INFORMATION
TECHNOLOGY JOURNAL

A Study to Examine If Integration of OTAs Features can Make SBTs More Flexible Online Airline Reservation Systems?

Arif Mushtaq, Suzia Bt. Sulaiman, P.D.D. Dominic, Sadia Riaz and Muhammad Abdul Tawab Khalil
Department of Computer and Information Sciences, Universiti Teknologi PETRONAS,
Tronoh, 31750, Perak, Malaysia

Abstract: Suppliers branded websites are Self-Booking Tools (SBTs) providing direct linkage of the passenger with the airline industry. They provide carrier-direct bookings facility to travelers without having them going through the hassle of other intermediates. On the contrary, Online Travel Agencies (OTAs) cash upon the nexus of computer reservation systems and global distribution systems act as a central hub for price differentiation and comparison. Their success is derived by innovational strategies, as a result they hold lion's share in the travel industry. In this paper we identify and discuss different OTAs features that are not integrated into SBTs. It is essential to understand if the integration of some OTAs features could make SBTs more flexible online airline reservation systems. Should this is the case, then how could this be done. Therefore, a preliminary but comprehensive survey with the focus group was conducted with airline executives, using quantitative survey method to examine their subjective satisfaction with existing systems and to get feedback on the idea of OTAs features integration into SBTs so as to make them more flexible. The finding indicates that although opaque fare, matrix display, alternate airport search and hotel search facility are all part of OTAs' innovations, adoption of opaque fare concept can make SBTs more flexible online airline reservation systems.

Key words: Self Booking Tools (SBTs), Online Travel Agencies (OTAs), opaque fares, Flexible Online Airline Reservation Systems (FOARS)

INTRODUCTION

Computer Reservation Systems (CRSs) are the computerized systems used for storing and retrieving information such as, airline reservation systems, car rental systems and, hotel reservation systems. CRSs run on mainframes, minicomputers or microcomputers and are connected through data communication links to terminals within various branches of the company for bookings. While, Global Distribution Systems (GDSs) are the systems that book and sell tickets for multiple airlines and use internet gateways to allow users for making reservations, from hotel booking to car rentals, from railway reservation to e-ticketing. The emergence of GDSs and their connectivity with CRSs has brought hundreds of thousands of travel agents and other distributors with thousands of suppliers on one single platform, hence resulting in improved efficiency, facilitating control and rapid response time to both customers and management (Coli *et al.*, 2011; Braham, 1988; Sheldon, 1977; O' Connor, 1999).

Likewise travel agencies through GDSs enjoy the freedom to make reservations directly from their terminal

with any airline, on any continent. This saves much of their coordination time and effort that is required in settling negotiations. A travel agency, also called a travel bureau, is defined as business that attends to the details of transportation, itinerary and accommodations for travelers (Quinby, 2008). Travel agency acts as an agent, just like a retail storefront that books and sells tickets on behalf of many airlines. Traditional travel agencies hold a large portion of travel booking industry, due to a number of factors such as, face to face service to customers, provision of personalized services and realistic solutions for providing reservation arrangements, comfort in country of destination and special packages or promotional deals (Oxford Economics, 2010). On the negative front, traditional travel agencies are blamed for practicing restrictive practices such as racking whereby they promote traveling brochures of those companies only who pay them highest commission (Renshaw, 1997). The traveler is unaware of possible alternative options and considers them to be the only once or best option available.

On the contrary, an Online Travel Agencies (OTAs) operate through a travel website on the World Wide Web,

---

Corresponding Author: Arif Mushtaq, Department of Computer and Information Sciences, Universiti Teknologi PETRONAS,
Bandar, Seri Iskandar, Tronoh 31750, Perak, Malaysia Tel: +60195969598 Fax: +605-3656180

dedicated to providing updated travel related information, guidance and travel reviews. The travelers interact with the virtual interface of the online travel agency which allows them to search and book their travel plans. The online reservation process does not involve personalized attention on behalf of online travel agency and still this does not seem to be a matter of concern for travelers. According to Forrester Research (Saks, 2006), approximately seventy million consumers searched for travel plans online in July 2006, thus making online travel bookings the single largest component of e-commerce. This also makes online travel agencies an important part of the overall equation for flexible reservation systems for airlines. The recent growing acceptance of online travel agencies is credited to their meta-search engines feature that provides fare aggregators to travelers (Kim *et al.*, 2007). Meta-search engine as the name indicates conducts search across multiple independent search engines and gets live availability of flights through screen scraping process which crawls through the airline websites and extracts content by way of human-readable HTML feed. The content extracted from various airlines website is then displayed to the users in the form of fare aggregation, i.e., all results on one screen. According to PhoCusWright Report 2009 (Quinby and Merten, 2009), the overall share of online travel agencies in US travel market alone was 13% in 2008 and projected to touch 16% in 2011 (Fig. 1).

On the contrary, the share of conventional traveling agency was 33% in 2008 and is projected to suffer a decline 3% in 2011. This is further justified from Yahoo Travels' claim which says that 76% of all online travel purchases occur as a result of search function. Jupiter Research in its Travel Consumer Survey published in 2004 pointed out that nearly two in five online travel consumers say they believe that no one site has the lowest rates or fares (Last Minute Travel Bargains). This therefore created a niche research dimension for OTAs to look at different ways for integrating additional features into their reservation system so as to optimize aggregate travel search and provide lowest rates from multiple travel sites, to eliminate travelers' verification need from site to site.

It is also interesting to note from the chart above that supplier branded websites also will experience an estimated increase of 3% in 2011. Suppliers branded websites are self-booking tools providing direct linkage of the passenger with the airline industry. They provide carrier-direct bookings facility to travelers without having them going through the hassle of other intermediates. These booking are just like going to the reservation office of a specific airline physically and are popular among travelers who remain loyal to their favorite brands of
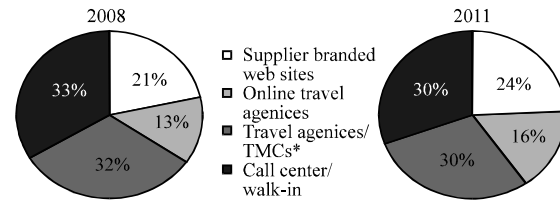

Fig. 1: U.S. Travel market by Channel, 2008 and 2011

airlines and prefer to travel only through them. Another strong reason for travelers to opt for SBTs is their ability to earn flying rewards which ultimately makes them more loyal towards a particular brand of airline. Likewise, in order to differentiate their reservation channel from others, airlines have started to invest heavily in their online SBTs capabilities, offering more features and convenience for travelers such as tracking, managing and redeeming air miles. Moreover, airlines also invest massively on branding of their image and securing loyalty of customers by offering reward mileage bonuses. In addition to this some airlines have gone to the extent of imposing fees on Global Distribution Systems (GDSs) bookings for their carrier. For example Lufthansa airline in its Preferred Fares Program launched in 2008, imposed fees of €4.90 per ticket for travel agencies in Austria, Germany and Switzerland that made reservations through GDSs.

On the contrary, OTAs cash upon the nexus of Computer Reservation Systems (CRSs) and GDSs act as a central hub for price differentiation and comparison. They provide discounted fares and 24 h service. Their fixed costs are lowest, since there is no requirement as such to set up physical offices with state-of-the-art facilities at prime locations. Their success is derived by innovational strategies, as a result they hold lion's share, 50% (average 2006, 2007 and 2008) in the travel industry.

In this study we identify and discuss different OTAs features that are not integrated into SBTs of the airlines mostly because of the practical implication of each OTAs feature which is not very feasible for the SBTs to opt for. However, it was essential to understand if the integration of some OTAs features could make SBTs more flexible online airline reservation systems. Should this is the case, then how could this be done. It was decided to opt for a survey with the focus group approach (Nielsen, 1993), since it is an acknowledged technique of usability engineering which is based on survey method or qualitative or can be used as a self-contained technique (Morgan, 1988; Vaughn *et al.*, 1996) to collect users' subjective feedback, views or response on software or a website. Moreover, the said technique is believed to be helpful to obtain information, stimulate new ideas,

diagnose problem, generate and test hypothesis (Krueger, 1994; Stewart and Shamdasani, 1990). This approach has a high apparent validity, because the concept of combining focus groups with surveys can be easily comprehended and the results are believable since it provides "augment pre-testing" of a preliminary version. The cost of the survey is at the minimal, therefore, one can get the results relatively quicker and if required, the sample size can be increased as per the discretion of the research requirement (Marshall and Rossman, 1999).

LITERATURE REVIEW

The efficient use of Information Communication Technologies (ICTs) can promote and strengthen today's competitive business (Jayashree and Marthandan, 2010; Ongori, 2009). ICTs open opportunities and challenges for the businesses by providing business connections (Mirza *et al.*, 2009). For example, anyone can directly access the travel reservation systems these days with the help of Internet and a Web browser. It is expected to have more number of online transactions with the use of new technologies (Haque *et al.*, 2009) such as, use of mobile messaging technology and services provided by Radio Frequency Identification (RFID) tracking (IBM, 2005). ICTs do not only reduce distribution cost for the airline industry rather it provides a way to get closer to their customers (Olmeda and Sheldon, 2001). In 2007, e-ticketing was estimated to be the major distribution channels worldwide (O'Toole, 2002). However, online travel agencies provide more efficient use of ICTs to promote their business.

A comparison chart on SBTs and OTAs is presented and discussed (Table 1). Table 1 discusses innovative attributes and functions that have contributed immensely towards the popular acceptance of OTAs over Airlines' SBTs and are also widely common among travel companies in recent years (Lambert, 2006; Harrison, 2006). Functions such as product presentation, reservation, quoting and ticketing, post-sale services, low fare notification, dynamic packaging and flexible alternative date search are also performed by SBTs, however, OTAs get an edge over SBTs in terms of providing matrix display, opaque fares, alternative airport search and hotel search.

Matrix display: Orbitz is the pioneer in OTAs who initiated the concept of matrix display. This feature allows users to click on any particular airline offered fare to see the further details such as departure and arrival timings. As shown in Fig. 2, there are a number of airfares from New York to Los Angeles offered by multiple carriers on the specified dates e.g., departure: 29 December 2010; arrival: 29 January 2011. In the matrix, carriers are organized in multiple columns, stops in multiple rows and the airfares are placed against airlines and stops.

Alternate airport search: Alternate airport search feature helps users to find the lowest possible fare or most convenient schedule across multiple departure and arrival airports. Using this feature as shown in Fig. 3, one can click on the checkbox "include nearby airports" to see the search results on the specified as well as nearby airports. Orbitz provides the flexibility of choosing include nearby airports for source and destination airports.

Table 1: Comparison chart SBTs vs. OTAs Schulz (1996)

| Feature	Description	SBTs	OTAs
Product presentation	It is the presentation of services or products in all aspects of travel industry	✓	✓
Reservations	It is used for making reservations for the offered services and products	✓	✓
Quoting and ticketing	It relates to providing fare quotes and generate receipts for the given services and products	✓	✓
Additional services	It is post-sale features and user prompting for their guidance throughout the reservation process	✓	✓
Matrix display	It is using this feature, users may click on any cell within the matrix to sort airfare search results by price, airline and number of stops. It was initially introduced by Orbitz but these days it has become a standard for all OTAs		✓
Opaque fares	It was initiated by Priceline's Name Your Own Price airfare bidding model. In this feature users are offered heavily discounted tickets with not specified time or flight number. They are usable at the discretion of the airline		✓
Low-fare notifications	It is a feature in which customers are intimated via email to opt for specific promotional deals	✓	✓
Flexible and alternative date search	There allow users to search and compare flight options across multiple departures and return dates so as to is find the lowest possible fare	✓	✓
Dynamic packaging	It initially made famous by Expedia where users are allowed to shop for multiple components in a single search, such as Flight and Hotel	✓	✓
Alternative airport search	It allow travelers to search across multiple departure and arrival airports so as to find the lowest possible fare or most convenient schedule		✓
Hotel search, results display and sorting	This feature allow travelers to display, sort and compare options from hundreds of possible hotel search results • Address or landmark search and sorting • Map-based search results display • Traveler reviews included with the results • Multiple sorting options, including price, star rating, brand, guest rating and amenities	✓	
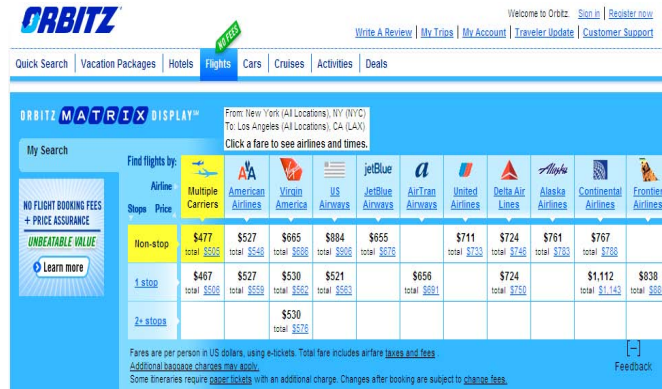
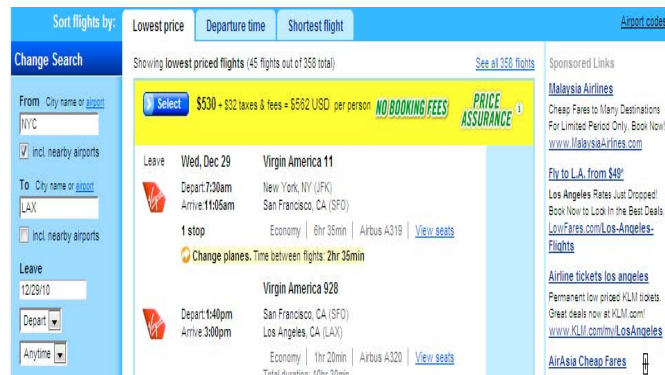Fig. 2: Lowest airfare search results through matrix display

Fig. 3: Alternative airport search to find the lowest possible fare or most convenient schedule

Hotel search: OTAs offer hotel search feature that provides the option to display, sort and compare hundreds of possible hotel search results. As shown in Fig. 4, this feature allows address or landmark search and sorting, map-based search results display, traveler reviews included with the results and multiple sorting options, including lowest price, distance, star rating, brand and amenities.

Opaque fares: Opaque selling intermediaries have become an established distribution channel for the travel industry (Granados *et al.*, 2010). This form of opaque selling came into limelight in 1998 when priceline.com's, Name-Your-Own-Price emerged with an opaque selling business model where both the itinerary information and the identity of the airline carrier were hidden from the traveler, until the bid was purchased (Fig. 5). Next, major U.S airlines established Hotwire to compete in the opaque segment of intermediaries. However, it came up with a different opaque selling business model which was not

based on bidding mechanism but rather posting a price for an offer that concealed key itinerary information and airline identity (Fig. 6).

Since then many opaque selling intermediaries have appeared in the international travel market, such as cheaptickets.com, onetravel.com etc. and popularized this selling mechanism (Hann and Terwiesch, 2003; Terwiesch *et al.*, 2005). However, the common aspect of all such opaque selling intermediaries is that they are based on hiding descriptive attributes of the service to be provided; as a result travelers cannot fully predict the ultimate service provider or the airline.

In the last section we identified and discussed four OTA features that are not integrated into SBTs of the airlines mostly because of the practical implication of each OTA feature which is not very feasible for the SBTs to opt for. However, it was essential in this research to understand if the integration of the same OTA features could make SBTs more flexible online airline reservation systems. Should this is the case, then how could this be done?
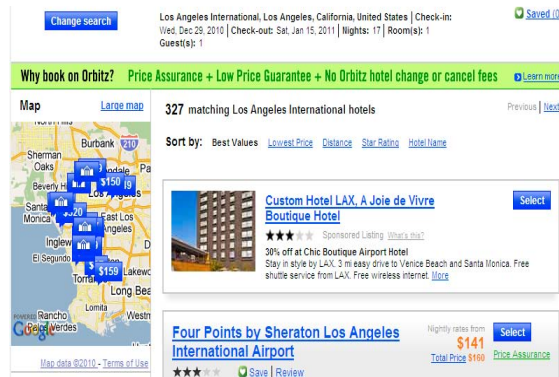
Fig. 4: Hotel search, results display and sorting to compare options from hundreds of possible hotels
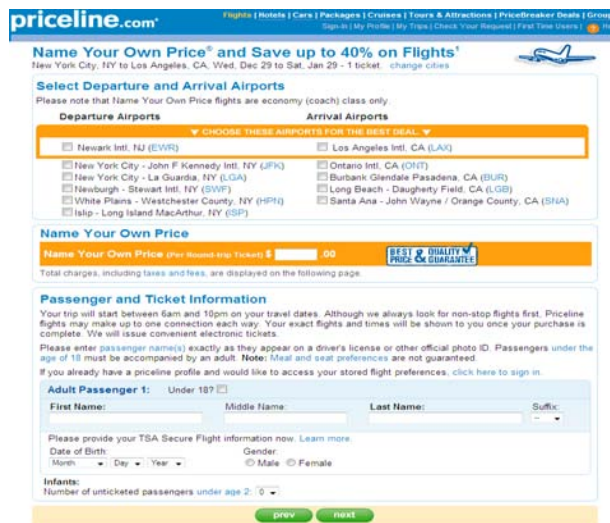

Fig. 5: Opaque fares offered by priceline for discounted tickets without specifying carrier, time and the route
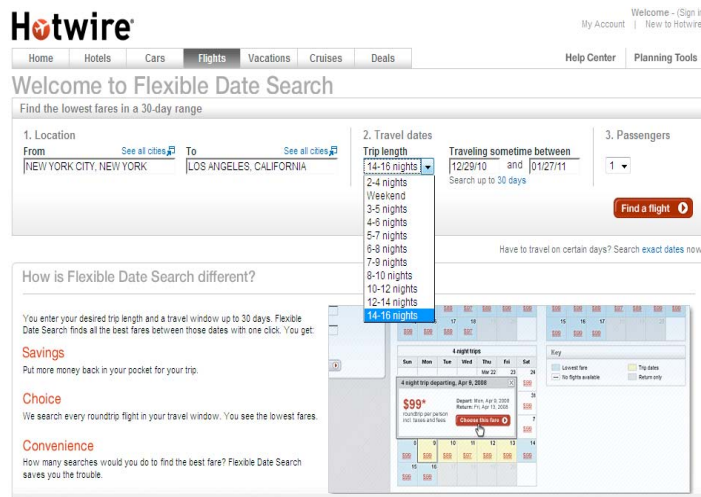

Fig. 6: Opaque fares offered by hotwire for discounted tickets with specified time or flight number

RESEARCH DESIGN AND METHOD

This study was based on meeting the experts or executives at the airline reservation offices. Different airlines were chosen for the focus group survey. The airlines are local Malaysian carriers with their offices located in the city of Ipoh, Perak. The executives at the manager level were those involved in strategic decision planning, the junior executives handled operational work including making reservations using computer airline reservation systems while the technical experts handled queries related to SBTs of the airlines. The statistical analysis of data obtained from the focus group survey has been conducted using the SPSS v. 11 statistical analysis package.

Objectives of the research: The main objective is to understand if the integration of some OTA features could make SBTs flexible online airline reservation systems and how that can be achieved? Therefore, a preliminary but comprehensive focus group research was conducted with airline executives, using quantitative survey method to:

- Examine their subjective satisfaction with existing self-booking tools provided by the airlines
- Report if they approve or disapprove the proposed idea of OTA features (Matrix Display, Opaque Fare, Alternate Airport Search, Hotel Search Facility) integrated into SBTs so as to make them flexible online airline reservation systems and
- Recommend an OTA feature of their choice, for making SBTs flexible online airline reservation systems

Methodology: A mixture of two approaches-adaptive (questions from existing literature) and development (questions as per the required scenario)-was used to prepare the questionnaire. Relevant and useful questions were adapted from the literature review (Chin *et al.*, 1988; Lin *et al.*, 1997; Lewis, 1995).

A two-way analysis of variance was performed to test the satisfaction level of existing online airlines reservation systems. The representatives were requested to indicate if integration of OTAs features will make online airlines reservation system more flexible or not and also to recommend an OTAs feature out of the four for integration into SBTs.

DATA ANALYSIS

Means plot: The means plot (Fig. 7) illustrates two lines, red line indicating respondents who consider integration of OTA features into SBTs may not necessarily make
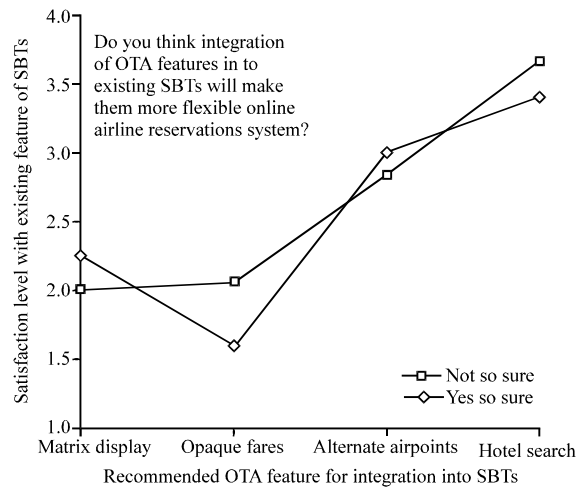
Fig. 7: Means plot on the recommendation of integrating OTA features into SBTs for making more flexible online airline reservation systems

them flexible online airline reservation systems while the green one denotes the respondents who think otherwise.

Out of the four OTA features investigated in this study, opaque fare and hotel search are the only two OTA features for which the green line is lower than the red line (low value indicates high satisfaction). However, among the two, opaque fare is the most recommended OTA feature for making SBTs flexible, since it reflects absolute highest satisfaction point of the respondents who thought integration of OTA features into SBTs will make them more flexible online airline reservation systems and also among respondents who think otherwise, because it has been considered as the second most important feature for integration, only after Matrix Display.

Respondents who considered integration of OTA features would make SBTs flexible and also who stated otherwise, reported absolute lower level of satisfaction with hotel search facility as a recommended solution for SBTs. The finding is very much self-explanatory because Hotel search facility is a popular OTA integrated feature which displays information of multiple hotels and promotional packages available in deals with specific airlines. However, in the context of SBTs, this feature may not be feasible for integration, since SBTs are self-booking tools offered by an airline where multiple carrier and hotel reservation sources are not incorporated with the reservation planning.

When we look at the other two OTA features, i.e., Matrix Display and Alternate Airport Search the pattern is quite different and this is the part of interaction effect that the direction of difference is not in the same direction. Respondents who considered integration of OTA features into SBTs will not necessarily make them flexible, opted

Table 2: Mean score and standard deviation on the recommendation of integrating OTA features into SBTs for making more flexible online airline reservation systems

Do you think integration of OTA features in to existing SBTs will make them more flexible online airline reservations systems?	Matrix display	Opaque fares	Alternative airport search	Hotel search facility
Yes, very sure about it				
Mean	2.25	1.60	3.00	3.40
SD	0.500	0.548	0.707	0.548
Not so very sure about it				
Mean	2.00	2.06	2.83	3.67
SD	0.707	0.827	0.753	0.577

Table 3: Tests of between-subjects effects

Source	Type III sum of Squares	df	Mean square	F	Sig.
Corrected model	18.729(a)	7	2.676	5.205	0.000
Intercept	269.145	1	269.145	523.552	0.000
Recommended OTA feature for	18.056	3	6.019	11.708	0.000
SBTs flexible SBTs (Yes/No)	1.827	1	1.827	3.556	0.004
Flexible SBTs*					
Recommended OTA feature for SBTs	1.012	3	0.337	0.656	0.042
Error	21.591	42	0.514		
Total	338.000	50			
Corrected total	40.320	49			

a R Squared = 0.465 (Adjusted R Squared = 0.375)

for Matrix Display and Alternate Airport Search as their recommended solution for the SBTs (Table 2).

Analysis of variance: A two-way analysis of variance tested the satisfaction level of the representatives with existing online airline reservation systems and also reported if the integration of OTA features into SBTs would make them more flexible reservation systems and also picked their recommended OTA feature for integration into SBTs.

The three different F-tests as shown in Table 3 in the two way analysis of variance are:

- The first one is the mean satisfaction level different across four proposed OTA features for SBTs, controlling for that effect of sharing, if the chosen OTA feature will make existing SBTs more flexible. The difference in satisfaction level has been found to be statistically significant at p<0.01

- The second F-test looks at whether respondents who reported that integration of OTA features into SBTs will make them flexible reservation systems, do or do not have different levels of satisfaction with existing online airline reservation systems and again the results were significant at p<0.05

- The third F-test examines the interaction effect of the four proposed OTA features and their integration into SBTs for making them flexible online airline reservation systems. The finding was significant at p<0.05, suggesting that some combination of OTA features and existing SBTs are related and can influence upon one another, especially in terms of making them more flexible

The three different F-tests in the two way analysis of variance are discussed as under:

- Respondents who indicated that integration of OTA's feature into existing SBTs will make them flexible online airline reservation systems, shared the highest level of satisfaction when opted for opaque fare as a recommended OTA feature for SBTs. However, respondents who indicated integration of OTA features into existing SBTs may not make them flexible, reported higher level of satisfaction when opted for Matrix Display and Alternate Airport Search as a recommend solution for SBTs (F = 11.708, p = 0.000<0.01)

- Satisfaction level with existing online airline reservation systems differed significantly (F = 3.556, p = 0.004<0.05) across respondents who indicated whether or not integration of OTA features would make the existing systems more flexible

- The interaction effect of the four proposed OTA features and their integration into SBTs for making them flexible online airline reservation systems was also significant (F = 0.656, p = 0.042<0.05)

DISCUSSION

This study identifies and discusses different OTAs features that are not integrated into SBTs of the airlines mostly because of practical implication. These features are matrix display, alternate airport search, hotel search and opaque fares.

The Matrix display and hotel search features are unique in sense of incorporating multiple sources

```
┌─────────────────────┐
│  Airline resveration │
│       system         │
└─────────────────────┘
        │
   ┌────┴────┐
   │         │
┌──────┐  ┌──────┐
│ OTAs │  │ SBTs │
└──────┘  └──────┘
   │         │
┌──────────┐ ┌──────────┐
│Existing OTA│ │Existing SBT│
│ features  │ │ features  │
└──────────┘ └──────────┘
   │              │
┌──────────────────┐  │
│ Opaque fares      │  │
│                   │  │
│ Matrix dispaly    │  │
│                   │  │
│ Alternate airport search │
│                   │  │
│ Hotel search      │  │
└──────────────────┘  │
   │                  │
┌──────────┐          │
│Opaque fare│          │
└──────────┘          │
   │                  │
┌─────────────────────────┐
│     Proposed SBTs        │
└─────────────────────────┘
```
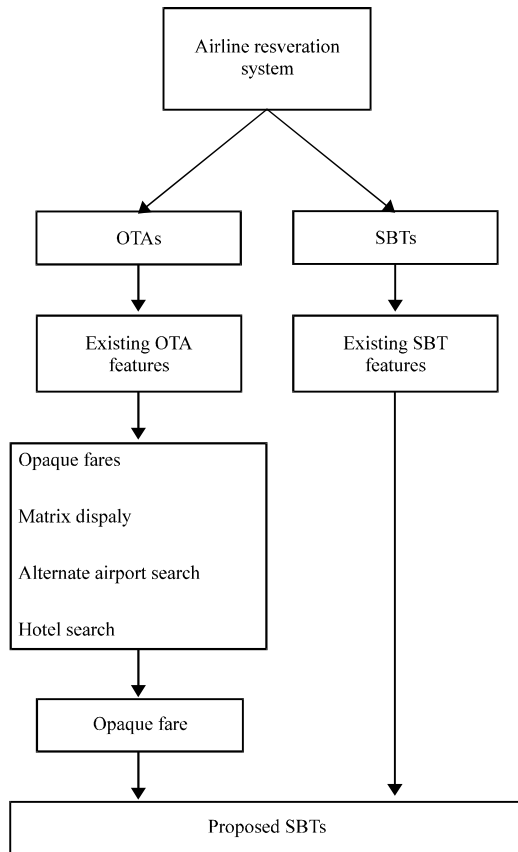
Fig. 8: Proposed model for flexible online airline reservation systems after integrating opaque fares mechanism into SBTs

reservation information. However from integrating into SBTs perspective, they are not feasible because they require merger of multiple information resources which might not be an acceptable standard for an airline due to its privacy policy and other regulations.

On the contrary, alternate airport search is related to providing additional information as well as the extent to which a traveler is willing to be flexible in identifying his/her destination sources. This feature seems practical and has implications for integration into SBTs.

Finally, unlike other OTA innovations, the opaque fare mechanism depends on hidden characteristics of the traveling plan, thus leveraging upon traveling behavior of leisure travelers who are always up for grabs and less sensitive to traveling plans. And this study showed that it is highly recommended by the experts in the airline industry for integration into SBTs as shown in Fig. 8.

Researchers point out (Gallego and Phillips, 2004) that opaque products are flexible in characteristics; therefore, a seller is in a unique position to offer

horizontally differentiated products to customers upon purchase due to the flexibility of assigning pre-determined products to the customer. Opaque mechanics gained popularity due its very unique price discrimination mechanism (Jiang, 2007) which could generate incremental revenue for the airline by deliberating upon price sensitive consumers (Deneckere and McAfee, 1996). In very short time, opaque selling has attained the status of a competitive lever for the airline, signifying that an airline could suffer revenue loss to its competitors by not opting to offer opaque offers (Huang and Socic, 2010).

Airlines secure incremental revenue by way of disposing off their distressed inventory through last-minute sale discounts. The last minute sale discounts are offered at heavily discounted rates. This mechanism has nothing much of 'opaque' or 'hidden' in it. However, this type of direct selling at the last-minute is considered very risky for the airline, since potential travelers prefer to wait for last-minute sales and not purchase in anticipation of heavy discounts (Jerath et al., 2010). Such a condition may put an airline in a very risky position with potential possibility of revenue loss. That is why this practice is substantially criticized by analysts and researchers who refer to it as a vivacious cycle of price degradation that can eventually destroy the airlines (Sviokla, 2004).

The term flexibility of a system is referred to its ability to respond to internal or external changes (Nilchiani, 2005; Saleh, 2002). Change can be defined as the transition over time which requires change agent. Researchers argued that if the change agent is external to the system, then the change under consideration is a flexible-type change (Ross et al., 2007). Therefore, in case of SBTs incorporated with opaque mechanics would serve the role of external change agent by way of providing flexibility in users' decision making. Similarly, if the change agent is internal to the system, then the change under consideration is an adaptable-type change. Thus the provision of opaque mechanism into SBTs also serves the role of internal change agent by way of providing the capability of accepting changed decisions. If no change agent exists, then the system is rigid (no change can occur). Since provision of opaque mechanics could make users flexible and also increases the adaptability of the system. It then may be said that the usability of the system would be enhanced. Moreover, by opting to integrate opaque mechanics into their SBTs, the airlines will not encounter reducing profits situation, as in the case of direct last-minute selling. This is because it holds a critical position to replicate its profit margin by setting high price of opaque selling. But on a more fare note, airlines may like to introduce opaque selling directly through their SBTs so as to attract additional sufficient

number of customers and minimize the effect of price degradation, as discussed earlier. Thus it is believed that if an airline opts for opaque selling through its SBTs, it can enhance its profit through market expansion and also by enhancing price discrimination of one's existing customer base (Fay, 2008).

Our proposed model thus integrates opaque mechanics into the framework for designing of flexible online airline reservation systems.

CONCLUSION

Although opaque fare, matrix display, alternate airport search and hotel search facility are all part of OTAs' innovation, this survey concludes that adoption of opaque fare concept can make SBTs flexible online airline reservation systems.

The results obtained from the study are affected by several limitations. The non-availability of an absolute scale to measure flexibility turns the investigation into a cumbersome effort. It is difficult to even make any rough assumptions about the extent to which the users would like to have additional flexibility features in online reservation systems.

Furthermore, the survey was limited to a selected group of people (a set of travel offices); therefore, the findings of the study are also limited to those selected participants only.

ACKNOWLEDGMENT

REFERENCES

Braham, B., 1988. Computer Systems in the Hotel and Catering Industry. Cassell, London.

Chin, J.P., V.A. Diehl and K.L. Norman, 1988. Development of an instrument measuring user satisfaction of the human-computer interface. Proceedings of the Conference on Human Factors in Computing Systems, May 15-19, ACM Press, New York, pp: 213-218.

Coli ,M., E. Nissi and A. Rapposelli, 2011. Efficiency evaluation in an airline company: Some empirical results. J. Applied Sci., 11: 737-742.

Deneckere, R.J. and R.P. McAfee, 1996. Damaged goods. J. Econ. Manage. Strategy, 5: 149-174.

Fay, S., 2008. Selling an opaque product through an intermediary: The case of disguising one's product. J. Retailing, 84: 59-75.

Gallego, G. and R. Phillips, 2004. Revenue management of flexible products. Manufact. Service Operat. Manage., 6: 321-337.

Granados, N., K. Han and D. Zhang, 2010. Demand and revenue impacts of the opaque channel: Empirical evidence from the airline industry. Workshop on IS and Economics (WISE), December 2010, St. Louis, MO.

Hann, I.H. and C. Terwiesch, 2003. Measuring the frictional costs of online transactions: The case of a name-your-own-price channel. Manage. Sci., 49: 1563-1579.

Haque, A., A. Zaki-Hj-Ismail and A.H. Daraz, 2009. Issues of E-banking transaction: An empirical investigation on malaysian customers perception. J. Applied Sci., 10: 1870-1879.

Harrison, J., 2006. Traveling blind. Ottawa Citizen, September 16, pp: 2.

Huang, X. and G. Sosic, 2010. Name-your-own-price as a competitive secondary channel in the presence of posted prices. Working paper, Concordia University, Montreal, Canada.

IBM, 2005. z/TPF–The evolution of transaction processing to open standards. Enabling Transaction Processing for On Demand Business. http://www-01.ibm.com/software/htp/tpf/pages/G299-0768-00F.pdf.

Jayashree, S. and G. Marthandan, 2010. Government to E-government to E-society. J. Applied Sci., 10: 2205-2210.

Jerath, K., S. Netessine and S.K. Veeraraghavan, 2010. Revenue management with strategic customers: Last-minute selling and opaque selling. Manage. Sci., 56: 430-448.

Jiang, Y., 2007. Price discrimination with opaque products. J. Revenue Pricing Manage., 6: 118-134.

Kim, D.J., W.G. Kim and J.S. Han, 2007. A perceptual mapping of online travel agencies and preference attributes. Tourism Manage., 28: 591-603.

Krueger, R.A., 1994. Focus Groups: A Practical Guide for Applied Research. 2nd Edn., Sage Publications, California, USA.

Lambert, M., 2006. Last-minute gamble: Take a chance but be ready for anything. Miami Herald, November 26, Miami FL., http://www.accessmylibrary.com/article-1G1-154985891/last-minutegamble-take.html.

Lewis, J.R., 1995. IBM computer usability satisfaction questionnaire. Psychometric evaluation and Instructions for use. Int. J. Hum.Comput. Interact., 7: 57-78.

Lin, H.X., Y.Y. Choong and G. Salvendy, 1997. A proposed index of usability: A method for comparing the relative usability of different software systems. Behav. Inform. Technol., 16: 267-277.

Marshall, C. and G.B. Rossman, 1999. Designing Qualitative Research. 3rd Edn., Sage Publications, London, UK.

Mirza, A.P., M.T. Hamidi Beheshti, A. Wallstrom and O.P. Mirza, 2009. Adoption of internet banking by Iranian consumers: An empirical investigation. J. Applied Sci., 9: 2567-2575.

Morgan, D.L., 1988. Focus Groups as Qualitative Research. Sage Publicatoins, Newbury Park, California, USA.

Nielsen, J., 1993. Usability Engineering. 1st Edn., Academic Press Inc., Boston, Ma.

Nilchiani, R., 2005. Measuring space systems flexibility: A comprehensive six-element framework. Master Thesis, Massachusetts Institute of Technology: Department of Aeronautics and Astronautics, Cambridge.

O'Connor, P., 1999. Tourism and Hospitality Electronic Distribution and Information Technology. CAB International, Oxford.

Olmeda, I. and P. Sheldon, 2001. Data mining techniques and applications for tourism Internet marketing. J. Travel Tourism Market., 11: 1-20.

Ongori, H., 2009. Role of information communication technologies adoption in SMES: Evidence from Botswana. Res. J. Inform. Technol., 1: 79-85.

Oxford Economics, 2010. The travel gold rush 2020: Pioneering growth and profitability trends in the travel sector. Developed by Oxford Economics in partnership with Amadeus. http://www.amadeus. com/amadeus/documents/corporate/Travel-Gold-Rush-2020-EN.pdf.

O'Toole, K., 2002. The airlines IT trends survey 2002. Airline Business.

Quinby, D., 2008. Travel agency distribution landscape 2006-2009: Key terms and definitions. PhoCusWright Inc., 1 Route 37 East, Suite 200 Sherman, CT 06784-1430 USA.

Quinby, D. and R. Merten, 2009. The role and value of the global distribution systems in travel distribution. A PhoCusWright Whitepaper, PhoCusWright Inc., 1 Route 37 East, Suite 200 Sherman, CT 06784-1430 USA. http://www.interactivetravel.org/Industry Background/Attachments/GDS_Profile_Whitepape r.pdf.

Renshaw, M.B., 1997. The Travel Agent. 2nd Edn., Business Education Publishers Ltd., Sunderland.

Ross, A.M., D.H. Rhodes and D.E. Hastings, 2007. Defining-system changeability: Reconciling flexibility, adaptability, scalability and robustness for maintaining system lifecycle value. Proceedings of the 17th INCOSE International Symposium, August, 3-7, San Diego CA.

Saks, G., 2006. Travel: The emergence of meta search. Compete Pulse. http://blog.compete.com/2006/11/14/ meta-search-kayak-sidestep-farechase-mobissimo-pinpoint-travel/.

Saleh, J.H., 2002. Weaving time into system architecture: New perspectives on flexibility, spacecraft design lifetime and on-orbit servicing. Master Thesis, Massachusetts Institute of Technology: Department of Aeronautics and Astronautics, Cambridge.

Schulz, A., 1996. The role of global computer reservation systems in the travel industry today and in the future. Lufthansa Syst. GmbH, EM-Elect. Markets, Vol. 6,

Sheldon, P., 1977. Tourism Information Technology. CAB International, Oxford.

Stewart, D.W. and P.N. Shamdasani, 1990. Focus Groups: Theory and Practice. Sage Publications, Newbury Park, Newbury.

Sviokla, J., 2004. Value poaching. Proceedings of the Conference on Board Review.

Terwiesch, C., S. Savin and I.H. Hann, 2005. Online Haggling at a name-your-own-price retailer: Theory and application. Manage. Sci., 51: 339-351.

Vaughn, S., J.S. Schumm and J. Sinagub, 1996. Focus Group Interviews in Education and Psychology. SAGE Publications, Thousand Oaks.