rovinelli, R. J., & Hambleton, R. K. (1977). On The Use Of Content Specialists In The Assessment Of Criterion-Referenced Test Item Validity. *Dutch Journal of Educational Research*, 2, 49-60.
- Tourism Authority of Thailand (TATS). Retrieved from <http://www.tourismthailand.org/>
- Turner, R. & Carlson, L. 2003. Indexes of Item-Objective Congruence for Multidimensional Items. *International Journal of Testing*. 3. 163-171. 10.1207/S15327574IJT0302_5.
- Visser, M., & Sikkenga, B. 2012. *Online Marketing*. Groningen: Noordhoff Uitgevers.
- Wangchan, R., & Worapishet, T. (2019). Factors Influencing Customer Loyalty in Hotel Business: Case Study of Five-Star Hotels in Bangkok, Thailand. *Asian Administration and Management Review*, 2(1), 86-96.
- Winer, R. 2001. A Framework for Customer Relationship Management. *California Management Review*. 43. 10.2307/41166102.
- Xu, Hongjiang & Koronios, Andy. (2004). Understanding information quality in e-Business. *Journal of Computer Information Systems*. 45. 73-82.