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A Consumer Perspective of Service Quality in the Airline Industry

Muhammad Muazzem Hossain[1], Noufou Ouedraogo[2] and Davar Rezania[3]

ABSTRACT

The airline Service quality has received much attention from both academicians and practitioners. Various studies have used SERVQUAL, AIRQUAL, the Kano Model, etc. for measuring the customer service quality in the airline industry. However, a review of the airline service quality literature shows a lack of research about the use of latent semantic analysis (LSA) in uncovering the underlying factors affecting the quality of service provided by the airline companies. The purpose of this study is to explore the generic service quality characteristics pertaining to the airline industry by mining the comments provided by the passengers of various airline companies across the globe. Passengers are under no pressure to express their concerns, opinions, or suggestions for improvement of service quality. Therefore, we posit that the customers' comments are reflections of their perception of quality of service that they have already experienced. This study will help the stakeholders better understand the characteristics of service quality in the airline industry. The findings will provide managers in the airline industry with insights for managing and improving the quality of service rendered to their customers. We collected 1,069 customer comments on eleven airline companies and conducted an LSA on them to identify five factors affecting the service quality in the industry. The findings suggest that caring and friendly crews, luggage handling, in-flight meals, in-flight entertainment, and service expectation are the five critical factors of the airline service quality in the eyes of the customers.

Keywords: Service quality, airline quality, latent semantic analysis, free text analysis, airline industry.

1. INTRODUCTION

The airline service quality is gaining attention both from academicians and from practitioners. The airline industry not only plays a critical role in the service industry but also contributes to other industries by transporting passengers to their required locations all over the world (Rhoades and Waguespack, 2008). The airline industry has seen an average growth of about 12 percent per annum since the 1960s (Chau and Kao, 2009). Despite the recent slow down due to a maturing

[1] MUHAMMAD MUAZZEM HOSSAIN, School of Business, Grant MacEwan University, Edmonton, Canada, HossainM4@macewan.ca.
[2] NOUFOU OUEDRAOGO, School of Business, Grant MacEwan University, Edmonton, Canada, OuedraogoN@macewan.ca.
[3] DAVAR REZANIA, School of Business, Grant MacEwan University, Edmonton, Canada, RezaniaD@macewan.ca.

industry, deregulation and general crises, the world passenger traffic is expected to grow by over 5% per year from 2010 through 2029 (Tinseth, 2010). Among numerous factors that have affected the passenger growth, service quality plays an important role in the success of the airline industry (Bamford and Xystouri, 2005; Rhoades and Waguespack, 2005). Service quality promotes customer satisfaction, which translates directly into profitability, market share, and return on investment (Fornell, 1992; Stevens et al., 1995; Legoherel, 1998). Airline companies are constantly looking for ways to increase their competitiveness in service quality due to the agile business environment resulting from increased competition (Ku and Fan, 2009). Therefore, an astute understanding of service quality in the airline industry can be invaluable to service providers.

A number of approaches have been used to measure the service quality of the airline industry. For instance, Chau and Kao (2009) applied the SERVQUAL model (Parasuraman *et al.*, 1988) and the disconfirmation model to identify critical performance measures in the airline industry. Pakdil and Aydin (2007) used weighted SERVQUAL scores to study passengers' expectations and perceptions of airlines' service quality. Ekiz *et al.* (2006) developed an AIRQUAL scale to measure the quality perceptions of airline customers. Shahin and Zairi (2009) utilized the Kano model for classifying and prioritising requirements of airline travellers with three case studies on international airlines. A factor analysis was used by Aksoy *et al.* (2003) to reduce thirty nine service quality attributes of various airlines into a few important factors. Liou and Tzeng (2007) developed a non-additive model using factor analysis to evaluate the service quality of international airlines. Shannon *et al.* (2009) used a quasi-experiment research setting to investigate the components of customer satisfaction in the US airline industry. Yet other approaches include the longitudinal analysis (Lemon and Wangenheim, 2009), multimarket contact approach (Prince and Simon, 2009), the social psychology approach (e.g., Ekinci and Dowes, 2009), etc.

However, a review of the airline service quality literature shows a lack of research about the use of latent semantic analysis (LSA) in uncovering the underlying factors affecting the quality of service provided by the airline companies. LSA uses mathematical and statistical techniques to identify key common themes in a collection of text documents called corpus without an *a priori* theoretical model. It allows for computerized extraction of concepts hidden in text data and has great potential for free text analysis. In this study, we propose that the airline service quality is best reflected by the anecdotal evidence such as the comments and feedback by customers, and use LSA on the customer comments to determine the factors influencing the quality of service. The purpose is to explore the generic service quality characteristics pertaining to the airline industry by mining the comments provided by the passengers of various airline companies across the globe. Passengers are under no pressure to express their concerns, opinions, or suggestions for improvement of service quality.

Therefore, we posit that the customers' comments are reflections of their perception of quality of service that they have already experienced. This study will help the stakeholders better understand the characteristics of service quality in the airline industry. The findings will provide managers in the airline industry with insights for managing and improving the quality of service that they render to their customers.

The rest of the paper is organized as follows: Section two provides a review of the relevant literature. Section three discusses the methodology of this study. The analyses, results and findings are presented in the fourth section. Finally, conclusions, limitations, and future research are discussed in the fifth section.

2. LITERATURE REVIEW

Service quality has a strong foothold in the marketing and management literature. Various definitions of service quality exist. Service quality is usually defined as the customer's impression of the relative inferiority/superiority of a service provider and its services (Bitner and Hubert, 1994; Tsoukatos and Rand, 2006) to its competing alternative. Parasuraman *et al.* (1988) define service quality as the gaps between customers' expectations of the service and their perceptions of the service based on five dimensions that include tangibility, reliability, assurance, responsiveness, and empathy. Many studies have used these definitions of service quality in the airline industry (e.g., Chau and Kao, 2009; Nadiri *et al.*, 2008; Pakdil and Aydin, 2007). Due to high competition, managers in the airline industry must find ways to make their services stand out by understanding their customers' needs and then meeting or exceeding these needs (Nadiri *et al.*, 2008).

Researchers have identified a large number of service quality attributes for the airline industry. Some studies suggest that the determinants of customer satisfaction for passenger airline companies include employee service, on-board service, safety and reliability, flight availability (Liou and Tzeng, 2007; Park, 2007), schedule, on-time performance, frequent flier program (Liou and Tzeng, 2007), airport service, ticket price, value, and airline image (Park, 2007). According to Chen and Chang (2005), the service attributes of ground service (e.g., convenient flight schedules, service efficiency of reservation staff, convenient ticketing and check-in procedures) and the service attributes of in-flight service (e.g., seat comfort, clean and pleasant interior, good cabin equipment conditions, cabin crew's ability to handle customer complaints) influence the service quality of the airline industry. Many studies have utilized and extended the dimensions of SERVQUAL to measure the service quality of the airline industry. For example, Nadiri et al. (2008) developed the AIRQUAL model based on the dimensions of the SERVQUAL and suggest that the service quality of the airline industry depends on airline tangibles, terminal tangibles, personnel, empathy, image, customer satisfaction, repurchase intention, and word-of-mouth communication. Park et al. (2004) used the dimensions of SERVQUAL together with service expectation, service perception, service value, passenger satisfaction, and airline image to understand the effects of these factors on passengers' intentions. Yet Pakdil and Aydin (2007) used weighted SERVQUAL scores, including employees, tangibles, responsiveness, reliability and assurance, flight patterns, availability, image, and empathy to investigate passengers' expectations and perceptions of airline companies' service quality.

While there is a wealth of research in the service quality literature on the use of various models, none of them embody the comments and feedback that customers freely leave about the service quality of the airline industry. Mining the comments and feedback provided by customers is an effective way to reveal the factors that the traditional models may overlook. In this study, our objective is to analyze the customers' comments using the latent semantic analysis (LSA) as a means to explore the latent factors affecting the service quality of the airline industry.

3. RESEARCH METHODOLOGY

This study uses the latent semantic analysis (LSA) to explore the factors influencing the service quality of the airline industry based on customer comments about the quality of service. LSA is both a theory and a method that extracts the contextual-usage meaning of words and obtains approximate estimates of meaning similarities among words and text segments in a large corpus (Landauer *et al.*, 1998). It has a plethora of applications. LSA improves library indexing methods and the performance of search engine queries (Berry *et al.*, 1995; Deerwester *et al.*, 1990; Dumais, 2004). Psychology researchers use LSA to explain natural language processing such as word sorting and category judgments (Landauer, 2002). LSA in combination with document clustering was used on titles and keywords of articles published in 25 animal behavior journals in 1968-2002 (Ord *et al.*, 2005) to produce lists of terms associated with each research theme. The same method was used on titles, abstracts, and full body text of articles published in the *Proceedings of the National Academy of Science* in 1997-2002 to produce visualization clusters projected on 3 dimensions (Landauer *et al.*, 2004). LSA uses mathematical and statistical techniques to derive the latent semantic structure within a text corpus (Berry, 1992; Deerwester *et al.*, 1990). The text corpus comprises of documents that include text passages, essays, research paper abstracts, or other contexts such as customer comments, interview transcripts, etc. To illustrate the LSA methodology, a small database of 7 short documents was created. Each step of the latent semantic analysis is illustrated in Appendix A. A detailed review of LSA is beyond the scope of this paper. See Sidorova *et al.* (2008) for further details.

The LSA methodology delineated in Appendix A can easily be duplicated in other applications involving text data. This study conducts LSA of the corpus that consists of customer comments collected on eleven airline companies, including Air Canada, American Airlines, Air France, British Airways, Singapore Airlines, Air Korea, Indian Airlines, Royal Air Maroc, Qantas, Royal Brunei Airlines, and Asiana Airlines. Customer comments on these airlines were collected from the website http://www.airlinequality.com and included comments left by customers during 2006-2009. The corpus comprises a total of 1,069 comments.

4. ANALYSIS AND RESULTS

The final corpus included 1,069 documents (i.e., customer comments) with 7,333 words. In order to create a dictionary of relevant terms, the dictionary of these 7,333 raw words was subjected to a process of term filtering, term stemming (Porter, 1980), and communality filtering (Sidorova *et al.*, 2008). Term filtering included the removal of numbers, dates, symbols, unique words, and stopwords from the dictionary. The list of stopwords such as 'a', 'an', 'for', 'of', 'the', etc. consisted of the standard 571 common words developed by the System for the Mechanical Analysis and Retrieval of Text (SMART) at Cornell University (Salton & Buckley, 1988) plus some airline industry specific words such as the flight times and numbers. The removal of numbers, dates, symbols, and stopwords produced a dictionary of 6,465 words. The elimination of unique words reduced the dictionary size to 3,524. Unique words are the words that appear in only one document. The justification for exclusion of these words from the dictionary is that if a word is mentioned in only one document then it is not part of a semantic pattern. The application of Porter (1980) term stemming resulted in 2,744 unique stemmed words. An initial LSA performed on the dictionary of these stemmed words revealed that 21% of the words contributed to only 5% of the total variance. Therefore, these words were filtered out as a result of communality filtering (Sidorova *et al.*, 2008). Thus, the final dictionary consisted of 2,373 terms. The LSA method illustrated in Appendix A was applied to the dictionary to extract five latent factors affecting the service quality.

Table 1: Summary of Ten Semantic Factors of Service Quality of the Airline Industry

Factor	Factor Label	Factor Description	High Loading Terms (Stemmed)
F1	Caring and Friendly Crews	Crews are friendly, helpful, and available when needed; Crews provide relevant information.	excel (0.665), cabin (0.621), friendli (0.621), crew (0.582), staff (0.574)
F2	Luggage Handling	Arrival of luggage and waiting time; Luggage info for connecting flights; Appropriate response to lost luggage issues.	arriv (0.442), told (0.394), dela (0.393), luggag (0.389), wait (0.369), baggag (0.345)
F3	In-Flight Meals	Quality, quantity, variety, and frequency of meals; Price of paid meals.	serv (0.397), drink (0.350), snack (0.272), coffe (0.238), juic (0.218), alcohol (0.215)
F4	In-Flight Entertainment	Movie choices; Overhead TVs; PTVs; Music, radio, newspapers, and games; Functioning entertainment systems; Availability of help to use entertainment systems.	entertain (0.421), inflight (0.362), help (0.263), work (0.252), system (0.248)
F5	Service Expectation	Service commiserates with passenger expectation; Discussion of the relationship between price and value.	premium (0.454), busi (0.388), upgrad (0.311), class (0.291), price (0.247), worth (0.224)

Small number of dimensions in LSA can be used to detect unique components. On the other hand, large number of dimensions can capture similarities and differences. Our objective is to investigate the generic characteristics of the service quality commonly perceived by the global airline passengers. Therefore, we have chosen to extract five latent factors in order to identify the most common and critical aspects of the worldwide service quality in the airline industry. Table 1 (above) provides the summary of factor labels, descriptions, and term loadings of these five factors.

5. DISCUSSIONS, LIMITATIONS, AND FUTURE DIRECTION

The service quality is best reflected in the comments and feedback provided by customers about the service rendered to them. The findings of our study suggest that there are five critical aspects of the airline service quality in the eyes of the customers.

The first factor is the caring and friendly behaviour of the crews including both the ground staff and the crews on board the flight. Specially, passengers of the global airline industry view that having crews on board the aircraft that swiftly respond to the needs and concerns of them is the most crucial aspect of the service quality.

The second important aspect of the airline service quality is the luggage handling. This includes the arrival of luggage on time, luggage information on connecting flights, and an appropriate and immediate response to the inquiry of lost luggage. As it is almost impossible for an airline company to never have luggage delays or lost (by its own fault or the fault of other connecting airline companies), passengers find it crucial that they are informed of any delay of luggage delivery.

The third factor affecting the service quality of the airline industry is the in-flight meals. Customers perceive the in-flight meals in terms of quantity, quality, variety, frequency of meals served, and the price for paid meals. As passengers are becoming increasingly cautious about what they eat due to health concern, culture, or religious restrictions, managers of the airline companies around the world need to be aware of this diversity of their customer base.

In-flight entertainment, particularly for long flight, is the fourth aspect of the airline service quality. This includes the diversity of entertainment choices (e.g., movies, music, games, newspapers, etc.), the ease of use of the entertainment systems, and the availability of help if needed.

Last but not least is the service expectation. The service expectation can never be expressed in absolute terms. The level of service expectation depends on various factors such as the reputation of the company (a priori higher expectations from a well reputed company), the price the customer paid (lower expectations for low cost companies), and the cabin class in which the customer is travelling (higher expectations for first class compared to economy). Passengers of the airline industry perceive that they get enough value for their money. Though the service expectation is difficult to measure, managers in the airline industry need to pay adequate attention to meeting or exceeding the customer expectation.

This study has a few limitations. First, the corpus included comments on only eleven airline companies. Future studies may use LSA on customer comments collected on more airline companies. Second, the data were collected from http://www.airlinequality.com and, therefore, are not all inclusive. Future research can collect more comprehensive data from various other sources. Lastly, further studies are called for to explore a larger number of factors affecting the service quality of the airline industry.

APPENDIX A: Illustration of LSA Method

The Corpus

The corpus consists of a collection of seven select article titles published in volume 10 issues 2/3 and 4 of the *International Journal of Business Performance Management* (IJBPM) in 2008. Table A1 presents the list of these article titles and their reference to IJBPM. The initial dictionary comprises of 70 words, of which 40 words appear only in one document. The elimination of these unique words reduces the dictionary size to 30 words. We then remove the stopwords such as 'a', 'an', 'for', 'of', 'the', etc. from the dictionary. The list of stopwords consists of the standard 571 common words developed by the System for the Mechanical Analysis and Retrieval of Text (SMART) at Cornell University (Salton and Buckley, 1988). The removal of stopwords from the dictionary reduces its size to 15 words. The dictionary, therefore, consists of 15 relevant words. These words are italicized and boldfaced in Table A1. There are only 5 unique words (i.e., terms) in the dictionary of relevant words: *analysis, growth, model, productivity,* and *risk.*

Table A1: Titles of Seven Select Articles Published in IJBPM in 2008

ID	Document Title	IJBPM Ref.
P1	Deregulation and ***productivity growth***: a study of the Indian commercial banking industry	p. 318-43
P2	Global ***productivity growth*** from 1980-2000: a regional view using the Malmquist total factor ***productivity*** index	p. 374-90
P3	Measuring ***productivity*** under different incentive structures	p. 366-73
R1	A rating ***model*** simulation for ***risk analysis***	p. 269-99
R2	An ***analysis*** of the key-variables of default ***risk*** using complex systems	p. 202-30
R3	New contents and perspectives in the ***risk analysis*** of enterprises	p. 136-73
R4	***Risk*** insolvency predictive ***model*** maximum expected utility	p. 174-90

Matrix X and the Singular Value Decomposition (SVD) of Matrix X

Matrix X is a 5×7 rectangular matrix and is of rank 5. The raw frequencies were transformed by using the traditional TF-IDF (term frequency – inverse document frequency) weighting method (Han and Kamber, 2006, p. 619). The SVD of X is given by $X = TSD^T$, where **T** is the 5×5 matrix of term eigenvectors of the square symmetric matrix $Y = XX^T$, **Y** is the 5×5 matrix of term covariances, **D** is the 5×7 matrix of document eigenvectors of the square symmetric matrix $Z = X^T X$, **Z** is the 7×7 matrix of document covariances, and **S** is the 5×5 diagonal matrix of singular values (i.e., the square roots of eigenvalues of both **Y** and **Z**). Matrix X, the transformed Matrix X and the SVD of Matrix X are shown in Table A2, Table A3 and Figure A1, respectively.

Table A2: Matrix X

Term	Document						
	P1	P2	P3	R1	R2	R3	R4
analysis	0	0	0	1	1	1	0
growth	1	1	0	0	0	0	0
model	0	0	0	1	0	0	1
productivity	1	2	1	0	0	0	0
risk	0	0	0	1	1	1	1

Table A3: Transformed Matrix X (TF-IDF)

Term	Document						
	P1	P2	P3	R1	R2	R3	R4
analysis	0	0	0	0.525	0.834	0.834	0
growth	0.913	0.746	0	0	0	0	0
model	0	0	0	0.777	0	0	0.913
productivity	0.408	0.666	1	0	0	0	0
risk	0	0	0	0.347	0.551	0.551	0.408

Figure A1: The SVD of Matrix X

$$
\underset{\mathbf{X}}{\begin{bmatrix} 0 & 0 & 0 & 0.525 & 0.834 & 0.834 & 0 \\ 0.913 & 0.746 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0.777 & 0 & 0 & 0.913 \\ 0.408 & 0.666 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0.347 & 0.551 & 0.551 & 0.408 \end{bmatrix}}
=
\underset{\mathbf{T}}{\begin{bmatrix} 0.694 & 0 & 0.514 & 0 & 0.505 \\ 0 & -0.66 & 0 & 0.75 & 0 \\ 0.463 & 0 & -0.85 & 0 & 0.235 \\ 0 & -0.75 & 0 & -0.66 & 0 \\ 0.552 & 0 & 0.07 & 0 & -0.83 \end{bmatrix}}
\times
\underset{\mathbf{S}}{\begin{bmatrix} 1.678 & 0 & 0 & 0 & 0 \\ 0 & 1.542 & 0 & 0 & 0 \\ 0 & 0 & 1.067 & 0 & 0 \\ 0 & 0 & 0 & 0.79 & 0 \\ 0 & 0 & 0 & 0 & 0.209 \end{bmatrix}}
\times
\underset{\mathbf{D}^{T}}{\begin{bmatrix} 0 & 0 & 0 & 0.545 & 0.526 & 0.526 & 0.386 \\ -0.59 & -0.64 & -0.49 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -0.35 & 0.438 & 0.438 & -0.7 \\ 0.526 & 0.151 & -0.84 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0.763 & -0.18 & -0.18 & -0.6 \end{bmatrix}}
$$

Reduction, Rotation, and Interpretation of Factors

The rank-*k* reduced model $\hat{X} = \hat{T}\hat{S}\hat{D}^T$ is the best possible least-squares-fit to **X**. In this illustration, we selected ***k*** based on the Kaiser-Guttman rule, which suggests that we keep the factors whose eigenvalues are greater than $\overline{\lambda}$. The diagonal matrix **S** contains the singular values s_i = {1.678, 1.542, 1.067, 0.790, and 0.209}. The corresponding eigenvalues are $\lambda_i = s_i^2$ = {1.295, 1.242, 1.033, 0.889, and 0.457}. Therefore, $\overline{\lambda}$ = 1.40 and the Kaiser-Guttman rule suggests keeping the first two principal factors. The SVD of the reduced model $\hat{X} = \hat{T}\hat{S}\hat{D}^T$ with $k = 2$ is shown in Figure A2. The term and document loadings are given by $L_T = \hat{T}\hat{S}$ and $L_D = \hat{D}\hat{S}$, respectively. The term loadings before and after varimax rotation are shown in Table A4. Table A5 shows the document loadings before and after varimax rotation. As Table A4 and Table A5 indicate, Factor F1 appears to be highly related to the terms {*analysis*, *model*, and *risk*}, and loads strongly on documents R1, R2, R3, and R4. Factor F2 appears to be primarily related to the terms {*growth*, and *productivity*}, and loads strongly on documents P1, P2, and P3. Reading the corresponding titles from Table A1, it is plausible to infer that factor F1 is about *Analysis of Risk Models* and factor F2 is about *Growth and Productivity*.

Figure A2: The SVD of the Reduced Model

$$\underbrace{\begin{bmatrix} 0 & 0 & 0 & 0.635 & 0.612 & 0.612 & 0.449 \\ 0.602 & 0.657 & 0.496 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0.423 & 0.408 & 0.408 & 0.3 \\ 0.683 & 0.745 & 0.563 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0.505 & 0.487 & 0.487 & 0.358 \end{bmatrix}}_{\textbf{X-hat}} = \underbrace{\begin{bmatrix} 0.694 & 0 \\ 0 & -0.66 \\ 0.463 & 0 \\ 0 & -0.75 \\ 0.552 & 0 \end{bmatrix}}_{\textbf{T-hat}} \times \underbrace{\begin{bmatrix} 1.678 & 0 \\ 0 & 1.542 \end{bmatrix}}_{\textbf{S-hat}} \times \underbrace{\begin{bmatrix} 0 & 0 & 0 & 0.545 & 0.526 & 0.526 & 0.386 \\ -0.59 & -0.64 & -0.49 & 0 & 0 & 0 & 0 \end{bmatrix}}_{\textbf{D-hat}^T}$$

Table A4: Term loadings before and after varimax rotation

Term	Term Loadings: Unrotated Factor 1	Unrotated Factor 2		Orthogonal. Tran. Matrix (varimax)			After varimax Factor 1	After varimax Factor 2
analysis	1.1639	0					1.1639	0
growth	0	-1.0193		1.0000	0.0000		0	-1.0193
model	0.7762	0	×			=	0.7762	0
productivity	0	-1.1564		0.0000	1.0000		0	-1.1564
risk	0.9265	0					0.9265	0

Table A5: Document loadings before and after varimax rotation

Document	Document Loadings: Unrotated Factor 1	Unrotated Factor 2		Orthogonal. Tran. Matrix (varimax)			After varimax Factor 1	After varimax Factor 2
P1	0	-0.9098					0	-0.9098
P2	0	-0.9929		1.0000	0.0000		0	-0.9929
P3	0	-0.7502	×			=	0	-0.7502
R1	0.9152	0		0.0000	1.0000		0.9152	0
R2	0.8827	0					0.8827	0
R3	0.8827	0					0.8827	0
R4	0.6476	0					0.6476	0

REFERENCES

Aksoy, S., Atilgan, E., and Akinci, S. (2003), "Airline services marketing by domestic and foreign firms: Differences from the customers' viewpoint," *Journal of Air Transport Management*, Vol. 9, pp. 343–351.

Bamford, D. and Xystouri, T. (2005), "A case study of service failure and recovery within an international airline," *Managing Service Quality*, Vol. 15 No. 3, pp. 306-22.

Berry, M. W. (1992). "Large scale singular value computations," *International Journal of Supercomputer Applications*, 6, 13-49.

Berry, M., Dumais, S., and O'Brien, G. (1995), "Using Linear Algebra for Intelligent Information Retrieval," *SIAM Review*, Vol. 37 No. 4, pp. 573-595

Bitner, M. J., & Hubbert, A. R. (1994), Encounter Satisfaction versus Overall Satisfaction versus Quality: The Customer's Voice. In Rust, R.T., & Oliver, R.L. (Eds.). *Service Quality: New Directions in Theory and Practice. Thousand Oaks*, CA: Sage, 72-94.

Chau, V.S., & Kao, Y. (2009), "Bridge over troubled water or long and winding road? Gap-5 in airline service quality performance measures," *Managing Service Quality*, Vol. 19 No. 1, pp. 106-134.

Chen, F.Y., and Chang, Y.H. (2005), ''Examining Airline Service Quality from a Process Perspective,'' *Journal of Air Transport Management*, Vol. 11, pp. 79-87

Deerwester, S., Dumais, S., Furnas, G., Landauer, T., and Harshman, R. (1990), "Indexing by Latent Semantic Analysis," *Journal of the American Society for Information Science*, Vol. 41 No. 6, pp. 391-407.

Dumais, S. (2004), "Latent Semantic Analysis," *Annual Review of Information Science and Technology*, Vol. 38, pp. 189-230.

Ekinci, Y., and Dawes, P. (2009), "'The Impact of Frontline Employee Personality on Consumer Satisfaction," *The Service Industries Journal*, Vol. 29 No. 4, pp. 503-521.

Ekiz, H.E., Hussain, K., and Bavik, A. (2006), "Perceptions of service quality in North Cyprus national airline," *Tourism and Hospitality Industry 2006 – New Trends in Tourism and Hospitality Management*, Proceedings of 18th

Biennial International Conference, Croatia: Faculty of Tourism and Hospitality Management, Opatija, May 3-5, Vol. 03-05, pp.778-90.

Fornell, C. (1992), "A national customer satisfaction barometer: the Swedish experience," *Journal of Marketing*, Vol. 56, pp. 6–21.

Han, J., and Kamber, M. (2006), *Data Mining: Concepts and Techniques* (2nd ed.), Morgan Kaufmann Publishers.

Ku and Fan (2009), "Knowledge sharing and customer relationship management in the travel service alliances," Vol. 20 No. 12, pp. 1407–1421.

Landauer, T. K. (2002), "On the computational basis of learning and cognition: Arguments from LSA," in N. Ross (Ed.), *The psychology of learning and motivation*, Vol. 41, pp. 43-84.

Landauer, T., Foltz, P., and Laham, D. (1998), "Introduction to Latent Semantic Analysis," *Discourse Processes*, Vol. 25, pp. 259-284.

Landauer, T., Laham, D., and Derr, M. (2004), "From Paragraph to Graph: Latent Semantic Analysis for Information Visualization," *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, Vol. 101, pp. 5214-5219.

Legoherel, P. (1998), "Quality of tourist services: the influence of each participating component on the consumer's overall satisfaction regarding tourist services during a holiday," *Proceedings of the Third International Conference on Tourism and Hotel Industry in Indo-China and Southeast Asia: Development, Marketing, and Sustainability*, Thailand, pp. 47–54.

Lemon, K., and Wangenheim, F. (2009), "The Reinforcing Effects of Loyalty Program Partnerships and Core Service Usage: A Longitudinal Analysis," *Journal of Service Research*, Vol. 11 No. 4, pp. 357-70.

Liou, J.J.H., and Tzeng, G.-H. (2007), ''A Non-Additive Model for Evaluating Airline Service Quality,'' *Journal of Air Transport Management,* Vol. 13, pp. 131-138.

Nadiri, H., and Hussain, K.(2005), "Perceptions Of Service Quality in North Cyprus Hotels," *International Journal of Contemporary Hospitality Management*, Vol. 17 No. 6, pp. 469-480.

Ord, T., Martins, E., Thakur, S., Mane, K., and Börner, K. (2005), "Trends in Animal Behaviour Research (1968-2002): Ethoinformatics and the Mining of Library Databases," *Animal Behaviour*, Vol. 69, pp. 1399-1413.

Pakdil, F., Aydın, O. (2007), "Expectations and perceptions in airline services: An analysis using weighted servqual scores," *Journal of Air Transport Management,* Vol. 13 No. 4, pp. 229-237.

P Parasuraman, A., Berry, L.L., and Zeithaml, V.A. 91998), "SERVQUAL: A Multiple-Item Scale For Measuring Consumer Perceptions of Service Quality," *Journal of Retailing*, Vol. 64 No. 1, pp. 12-40.

Park, J.-W. (2007), ''Passenger Perceptions of Service Quality: Korean and Australian Case Studies,'' *Journal of Air Transport Management,* Vol. 13, pp. 238-242.

Park, J.-W., Robertson, R., and Wu, C.-L. (2004), ''The Effect of Airline Service Quality on Passengers' Behavioural Intentions: A Korean Case Study,'' *Journal of Air Transport Management,* Vol. 10, pp. 435-439.

Porter, M. (1980), "An algorithm for suffix stripping," *Program*, Vol. 14 No. 3, pp. 130–137.

Prince, J., and Simon, D. (2009), "Multimarket Contact and On-Time Performance in the U.S. Airline Industry," *Academy of Management Journal*, Vol. 52, pp. 336-354.

Rhoades, D.L., & Waguespack, B. (2008), "Twenty years of service quality performance in the US airline industry," *Managing Service Quality*, Vol. 18 No. 1, pp. 20-33.

Rhoades, D.L., and Waguespack, B. (2005), "Strategic imperatives and the pursuit of quality in the US airline industry," *Managing Service Quality*, Vol. 15 No. 4, pp. 344-56.

Salton, G., and Buckley, C. (1988). "Term-weighting approaches in automatic text retrieval," *Information Processing & Management*, vol. 24 No. 5, pp. 513–523.

Shahin, A., & Zairi, M. (2009), "Kano model: A dynamic approach for classifying and prioritising requirements of airline travellers with three case studies on international airlines," *Total Quality Management & Business Excellence*, Vol. 20 No. 9, pp. 1003 – 1028.

Shannon, W. A., Baggett, L.S., and Widener, S.K. (2009), "The impact of service operations failures on customer satisfaction: evidence on how failures and their source affect what matters to customers," *Manufacturing & Service Operations Management*, Vol. 11 No. 1, pp. 52-69.

Sidorova, A., Evangelopoulos, N., Valacich, J., and Ramakrishnan, T. (2008). "Uncovering the intellectual core of the information systems discipline," *MIS Quarterly*, Vol. 32 No. 3, pp. 467-482.

Stevens P., Knutson, B., and Patton, M. (1995), "Dineserv: a tool for measuring service quality in restaurants," *The Cornell Hotel and Restaurant Administration Quarterly*, pp. 56–60.

Tinseth, R. (2010), "Current market outlook 2010-2029," Boeing: Long-Term Market. Accessed online on August 15, 2010 from http://www.boeing.com/commercial/cmo/.

Tsoukatos, E., and Rand, G.K. (2006), "Path analysis of perceived service quality, satisfaction and loyalty in Greek insurance," *Managing Service Quality*, Vol. 16 No. 5, pp. 501-519.