

Measuring Quality of Asian Airline Websites Using Analytical Hierarchy Process: A Future Customer Satisfaction Approach

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ABSTRACT

The use of internet has changed the way of handling daily affairs of the people. The recent advancement in technology has given the chance to the companies to improve the value and satisfaction of the customer through their web based services. This study aims to check the Asian airlines website quality via online web diagnostic tools. The analytical hierarchy process (AHP) is used to evaluate the website quality of each airline and the results suggest the best airline operates in Malaysia. Future research direction is given to measure the customer satisfaction of airline websites.

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1. INTRODUCTION

The use of technology is vital in every walk of life, both in personal and organizational settings. With the new shifting paradigm, companies are switching to the online business channels. Technology is used to increase the efficiency of the organizations; however, it needs to be accepted by the people [1,2]. As organizations invest substantial budget and time in developing and implementing the information technology, its rejection by the customers leads to heavy losses for the organizations [2]. Thus, organizations should also focus on the question that if their consumers are satisfied with their online system or not?

Online systems are defined as the websites, which provide the customers, a complete information and flexibility to utilize different kind of services. Therefore the company website, which provide customers only the information of the company without providing any possibility to make transactions, is not considered as online system. The aim of this research is to evaluate the factors which make the good quality website and to give a future approach for customer satisfaction with the websites.

“A Web site can be defined as a group of interface and functional attributes that are connected to each other to serve high levels of usability, performance, and beauty to users, to satisfy users’ wants, and to obtain their satisfaction in a competitive market of online and offline sales and information services.” [3].

The critical success factor for any online channel is the design of website. The websites are the main interface between the company and its consumers, so the attributes and the features of website need to be chosen carefully. The quality of the website depends on technical attributes and user oriented attributes [4] Technical attributes constitutes the hyperlink multimedia aspects whereas, the user oriented attributes relate to usability and demonstrability. Customer satisfaction with respect to quality of website is a major question which needs to be discussed in different ways. First, the information and the content provided. Second, the design of the website and third the usability of interface of the website [5]. Each of this quality aspect leads to many criteria which mainly constitutes a website of high quality [6]. Users of the websites evaluate each criteria of websites to satisfy their needs. Monsuwe, Dellaert & Ruyter [7] studied the factors, which drive customer to shop online. Klopping and McKinney [8] tested the customer e-commerce and defined the customer acceptance of internet as a basic tool for accepting the online system. Most of the studies on

acceptance of online system have been conducted in the banking sector [9]. Banking journals have paid special attention to these topics [10]. So, this research chooses the airline sector as the airlines are also big channel to provide online services to their customers.

2. LITERATURE REVIEW

With the emerging trend of the information technology, the study of customer acceptance and satisfaction of the online services has been the major area of research for the researchers and practitioners [2]. It has been noted from several studies that customer intention towards the acceptance of new information system is mandatory condition for the successful adoption of online system [2, 9, 11, 12]. Customer perception and attitude about the online system make it successful or useless. The use of system by the customer is a major indicator of online system success and its acceptance [13].

2.1. Online Channels/Websites

Internet is being considered as the commercial channel for performing various business activities around the globe. Companies are investing million of budgets in deploying the online system to attract more customers [1,2]. A successful website is defined as “*the one that attracts customers, makes them feel the site is trustworthy, dependable, and reliable and generates customer satisfaction*” (p. 24) [9].

With the design of online system and web channels to serve customers the best, the question arises for the firms to what to do the best to get the best result? [14]. This answer can be understand by understanding first that what the consumer wants and expects from the firm’s and its online channels. Flavian et al. [14] focused their research on the factors that affects the success of e-commerce websites from consumer’s point of view. They considered website and its ingredients as a successful tool which can best satisfy the consumer needs and answer their queries while purchase online.

2.2. Customer Satisfaction & Online Channels

Many researchers concluded that users with the similar attitude and interests can be agreed to share and exchange the information and recommend others through social medias e.g.blogs, wikis and through web 2.0 applications and virtual communities [15, 16]. These virtual communities can impact on individuals decisions to travel when recommendations are been made by their family and friends, so they have more trust on these information [17]. These user generated contents and information exchange are more authentic for the travelers and it reduces their uncertainty about the decision of the services provided by the airlines [15, 18]. Schegg [19] described that airlines also use these user-generated content from these technologies to measure the customer satisfaction or customer relationship management. Lee [20] urged that main purpose of company’s online system is to maximize the profit. However, it depends on the trust and the satisfaction that intended the customer to purchase or shop online. The customer satisfaction also depends on the availability of the information and the ease of navigation of the website [21].

Law & Bai [22] summarized that it is crucial for companies to understand that how the quality of their websites can affect the customer satisfaction while they purchase online. The availability of the required information and the ease of navigation are the mandatory conditions that lead to the customer satisfaction. Liu, He, Gao & Xie [23] stated that in order to measure the customer satisfaction while purchasing through online system eight constructs are significant to determine the website Quality.

2.3. Analytic Hierarchy Process (AHP)

AHP was originally designed by Saaty [24] to solve complicated multi-criteria decision problem. When a goal is cleared and a set of criteria and alternative is offered, AHP is an appropriate model. AHP has been proposed to evaluate the best quality website, through decision making process [6]. AHP aggregates multiple criteria for decision making. The problem usually presented in hierarchical process and the decision maker makes choices through pair wise comparison to express the relevant strength of each criteria and attributes in that hierarchy. Construction of the hierarchy is the first step in the problem-solving process. In this case the goal of an AHP decision is to select the best airlines website during the first level. Load time page size, no. of items, response time, page speed, availability, broken links, response time, mark up validation, design optimization, page rank and traffic are the evaluation criteria during the second level of the hierarchy. The third level consists of the list of airlines which websites needs to be evaluated.

3. RESEARCH METHODOLOGY

The research consists of several stages defined by problem identification followed by research procedure and data collection, and ended with analysis of data. The websites has become a big distribution channel for the companies to sustain their competitiveness. The deployment of online system is necessary to gain new customers and retain existing customers. The main problem is that customers do not trust

completely on company’s online system and trust the physical channels of the business [25, 26]. As online system has been penetrated to shop in everyday life, customer satisfaction in this area has been focused very rare. In initiating stages of online channels, the research mainly focus on customer’s intention to accept online channels, rather than customer satisfaction with websites [20, 27]. Pertaining to the aim of the research the following research objectives are formulated.

1. To propose a new methodology for evaluating the best airlines websites operates in Malaysia.
2. To explore the criteria that constitutes a good quality website.

The research examined the four airlines websites portals which are Air Asia, Malaysian Airline, Thai and Singapore Airlines. Various web diagnostic online tools are used to evaluate each criteria of website. The data was taken in more than 30 trials at different time to analyze the websites. Table 1. presented the list of web diagnostic tools and alternatives tools to collect the data.

Table 1. Online Web- Diagnostic Tools[6]

Criteria	Web Diagnostic Tools	Alternative Tools for Validation
Load Time	www.websiteoptimization.com	Tools.pingdom.com
Page Size	www.websiteoptimization.com	Tools.pingdom.com
Number of Items	www.websiteoptimization.com	Tools.pingdom.com
Page Speed	www.websiteoptimization.com	Tools.pingdom.com
Availability	www.w3.org	www.achecker.ca
Broken Link	www.w3.org	www.dead-links.com
Response Time	www.websitepulse.com	Webhosting.candidinfo.com
Page Rank	www.pageranktool.com	www.prchecker.info
Traffic	www.alexa.com	www.metricsmarket.com
Design Optimization	www.webpagetest.org	Tools.pingdom.com
Markup Validation	www.w3.org	www.validome.org

AHP is used to solve multi- criteria decision making and construct the hierarchies for each problem [40]. The hierarchy model is presented in figure 1. The main level shows the goal of the research, the intermediate level indicates the criteria needs to make the decision and the lowest level shows the airlines needs to be evaluated.

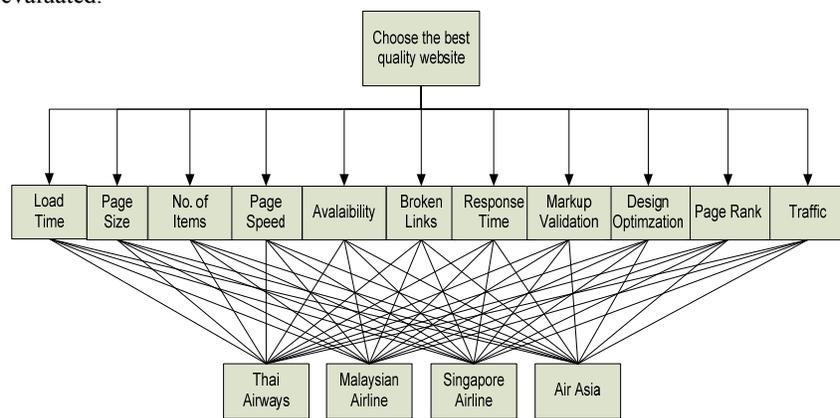


Figure 1. AHP Model for Airline Websites

An AHP scale is adopted from previous research to evaluate each criterion shown in table 2. The scoring is assigned from 1-9 to evaluate the each criteria where 1 is equal to equal and 9 is equal to the absolute value given to each criterion. If a number is greater than 9, it shows the inconsistencies in the elements [6].

Table 2. AHP Scale for Airline Websites [6]

Linguistic Expressions	AHP
Equal	1
Equal –Moderate	2
Moderate	3
Moderate- Fairly Strong	4
Fairly Strong	5

Linguistic Expressions	AHP
Fairly Strong- Very Strong	6
Very Strong	7
Very Strong- Absolute	8
Absolute	9

A pair wise comparison matrix will be obtained using the above scale from 1-9. The scale can input the number greater than 9 but this comparison is not required in this research as this need to reorganize the structure of the research.

4. RESULTS AND ANALYSIS

Result in table 3. presents the original data for each criteria gathered from web diagnostic online tools. The first column shows the each criterion to evaluate the best quality website. The second column shows the measurement unit for each element and the rest of the column shows the average value of each criteria.

Table 3. Original Data for Airline Website

Criteria	Measurement unit	Malaysian	Air Asia	Thai	Singapore
A(load time)	Second	4.64	2.99	7.74	3.82
B(page size)	Kb/Second	0.80	0.74	1.3	0.95
C(No. of items)	Number	137.00	128.00	77.00	59.00
D(page speed)	Second	69.47	77.96	78.95	76.52
E(availability)	Percentage	100	100	100	100
F(broken links)	Number	6	0	17	35
G(response time)	Second	1.78	0.79	1.41	0.60
H(page rank)	Number	6	7	7	8
I(traffic)	Number	10136.00	1499.00	17811.00	8096.00
J(design optimization)	Percentage	53.4	34.40	80.88	66.4
K(markup validation)	Number	205	50	7.23	16.28

After obtaining the original results, the next step is to compare one criteria with other. The preference criteria matrix for each criterion is obtained in a pair wise comparison. A weight assign to each of the criteria. Finally, a pair wise comparison matrix is obtained which compare each criteria to others and finally assign a weight to each criteria for all four airlines. Table 4 displayed the results for the final values obtained for each airline website.

Table 4. Final Results for Airlines Websites Based on AHP

Criteria	Malaysian	Air Asia	Thai	Singapore
A(load time)	0.042	0.193	0.014	0.081
B(page size)	0.000	0.000	0.947	0.000
C(No. of items)	0.000	0.000	0.001	0.002
D(page speed)	0.005	0.001	0.001	0.003
E(availability)	0.027	0.027	0.027	0.027
F(broken links)	0.000	0.001	0.000	0.432
G(response time)	0.018	0.098	0.045	0.229
H(page rank)	0.132	0.000	0.000	0.000
I(traffic)	0.000	0.000	0.001	0.000
J(design optimization)	0.005	0.002	0.021	0.010
K(markup validation)	0.003	0.011	0.059	0.027
Total Σ	0.105	0.337	0.172	0.384
Rank	4	2	3	1

The final results indicate the sum score for each airline and the ranking of each airline. The website which has higher score has suggested as the best airline website operates in Malaysia. In accordance with the

results above, Singapore airline website is suggested as the best website in comparison with all other airline website with a final score of 0.38.

5. CONCLUSION & FUTURE DIRECTION

This study evaluates the quality of airline websites using a series of web diagnostic online tools. Each criterion of the website measures through the online test. The results suggest the best airline website that operates in Malaysia. The model uses the AHP pair wise comparison using the measurement scale, which generates the weights for each criterion and makes it easy to judge the better results. The limitation of this study includes the small sample size and the time frame. The sample size only includes 30 trials for a maximum time period of one month which is very short period for making observation.

Future research includes adding more criteria to measure the website performance. As the airline industry is highly rich information based industry and has a great amount of user-generated travel content, the future research should be done with the context of customer satisfaction. A theoretical framework needs to be developed which identifies the factors that measure the customer satisfaction with airline websites.

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