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IMPACTS OF LOGISTICS SERVICE PERFORMANCE THROUGH IT ON OVERALL TOURIST SATISFACTION AND LOYALTY

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Abstract

Logistics service performance through information technology has become an increasingly important issue for tourism. A conceptual model with six hypotheses was developed to depict the relationships amongst tourism suppliers' service quality, logistics service performance, perceived service value, tourists' satisfaction and loyalty. Structural Equation Modeling was employed to analyze 425 responses from international tourists in Taipei, Taiwan for the empirical analysis. The results indicate that logistics service performance is an important antecedent to tourist satisfaction and loyalty, whereas information technology has significant effect on order accuracy and quality, and order efficiency, discrepancy and flexibility which under the construct of logistics service performance.

Keywords: Logistics service performance, IT, Service quality, Tourists' satisfaction, Loyalty, Structural equation modeling

1 INTRODUCTION

Tourism research is not short of publications indicating factors supporting tourism growth. Among them, attractiveness of the tourism destination (Murphy, et al. 2000), innovation of transportation (such as faster, cheaper, safer, and longer distance air travel) (Van Doren & Lollar 1985), increasing regimentation of life in society (for example, reduction in working hours, increasing income and increased ownership of recreation vehicles) (Krippendorf 1982), and innovations in the tourism industry (including the growth and sales of travel agencies, travel promotions, and electronic reservation systems) (Chan, et al. 2005) have been widely reported. However, little has been documented on the effect of logistics service performance (such as, using information technology (IT) to review the effectiveness of logistics services on time), which is a powerful determinant of holiday satisfaction.

Recently, Gallarza and Saura (2006) argue that *efficiency* of tourism products and services affects the tourist experience and customer loyalty. Gallarza and Saura (2006, p. 448-449) view efficiency as 'the antecedent of customer's loyalty, arguing that tourists' choice of travel destinations might be the result of a more sophisticated trading-off between price and time, where time is valued prominently as a cost of consuming services.' Cheng et al. (2007) further contend that information technology results in operational efficiency of tourism suppliers, which determines a destination's success, because an efficient operation could enhance the value of service quality to tourists and generate positive word-of-mouth recommendations. With the increasing recognition of logistics service performance, this paper argues that there is a relationship between logistics service performance through IT and tourism.

2 LITERATURE REVIEW

In tourism, customer satisfaction and loyalty derive largely from the services and the experiences the customer receives in visiting a tourist destination (Yilmaz & Bititci 2006a). Palmer and Bejou (1995) indicate that tourism studies focus on travel destination and investigate the significance of creating an attractive tourist destination emphasizing the production and marketing of tourism products. Researchers agree that travel destination is an essential part of the tourism industry and a determining factor of a customer's decision and expectation (Buckley 2007, Chi 2005, Hu 2003).

Whilst it appears that the constituents of tourism products determine customer satisfaction and loyalty, scholars generally agree that the way a tourism product is served (or the so-called service quality) is also a critical deciding factor (Sirakaya, et al. 2004). Notwithstanding the increasing importance of service quality as a major performance measurement of tourism product, the concept of service quality has remained elusive (Akbaba 2006). Various studies (Wu 2006, Yasin & Yavas 2001) indicate that service quality has to be defined from the customer's point of view. In tourism, service quality can be regarded as the tourists' judgment about a product or service's overall excellence or superiority (Zeithaml 1998). However, service quality is intangible, which cannot be seen or known before purchase (Ozer 2008). Therefore, how tourism suppliers provide their service accurately and efficiently to customers during their purchase is a major factor to increase customer satisfaction (La 2005).

Buhalis and Laws (2001) state that a tourism product is similar to a consumer product in supply chain management and logistics support. Many of the characteristics and logistics functions found in a manufacturing supply chain can also be found in the tourism industry. In a supply chain of consumer products, logistics helps to add service value for customers, improve on-time delivery performance, and enable dealers to increase services to customers (Lambert & Burduroglu 2000). In the tourism industry, the concept of tourism channel management, which includes an understanding of how products such as attractions, restaurants, hotels, and airlines are sold directly to consumers and how intermediaries serve clients with information to assist in closing sales utilizing an indirect distribution system, is likened to that of supply chain management (Laws 1998).

Conventionally, logistics service quality and performance is a major area of investigation in the field of manufacturing (Mentzer & Williams 2001, Stank, et al. 2003). As a tourism supply chain is similar to a manufacturing supply chain to a certain extent, the concept of logistics service performance should be readily applicable. Mentzer et al. (2001, p. 83) suggest that "two elements exist in service delivery: marketing customer service and physical distribution service" and could be measured by logistic service performance because of their logistics activities and services. Stank et al. (2003) contend that logistics service performance has to focus on more customer-based attributes (marketing base) rather than traditional physical distribution attributes in order to understand the customer's perceived value.

Panayides (2007) explores more customer perception attributes in logistics service performance measurement and finds a positive impact on the customer relationship due to the logistics service's effectiveness in the delivery of logistics service as a consequence of its performance. This is particularly true for tourism products where the customer's perception towards service quality is emphasized. The goals of logistics service performance include on-time service delivery, timely response to requests, accurate information storage and delivery, ability to solve problems, fulfillment of promises, and assisting clients in accomplishing their own objectives (Stank, et al. 1999). Mentzer and Williams (2001) regard availability, timeliness, and quality as the three main constructs of logistics customer services. Among the three, the role of IT is the key construct which includes accuracy, timeliness, information quality, customer-orientation, order quality fulfillment of promises and order discrepancy handling responsiveness. Efficient product delivery and satisfactory service quality, which ensure customer satisfaction and enhance propensity to revisit, form the basis of competitive advantage. This paper explores the impact of IT service on logistics service performance in the tourism supply chain in enhancing tourist satisfaction and loyalty.

2.1 Conceptual model and research hypotheses

2.1.1 Tourism suppliers' service quality (TSSQ)

In tourism research, service quality has been extensively examined over the past two decades (Kandampully 2000). The service quality instrument (SERVQUAL) (Parasuraman, et al. 1985, 1988) is the most commonly used instrument to measure service quality as provided by suppliers and perceived by customers. SERVQUAL has five dimensions as follows: (1) reliability (the ability to perform the promised service dependably and accurately); (2) responsiveness (the willingness to help clients and to improve and provide prompt service); (3) assurance (the knowledge and courtesy of employees and the ability to convey trust and confidence); (4) empathy (the provision of caring, individualized attention to customers); and (5) tangibles (the appearance of physical facilities, equipment, personnel, and communications materials). Nevertheless, the widely applied SERVQUAL scale can serve as a basis for development of new scales appropriate for different industries taking into account their unique operation characteristics.

This study emphasizes tourism suppliers' service quality among logistics service performance and overall tourist satisfaction. Improving customer satisfaction is the major service dimension in the logistics service industry. In order to assess the logistics capabilities and performance affected by suppliers' service quality, the SERVQUAL scale is largely used to carry out the application of logistics service performance and adopted into different service industry. Mentzer and Williams (2001) point out that service quality is an attempt to understand your customer's satisfaction from the perspective of various needs. This study modifies the SERVQUAL scale into more focusing on customers' perceived service value, operational attributes through IT and different product availabilities. The concept of this dimension includes the following:

- Based on many consumer behavior studies (Hartline & Ferrell 1996), personnel service quality is an antecedent of operational performance. Daugherty et al. (1998) indicate that communications and responsiveness which are major service quality elements adopted from SERVQUAL have been shown to have a positive relationship with customer satisfaction. Therefore, this study uses personnel service quality as one of the dimensions in total tourism supplier service quality.
- Lo, et al. (2004) suggest that information systems and sources play an important role in connecting customers and suppliers together efficiently. Thus information system quality is used to examine the quality of reservation systems in tourism suppliers.
- The availability of tourism products requested by tourists is important in service quality. Customers could be satisfied when they are able to obtain the quantities they desire (Kisperska-Moron 2005). Also, the product availability is an important element in the manufacturing industry (Mentzer & Williams 2001). To test the tourism supply chain performance, the indicator of providing the right quantity and quality products to tourists is an essential service performance measurement (Buhalis 2000b).

2.1.2 Logistics service performance (LSP)

Logistics service performance essentially emphasizes the ability of handling order processes in a supply chain (Mentzer & Williams 2001). Based on the unique characteristics of tourism products (Eraqi 2006), order accuracy (refers to the right quantity of tourism product), order quality (refers to how well the tourism product presents which is a supplier's commitment and quality to maintain a promised product delivery as schedule), order efficiency (refers to the concept of just-in-time to minimize inventory and maximize tourism production), and order discrepancy (refers to the ability of handling the wrong order) can examine how efficiently and functionally tourism suppliers could handle order requests in order to apply to the characteristic of perishability and inseparatability in tourism products.

Based on existing literature, tourism suppliers' service quality is defined as perceptions of service quality performed by service suppliers that contributes to service quality, information efficiency and product availability. Davis (2006) suggests that service quality of suppliers has a positive influence on logistics service performance. She contends that professional service quality results in positive logistics service performance. Scannell et al. (2000) also indicate that high quality of service performance could result in positive suppliers' logistics service performance. In order to further understand this casual relationship in tourism, this study adopts the SERVQUAL scale for tourism operation's attribute, and hypothesises:

- H1. Tourism suppliers' service quality positively influences logistics service performance; and thus that:
- H1a. Personnel Service Quality (PSQ) positively influences order accuracy and quality.
- H1b. Personnel Service Quality positively influences order efficiency, discrepancy and flexibility.
- H1c. Information Service Quality and Product Availability (ISQPA) positively influence order accuracy and quality.
- H1d. Information service quality and product availability positively influence order efficiency, discrepancy and flexibility.
- 2.1.3 Perceived service value (PSV)

Perceived service value has been discussed in many marketing studies as one of the key determinants of customer satisfaction and loyalty. Lin (2007, p. 115) summarises that 'the perceived service value is the result of the customer's overall evaluation of the benefits gain by the customer (from a product or service) and the costs (i.e. money, time, efforts, energy) that he paid'. Lee (2005) indicates that after the customer perceives the service provided, he or she might think the service value is more important than cost or time.

There are four definitions in service value which have been used in Zeithaml's study (1998). They are: (1) value is low price; (2) value is whatever I want for a product; (3) value is for the quality I get for the price I pay; and (4) value is that I get for what I give. Zeithaml (1998) reports that perceived service quality directly leads to service value and then leads to satisfaction and loyalty. Many other empirical studies in marketing support the positive relationship between service quality and customer satisfaction (Stank, et al. 1999, Um, et al. 2006). Professional service quality provides suppliers with enhanced insights regarding customer needs and wants (Stank, et al. 1999). Researchers conclude that service quality can directly or, indirectly through logistics service performance, enhance operational performance more efficiently, resulting in customer satisfaction (Chung, et al. 2006). This evidence supports that service quality and logistics service performance influences satisfaction and thus service quality can both directly and indirectly affect customers' perceived service value leading to customer satisfaction. Hence, this study hypothesises that:

H2: Tourism suppliers' service quality positively influences perceived service value, and also that:

- H2a. Personnel service quality positively influence perceived service value.
- H2b. Information service quality and product availability positively influence perceived service value.
- H3: Tourism suppliers' service quality positively influences overall tourist satisfaction.
- H3a. Personnel service quality positively influences overall tourist satisfaction and also that
- H3b.Information service quality and product availability positively influence overall tourist satisfaction.
- H4: Logistics service performance positively influences overall tourist satisfaction.
- H4a. Order accuracy and quality (OAQ) positively influence overall tourist satisfaction.

H4b. Order efficiency, discrepancy and flexibility (OEDF) positively influence overall tourist satisfaction.

H5: Perceived service value positively influences overall tourist satisfaction.

2.1.4 Overall tourist satisfaction (OTS) and Tourist loyalty (TL)

Overall satisfaction is a much broader concept based on a holistic evaluation after purchase (Gallarza & Saura 2006). Oliver (1997) indicates that overall satisfaction is not just the sum of the individual assessment of each satisfaction attribute. He further suggests that overall satisfaction and attribute satisfaction are distinct, though related, constructs. Thus, many tourism studies support his view and use overall satisfaction as a major attribute except for the individual satisfaction attribute (Lee 2005).

In the tourism field, researchers generally consider tourism loyalty as an experience of travel (Lee 2002), tourists' participation in travel activities (Hu 2003), and the degree of interest in tourism product and the affective response associated with it (Manfredo 1989). Tourist loyalty is not only related to a psychological behavior (i.e. a commitment or emergence of ego into the behavioral object), but also is an involvement in recreation/leisure behaviors (Lee 2005).

Based on the literature reviewed, a conceptual model on the relationship between logistics service quality, logistics service performance, service value, overall tourist satisfaction, and loyalty is proposed and shown in Figure 1. This leads to the following hypothesis:

Logistics Service Performance

H6. Overall tourist satisfaction positively influences tourist loyalty.



Tourism Suppliers' Service Quality

Figure 1. A conceptual model and hypotheses

3 METHODOLOGY

This study targeted the population of international tourists who stopped in Taoyuan International Airport in Taipei, Taiwan, and then stayed at hotels, motels, bed and breakfast accommodation, and used major tour sightseeing and major shopping centers during a two-month survey period from May to July in 2007.

A total of 654 responses out of 1,000 distributed questionnaires were received. To ensure the accuracy of the data, all questionnaires were thoroughly examined. Results from the questionnaires were cross-examined with Social Package for Social Science 15.0 (SPSS 15.0) to ensure that data entry has been completed without any errors. After checking the whole data set, the usable sample size was 425. Therefore, this study used 425 valid responses. After a sincere data screen, this study removed as a final sample size which was above the required 385 to provide 95% accuracy and confidence level to process the statistical analysis.

The survey questionnaire consisted of the following constructs: tourism suppliers' service quality, logistics service performance, perceived service value, overall tourists' satisfaction, and tourists' loyalty. To test the measurement models, separate Exploratory Factor Analysis (EFA), in order to reduce survey measurement items with low factor loadings and Confirmed Factor Analysis (CFA) were performed on variables associated within each construct. Then, SEM (LISREL SYNTEX 8.80) was further used to analyse the data. A seven-point Likert scale that ranged from 1= *Strongly Disagree* to 7= *Strongly Agree* was used to assess the hypothesized construct relationships.

4 DATA ANALYSIS

Table 1 represents the results of the initial model. The statistical results indicated a good support for all hypotheses. However, the critical N (162.73) was less than 200. Thus, this study modified the model in order to gain an overall good-fit result.

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Chi-square with degree of freedom	711.60 with 217 df ($p = .000$)			
Normed chi-square (χ^2/df)	3.27			
Goodness-of-fit (GFI)	0.87			
Root mean square error of approximation (RMSEA)	0.073			
Standardized root mean square residual (SRMR)	0.064			
Normed fit index (NFI)	0.97			
Hoelter's critical N (CN)	162.73			
Comparative fit index (CFI)	0.98			

 Table 1.
 A summary of goodness-of-fit indices for the initial model

Once being modified (Table 2), the result for this new model had improved its GFI (0.92) and CN (238.47), and decreased its Normed chi-square 2.14. The model indicates a good model fit in Table 2.

Chi-square with degree of freedom	416.03 with 194 df (p =.000)
Normed chi-square (χ^2/df)	2.14
Goodness-of-fit (GFI)	0.92
Root mean square error of approximation (RM	(ASEA) 0.052
Standardized root mean square residual (SRMI	IR) 0.06
Normed fit index (NFI)	0.98
Hoelter's critical N (CN)	238.47
Comparative fit index (CFI)	0.99

Table 2.Modified Overall Model Fit

In the construct reliability test, 'the Squared Multiple Correlations (SMCs) of the exogenous and endogenous variables indicate how well the y and x variables measure the latent constructs, and the extent to which the individual variables were free from measurement error' (Lo 2007, p. 130). 'The correlations represent the reliability of the measures, or the extent to which a measured variable's variance is explained by the latent factor' (Lo 2007, p. 130). The SMCs value is better if the value is close to one indicating that the factor or the latent-to-latent construct has better reliability. Most of the reliability of the constructs and hypotheses were accepted, except for two sub-hypotheses (see Table 3). Furthermore, the values of CR and AVE calculated for the latent constructs were considered reliable, ranging from 0.77 to 0.99 and from 0.59 to 0.77, respectively (see Table 3). Therefore, the indicators for all five constructs were sufficient.

Dimension	Std. Loadings	SMC (R ²)	CR	AVE
PSQ			0.99	0.71
PSQ1	0.88	0.77		
PSQ2	0.88	0.77		
PSQ3	0.87	0.77		
PSQ4	0.82	0.67		
PSQ5	0.84	0.70		
PSQ6	0.83	0.69		
PSQ7	0.78	0.62		
ISQPA			0.87	0.59
ISQPA1	0.76	0.58		
ISQPA2	0.76	0.58		
ISQPA3	0.80	0.65		
ISQPA4	0.80	0.64		
ISQPA5	0.72	0.62		
OAQ			0.83	0.71
OAQ1	0.86	0.74		
OAQ2	0.83	0.69		
OEDF			0.85	0.66
OEDF1	0.82	0.67		
OEDF2	0.81	0.66		
OEDF3	0.81	0.66		
PSV			0.87	0.77
PSV1	0.89	0.78		
PSV2	0.88	0.77		
OTS			0.83	0.71
OTS1	0.87	0.76		
OTS2	0.79	0.63		
TL			0.77	0.63
TL1	0.87	0.75		
TL2	0.72	0.52		

Table 3.SMCs, CR and AVE for final SEM model

Finally, to examine the discriminate validity of the measurement model, the correlations amongst latent constructs were examined. High value correlations exceeding 0.9 (Hair, et al. 2006) or correlations exceeding 0.85 (Kline 1998), should be noted as an indication of a problematic level of inter-correlated constructs. In this study, the correlations among and between exogenous and endogenous constructs ranged from 0.85 to 0.41, indicating an appropriate level of inter-correlation. Together with the results of CR and AVE, all the above tests indicated a good validity amongst the constructs in the final model (Fig. 2).

After the model was modified, the next step was to test the hypotheses reported in Section 2. The hypotheses were tested by evaluating the relationships between exogenous and endogenous variables. The SEM results supported all six main hypotheses, indicating statistically significant paths. Ten out of the total twelve hypothesized paths were significant, with absolute *t*-values exceeding 1.96. The paths from personnel service quality to overall tourists' satisfaction (H3a) and from order accuracy and quality to overall tourists' satisfaction (H4a) were not significant. This study reconfirmed many previous studies' findings, which was that overall tourists' satisfaction was the most important factor to tourist loyalty. This study used logistics service performance as a new factor to test the theoretical framework. The data analysis supported the hypothesized model and confirmed that order efficiency, discrepancy and flexibility could be a significant factor to tourists' satisfaction. Also, this study represented that both tourism suppliers' service quality and logistics service performance were antecedent to overall tourists' satisfaction and led to tourist loyalty.

In addition, the square multiple correlations (R^2) for the structural equations, which represents the amount of variance in each endogenous latent variable and accounted for by the independent latent variables, were evaluated. The R^2 for the five endogenous variables ranged from 0.35 to 0.82 (Fig. 2). Overall, the model had an R^2 of 0.74 which indicated that two exogenous variables (PSQ and ISQPA) explained 74% of variance in endogenous variables (TL). The other factors, such as SPA, ISQPA, OAQ, OEDF, and PSV together explained 85% of the variance in OTS. The results of R^2 represented the reliability of exogenous variables to endogenous variables. The results of R^2 in this final model had a high reliability within constructs.



Figure 2. Final structural equation model

5 DISCUSSION AND CONCLUSION

This study clearly indicated that tourism suppliers' service quality, logistics service performance, and perceived service value as antecedents positively affects tourists' satisfaction and loyalty. The results

indicated that not all of the dimensions of service quality and logistics service performance exerted an influence on tourists' satisfaction that is attained.

H1: Tourism suppliers' service quality positively influences logistics service performance.

There were four sub-hypotheses in the first main hypothesis. SEM demonstrates that personnel service quality was important to order accuracy and quality and order efficiency, discrepancy and flexibility. The other sub-hypotheses belonged to the factor of information service quality and product availability under the dimension of tourism suppliers' service quality. In the SEM, the statistical analysis had showed that information service quality had the significant relationship with logistics service performance. In the manufacturing and marketing field, the quality of information systems such as download speed, web content and customer service would positively affect the ordering process and effectiveness of logistics service performance (La 2005). This study used hospitality services as indicators. For example, hotel reservation systems, tourism sight-seeing booking systems and the airline reservation system were used as information service quality indicators. In regards to product availability, for example, tourism facilities and infrastructure, and services were used to be the other indicators in the factor of information service quality and product availability under the dimension of logistics service quality. SEM illustrate that information service quality and product availability positively affected order accuracy and quality, and order efficiency, discrepancy and flexibility.

H2: Tourism suppliers' service quality positively influences perceived service value.

There were two sub-hypotheses in the main hypothesis of logistics service quality which would be examined in the SEM relating to perceived service value. Perceived service value is commonly discussed as a determinant to customer satisfaction and loyalty. It is widely known as an overall evaluation of the benefits awarded from a customer after purchasing. In this study, logistics service quality (both factors) significantly affects perceived service value. Buckley (2007) indicates that perceived service value is largely defined by perceptions of service quality. SEM path analysis showed that suppliers' service quality has a direct effect on perceived service value, positively affecting tourist satisfaction.

H3: Tourism suppliers' service quality positively influences overall tourist satisfaction.

In this set of hypotheses, H3a was less significant to support H3. In past literature (Stank, et al. 1999, 2003, Mentzer, et al. 2001), many studies supported that higher service quality increases customers' satisfaction. This shares the same support between service quality and tourists' satisfaction from the tourism literature (Um, et al. 2006). However, the result showed that only H3b was supported by the SEM result. Therefore, H3 was partially supported.

H4: Logistics service performance positively influences overall tourist satisfaction.

The first sub-hypothesis of order accuracy and quality affecting overall tourist satisfaction was rejected using the SEM result. However, the second hypothesis of order efficiency, discrepancy and flexibility to positively affect, directly relating, to overall tourist satisfaction was supported. Previous studies (Daugherty, et al. 1988, Stank, et al. 2003) conducted an indirect relationship amongst logistics service performance and customer satisfaction. However, in this study, order efficiency, discrepancy and flexibility with 0.43 of direct effect which was the strongest factor compared to all other factors can positively affect overall tourists' satisfaction.

H5: Perceived service value positively affects overall tourist satisfaction.

Perceived service value is one of the determinant factors to tourist satisfaction in the tourism literature. Therefore, in this study, the two sub-hypotheses (H3a and H4a) stated that there was insufficient support and service in Taipei. After visiting Taipei, tourists still received a high perceived service value through tourism suppliers and felt satisfied.

H6: Overall tourist satisfaction positively affects tourist loyalty.

In the SEM, overall tourist satisfaction and tourist loyalty have the highest significant t value among the other constructs. In many tourism studies, satisfaction is the major determinant to win repeat tourists' loyalty. This research confirmed this empirical relationship.

The major contribution of this study was to present the concept of logistics service performance into tourism which is new and rarely used in tourism and IS-related studies. This study used two primary dimensions (tourism suppliers' service quality and logistics service performance) with four subdimensions in relation to tourists' satisfaction and loyalty. In the SEM result, information service quality and product availability increases order quality, accuracy, flexibility, discrepancy, and efficient. This result provides an important implication for tourism suppliers who should consider operation efficiency through IT as an important factor to affect tourists' satisfaction and loyalty. Order efficiency, discrepancy and flexibility of logistics service performance is the most important factor amongst the remaining factors positively affecting overall tourists' satisfaction. As a result, this study confirmed that tourists care about increasing time saving, product choices and changing product flexibilities in reservation which were tested in reservations (McIvor, et al. 2003). This study modifies the SERVQUAL scale into more attempting to tourism suppliers' service quality and logistics service performance. The application of this study had some limitations. Due to the gap between tourism and manufacturing research, this study used logistics service performance measurements only mainly from manufacturing theory as one major construct which are modified and representing tourism operations. Although the result fit in the final SEM model, two constructs (order quality and accuracy and order efficiency, discrepancy and flexibility) could not completely represented logistics service management in tourism. The reason that logistics service performance can be largely and successfully applied in manufacturing research was logistics activities truly existing in each supplier through the whole production supply chain. In contrast, several tangible categories are absent in tourism such as warehousing and production, which made this study more difficult to examine in the real tourism supply chain. The main product of tourism is service. Service quality is the most important category in measuring tourist satisfaction (Sirakaya, et al., 2004). Therefore, this study only focused on logistics service performance measurements (i.e. efficiency and flexibility) in the reservation process before and after travel to identify that logistics service performance does play a role in the tourism industry. Future studies can examine the possibilities of more impacts of IT through various tourism services affecting tourist satisfaction and revisit.

References

- Akbaba, A. (2006). Measuring service quality in the hotel industry: A study in a business hotel in Turkey, International Journal of Hospitality Management, 25(2), 170-192.
- Buckley, R. (2007). Adventure tourism products: Price, duration, size, skill, remoteness, Tourism Management, Article in Press.
- Bhualis, D. (2000). Relationships in the distribution channel of tourism: Conflicts between hoteliers and tour operators in the Mediterranean region, International Journal of Hospitality and Tourism Administration, 1(1), 113-139.
- Buhalis, D. (2001). Tourism distribution channels: Practices and processes, In Tourism Distribution Channels- Practices, Issues and Transformation (Buhalis, D. and Laws, E. Ed.), p. 7-32, Continuum, New York.
- Buhalsi, D. and Laws, E. (2001). Tourism Distribution Channels, Practices, Issues and Transformations. Continuum, New York.
- Chan. F., Bhagwat, R., Kumar, N. and Tiwari, M. (2005). Development of a decision support system for air-cargo pallets loading problem: A case study, Expert System with Applications, 1-14.
- Cheng, J.H., Chen, F.Y. and Chang, Y.H. (2007). Airline relationship quality: An examination of Taiwanese passengers. Tourism Management, Article in Press.
- Cheung, C.F., Chan, Y.L., Kwok, S.K., Lee, W.B. and Wang, W.M. (2006). A knowledge-based service automation system for service logistics, Journal of Manufacturing Technology Management, 17(6), 750-771.

Chi, G. (2005). A Study of Developing Loyalty Model, PhD thesis, Oklahoma State University.

- Daughetry, P.J., Stank, T.P. and Ellinger, A.E. (1998). Leveraging logistics/distribution capabilities: The effect of logistics service on market share, Journal of Business Logistics, 19(2), 35-51.
- Davis, E.R. (2006). The Role of Logistics Service Quality in Creating Customer Loyalty, PhD Thesis, The University of Tennessee.
- Dwyer, L, Forsyth, P. and Rao, P. (2000). The price competitiveness of travel and tourism: A comparison of 19 destinations, Tourism Management, 21(1), 9-22.
- Eraqi, M.I. (2006). Tourism service quality (TourServQual) in Egypt, Benchmarking: An International Journal, 13(4), 469-492.
- Gallarza, M. and Saura, I. (2006). Value dimensions, perceived value, satisfaction and loyalty: An investigation of university students' travel behaviour, Tourism Management, 27(3), 437-452.
- Hair, J., Black, W., Babin, A. and Tatham, R. (2006). Multivariate Data Analysis. 2nd Edition. Prentice-Hall, New Jersey.
- Hartline, M.D. and Ferrell, O.C. (1996), The management of customer contact service employees: An empirical investigation, Journal of Marketing, 69(October), 52-70.
- Hu, B. (2003). The Impact of Destination Involvement on Travellers' Revisit Intentions, PhD Thesis, Purdue University.
- Kandampully, J. (2000). The impact of demand fluctuation on the quality of service: A tourism industry example, Managing Service Quality, 10(1), 10-18.
- Kisperska-Moron, D. (2005). Logistics customer service levels in Poland: Changes between 1993 and 2001, International Journal of Production Economics, 93/94(8), 121-128.
- Krippendorf, J. (1982). Towards new tourism policies- The importance of environmental and sociocultural factors, Tourism Management, 3(3), 135-148.
- La, K.V. (2005). Customer Loyalty in Web-Based Retailing, PhD Thesis, Royal Melbourne Institute of Technology University.
- Lambert, D.M. and Burduroglu, R. (2000). Measuring and selling the value of logistics, The International Journal of Logistics Management, 11(1), 1-17.
- Laws, E. (1998). Conceptualizing visitor satisfaction management in heritage settings: An exploratory blueprinting analysis of Leeds castle, Kent, Tourism Management, 19(6), 545-554.
- Lee, G. (2002). Constructs of Tourists' Destination Loyalty and Market Segmentation, PhD Thesis, Purdue University.
- Lee, S.Y. (2005). A Conceptual Model of The Roles of Price, Quality, and Intermediary Constructs in Determining Behavioural Intention, PhD Thesis, Texas A&M University.
- Lin, W.B. (2007). The exploration of customer satisfaction model from a comprehensive perspective, Expert Systems with Applications, 33(1), 110-121.
- Lo, A., Cheung, C. and Law, R. (2004). Information search behaviour of Mainland Chinese air travellers to Hong Kong, Journal of Travel and Tourism Marketing, 16(1), 43-51.
- Lo, S.Y. (2007). A Study on The Impact of A Bundle of Determinants on The Shopping and Visiting Intentions of Tourists- An Extension of The Theory of Reasoned Action, PhD Thesis, Oklahoma State University
- Manfredo, M.J. (1989). An investigation of the basis for external information search in recreation and tourism, Leisure Science, 11, 29-45.
- McIvor, R., O'Reilly, D. and Ponsonby, S. (2003). The impact of Internet technologies on the airline industry: Current strategies and future developments. Strategic Change, 12, 31-47.
- Mentzer, J. and Williams, L. (2001). The role of logistics leverage in marketing strategy, Journal of Marketing Channels, 8(3/4), 29-48.
- Murphy, P., Pritchard, M. and Smith, B. (2000). The destination product and its impact on traveller perceptions, Tourism Management, 21(1), 43-52.
- Oliver, R.L. (1997). Satisfaction: A Behavioral Perspective on The Consumer, McGraw-Hill, New York.
- Ozer, M. (2008). Improving the accuracy of expert predictions of the future success of new internet services, European Journal of Operational Research, 184(3), 1085-1099.

- Palmer, A. and Bejou, D. (1995). Tourism destination marketing alliances, Annals of Tourism Research, 3(3), 619-629.
- Panayides, P.M. (2007). The Impact of Organizational Learning on Relationship Orientation, Logistics Service Effectiveness and Performance, Industrial Marketing management, 36(1), 68-80.
- Parasuraman, A., Valerie, A.Z. and Leonard, L.B. (1985). A conceptual model of service quality and its implications for future research, Journal of Marketing, 67(4), 420-450.
- Parasuraman, A., Valerie, A.Z. and Leonard, L.B. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality, Journal of Retailing, 64(1), 12-40.
- Scannell, T.V., Vickery, S.K., and Droge, C.L. (2000). Upstream supply chain management and competitive performance in the automotive supply industry, Journal of Business Logistics, 21(1), 23-48.
- Sirakaya, E., Petrick, E. and Choi, H.S. (2004). The role of mood on tourism product evaluation, Annals of Tourism Research, 31(3), 517-539.
- Stank, T.P., Thomas, J.G. and Shawnee, K.V. (1999). Effect of service supplier performance on satisfaction and loyalty of store managers in the fast food industry, Strategic Management Review, 11(4), 801-814.
- Stank, T.P., Goldsby, T.J., Vickery, S.K. and Savitskie, K. (2003). Logistics service performance estimating its influence on market share, Journal of Business Logistics, 24(1), 27-55.
- Um, S., Chon, K. and Ro, Y.H. (2006). Antecedents of revisit intention, Annals of Tourism Research, 33(4), 1141-1158.
- Wu, K.W. (2006). Service Quality, Customer Satisfaction, and Customer Loyalty in Consumer Electronics E-Tailers: A Structural Equation Modeling Approach, PhD thesis, Lynn University.
- Yasin, M.M. and Yavas, U. (2001). Improving service quality in the hospitality industry: A framework, Journal of Hospitality & Leisure Marketing, 7(4), 33-44.
- Yilmaz, Y. and Bititci, U.S. (2006 a). Performance measurement in tourism: A value chain model, International Journal of Contemporary Hospitality Management, 18(4), 341-349.
- Yilmaz, Y. and Bititci, U. (2006 b). Performance measurement in the value chain: Manufacturing vs. tourism, International Journal of Productivity, 55(5), 371-389.
- Zeithaml, V.A. (1998). Consumer perceptions of price, quality and value: A means-end model and synthesis of evidence, Journal of Marketing, 52(July), 2-22.