User-centred evaluation of airlines' websites

Anastasios A. Economides* and George Apostolou

Information Systems and Economics Departments,
University of Macedonia, 156 Egnatia Avenue,
Thessaloniki, 54006, Greece
E-mail: economid@uom.gr   E-mail: gapostolou@gmail.com
*Corresponding author

Abstract: A holistic airline site evaluation framework (ASEF) from the customer's point of view is presented. ASEF is specific-oriented towards the airlines' websites. Designers and developers of airlines' websites would use it as a guide in order to improve their websites considering multiple quality criteria. In addition, the websites of 30 major airlines are evaluated using ASEF. Most airlines' websites presented inefficiencies with respect to supporting persons with special abilities. Few websites supported e-communities enabling the user's participation. The websites would use Web 2.0 social networking tools to attract and retain customers. Furthermore, the websites should increase the flexibility of their services to match the personal needs of their customers. Also, each website should support a reliable internal search engine. Finally, governments should ensure that personal data could not be used by others without the person's authorisation.

Keywords: accessibility; airlines; e-booking; e-ticketing; privacy; social networks; travel portal; trust; usability; Web 2.0.

Biographical notes: Anastasios A. Economides received his Dipl.Eng. in Electrical Engineering from Aristotle University of Thessaloniki, in 1984. He received his MSc and PhD in Computer Engineering from the University of Southern California, Los Angeles, in 1987 and 1990, respectively. At graduation, he received his Outstanding Academic Achievement Award from the University of Southern California. Currently, he is an Associate Professor and Chairman of the Information Systems department at the University of Macedonia, Thessaloniki, Greece. His research interests include techno-economics of networks, e-learning and e-services. He has published over 150 peer-reviewed papers. He has been the Plenary Speaker in two international conferences.

George Apostolou received his Diploma degree in Economic Sciences from the University of Macedonia, Thessaloniki, Greece. He is working in the tourism and entertainment industry. He is interested in e-tourism issues.

1   Introduction

Using the internet, people have access to information, communication and services from anywhere and anytime. The world has become a global community of interconnected people, information and resources. The society and economy will be based on information, knowledge and communication. In a knowledge society, everyone would have access to knowledge and learning (Lytras and Sicilla, 2005). Our life will change regarding not only our education, work, government but also our home and leisure activities. Some changes are already here and some others just begin. One major change is the way we purchase products and services. E-commerce is a growing reality in the web. Recent field studies on e-commerce sites confirm the increased use of the web for shopping.

The number of people who shopped online climbed from 627 million in 2005 to 875 million in 2007 (The Nielsen Global Online Survey, 2008). More than 85% of the world's online population has used the internet to make a purchase – increasing the market for online shopping by 40% in the past two years. Globally, more than half of internet users have made at least one purchase online in one month. Globally, the most popular and purchased items over the internet were books (41% purchased during three months), clothing/accessories/shoes (36%), videos/DVDs/games (24%), airline tickets (24%) and electronic equipment (23%). Currently, 150 million European Union (EU) citizens – a third of the population – shops over the internet (http://www.ec.europa.eu/consumers/). The percentage of European consumers making at least one purchase over the internet increased from 27% (2006) to 33% (2008), and that of making at least one cross border purchase over the internet increased from 6% (2006) to 7% (2007). In fact, the world economy's slowdown has not affected the web field because large firms stop expanding and began consolidating and moving to the web marketplace so as to cut costs (Reifer, 2002).

The airline industry has been heavily affected by e-commerce. The airline industry has been considered as one of the most transformed in the web marketplace (Dutta and Segev, 2001). A majority of online travellers (78% or 79 million Americans) turned to the internet for travel or destination information in 2005 – much higher than the 65% of online travellers in 2004 (http://www.tia.org). In addition, 82% of travellers who plan their trips online also book reservations online. According to Forrester Research (http://www.forrester.com), nearly 40 million US households will book travel online, spending $86 billion on airline tickets, lodging, cars, intercity rail, cruises and packages. However, a EU investigation against misleading advertising and unfair practices on airline ticket selling websites showed that over 137 out of 386 websites showed serious and persistent consumer problems (http://www.ec.europa.eu/consumers/). These websites belong to Europe's leading airlines, low cost carriers as well as other websites selling airline tickets. The main problems were: misleading pricing; unavailability of advertised offers and unclear information on contract terms, either, missing, in another language or illegible due to use of characters of another language. For example, these websites added extra non-optional charges (e.g., taxes, booking fee, credit card fee, handling fees, fuel charge, phone charge, invoice fee) resulting in a different end price. Although the EU Commission asked these 137 websites to correct their data, only half of those 137 complied.

In order for a company to take the full advantages of e-commerce, it is not enough to just keep on a website. In the web, customers are only a mouse click away from

comparable offers. A poorly designed and wrongly structured website results in sales loss because customers cannot easily and quickly find what they want. It also results in loss of probable future visits because first time visitors had a negative experience. Customers are more likely to visit and purchase at websites that fulfil some quality standards. So, companies with an online presence need a means of grasping customer perceptions of website quality in order to increase their likelihood of generating website visitors and sales (Shchiglik and Barnes, 2004). Regarding airline industry, virtual channels are good enough to dominate the market, but the traditional channels also have their own niches in some specific segments (Shon et al., 2003). Koppius et al. (2005) found that airline customers are coming back to purchase online tickets primarily because of the satisfaction of the online booking process and a positive attitude towards using the online booking system. Loyalty incentives and price sensitivity only play a marginal role. In order to assist airline companies to evaluate their online activities, Harison and Boonstra (2008) provided a model which measures financial, visiting, traceability, accessibility performance as well customer satisfaction. Benckendorff (2006) suggested that airline website attributes can be organised into the following factors: value-aided service, targeted information, advanced booking features, basic look and book features, trust and interaction, in-flight options and frequent flyer programs. Of these, basic 'look and book' features were considered as most important by customers. Also, Lubbe (2007) investigated the internet apprehension and customer satisfaction regarding an airline website.

In order to design and develop effective websites, guidelines and recommendations are welcome. Recently, there were many studies on evaluating websites. One approach was the extended web assessment method (EWAM) (Schubert and Selz, 2001; Schubert and Dettling, 2002), which strongly emphasises on transaction phases. Liu et al. (2000) developed evaluation criteria based on the Fortune 1000 webmasters' suggestions. Their criteria emphasised design. Some other major approaches include the website quality evaluation method (wQEM) (Olsina and Rossi, 1999) and the webQual (Barnes and Vidgen, 2001, 2002), which is derived from the theory of reasoned action and the technology acceptance model. All these studies have a common purpose: to develop a generic instrument for evaluating e-commerce websites. Furthermore, these studies develop instruments that are intended to be generic (Shchiglik and Barnes, 2004).

Evaluation methods and frameworks, which focus on specific domains are scarce. Kim et al. (2003) showed significant differences in the design of websites across different industry groups. Evaluation instruments with domain-specific quality criteria are needed. Barnes and Vidgen (2002) applied the WebQual method for assessing the quality of the internet bookstores: Amazon, BOL and the Internet Bookshop. WebQual draws on previous work in three dimensions: website usability, information quality and service interaction quality to provide a rounded framework for assessing e-commerce offerings. Trust was the most highly rated factor in terms of customer importance. Heijden and Verhagen (2002) analysed two online bookshops based on usefulness, enjoyment, easy of use, style, familiarity, trustworthiness and settlement performance. Terzis and Economides (2005) presented the job site evaluation framework (JSEF). Then, more than a hundred users evaluated three Greek and three international sites for finding or filling jobs. Inefficiencies were found with respect to usability and social criteria. Jones et al. (2006) found the following major user requirements for a university knowledge portal: simplicity, search capability, site map, discussion forums, links, knowledge map, research repository and security issues. Pallas and Economides (2008) presented the museum's

sites evaluation framework (MUSEF) and evaluated more than 200 art museums' sites worldwide. The evaluation results revealed that most sites needed improvement with respect to interactivity and feedback and e-services. Zarifopoulos and Economides (2009) presented the mobile banking evaluation framework (MoBEF). Then, they evaluated the m-banking portals of 30 major banks from all over the world using MoBEF. They found that the portals' major problem was their limited services.

Regarding the airline industry, Law and Leung (2000) compared the online reservation services of 30 airlines. They found that airlines in North America had the most comprehensive web-based reservation services. Also, Law and Leung (2002) found out that North American-based travel sites outperformed Asian-based travel sites regarding their online airfare reservation services. Shchiglik and Barnes (2004) proposed the perceived airline website quality instrument (PAWQI). However, it did not provide specific airline industry-oriented criteria and the analysed case was only for three New Zealand airlines. In this paper, we attempt to address the need for a customer-oriented airline site evaluation framework (ASEF), which combines and extends criteria derived from evaluation methods and instruments developed in the past (Merwe and Bekker, 2003) but with a specific airline industry oriented way. Furthermore, we apply ASEF to evaluate 30 major airlines' sites from all around the world (Appendix). Finally, we make suggestions to administrators of airlines' websites regarding accessibility, Web 2.0 and social networks and trust, confidentiality and privacy.

2 Airline site evaluation framework

Driven by the need for a specific airline industry oriented evaluation framework, we develop the proposed ASEF. ASEF is specific-oriented towards evaluating airlines' websites from the customer's point of view. ASEF would be useful not only to users that may purchase airline services via internet but also to designers and developers of airlines' websites. It may be a useful guide for them to improve their services considering multiple quality criteria. In brief, the ASEF consists of six categories:

1   site finding

2   interface and presentation

3   navigation

4   content

5   reliability

6   technical aspects.

Each category consists of several subcategories and each subcategory consists of several criteria.

Airline site evaluation framework

1   Site finding
    1.1   URL is intuitive, easy to remember and type
    1.2   Easy to find site using search engines

2   Interface and presentation

   2.1   Visually attractive site

      2.1.1   Effective use of white space

      2.1.2   Effective and consistent use of colours

      2.1.3   Effective and consistent use of background

      2.1.4   Effective and consistent use of buttons, which are appropriately placed

      2.1.5   Consistent style of pages

   2.2   Flexibility

      2.2.1   Printable version of certain pages is available

      2.2.2   Multilingual content

      2.2.3   Customisation of site content depending on user's country/continent

      2.2.4   Special needs person accommodation (non-discrimination)

   2.3   Multimedia

      2.3.1   Multimedia usage takes into consideration user's hardware constraints

      2.3.2   Widely available multimedia format

      2.3.3   Multimedia help to the understanding of the site

      2.3.4   Adequate media richness (e.g., maps, animations, photos)

   2.4   Text

      2.4.1   Consistent and easy to read fonts

      2.4.2   Easy to change the size of fonts

      2.4.3   Correct spelling and grammar

3   Navigation

   3.1   Structure

      3.1.1   Intuitive organisation and structure

      3.1.2   Easy navigation, help-bar shows the steps of the transaction

      3.1.3   Facilities (e.g., icons) help navigation

      3.1.4   Friendly orientation shows the progress of the transaction

      3.1.5   Logical site map or table of contents

   3.2   Internet booking engine

      3.2.1   Easy to use internet booking engine

      3.2.2   Many search options are available to help user find preferable flight

      3.2.3   Ability to search and book other services (car hire, hotel, etc.)

      3.2.4   Many search options are available to help user find preferable other services

      3.2.5   No errors

      3.2.6   In case of not finding flight (or other services), proposals of related flights (or other services)

      3.2.7   Findings of the internet-booking engine are accurate and well described

3.3 Search engine

    3.3.1 Internal site search engine is available and appropriate placed

    3.3.2 Findings of the internal search engine are accurate and well described

3.4 Navigational necessities

    3.4.1 No broken links

    3.4.2 No 'under-construction' and 'non-updated content' pages

    3.4.3 Hyperlinks clearly described, well labelled and defined

    3.4.4 Pages sized to fit in browser window

    3.4.5 Easy to return to main page from every page

    3.4.6 No pop-up pages

    3.4.7 Easy access to help from every page

4 Content

4.1 Services information

    4.1.1 Full itineraries information

    4.1.2 Full fare and refund policy information

    4.1.3 Full on-flight services information

    4.1.4 Full fleet and airports information

    4.1.5 Full services for special passenger categories and pets information

    4.1.6 Full fare rules, contact information, website terms and conditions, carriage conditions information

    4.1.7 Full information regarding other services (car hire, hotel, etc.)

4.2 Special offers and frequent flyer program

    4.2.1 Newsletter free subscription

    4.2.2 Special online prices for flight services

    4.2.3 Special online prices for other services (car hire, hotel, etc.)

    4.2.4 Online free subscription to frequent flyer program

    4.2.5 Privileges for online buying tickets or other services

    4.2.6 Personal information and services for a frequent flyer passenger

    4.2.7 Frequent flyer privileges and rewards are valid for a network of airlines and other companies (car hire, hotel, etc.)

4.3 Company information

    4.3.1 Complete and appropriately placed company information

    4.3.2 Complete list and contact information of around the world offices

4.4 Advertisement

    4.4.1 Advertisement of company's products and services

    4.4.2 Advertisement of other companies

    4.4.3 Pleasant and appropriately placed advertisements

4.5   Support of website users

    4.5.1   Feedback forms

    4.5.2   Telephone numbers

    4.5.3   E-mail addresses

    4.5.4   Tool-free tele-assistance

    4.5.5   Round the clock help desk

4.6   Services for website users

    4.6.1   Current flight status information

    4.6.2   Boarding-pass printing and quick check-in capability

    4.6.3   VIP services

    4.6.4   E-communities

4.7   Competency of the provided assistance

    4.7.1   FAQ and detailed help explain every procedure

    4.7.2   Help for any kind of users

5   Reliability

5.1   Registration

    5.1.1   Registration is optional

    5.1.2   Easy to register

    5.1.3   Easy to login

    5.1.4   Easy to modify registered profile

    5.1.5   Offers to registered users

5.2   Transaction procedure

    5.2.1   Full current and next transaction step information

    5.2.2   Easy to go back or exit from the transaction procedure

    5.2.3   Procedure for purchasing other services (car hire, hotel, etc.) is completed in the airline's website

5.3   E-ticketing

    5.3.1   Various alternative methods of payment

    5.3.2   Acknowledgement of transaction can be printed and sent to customer via e-mail, SMS, etc.

5.4   Paper ticket

    5.4.1   Various alternative methods of payment

    5.4.2   Various alternative methods of ticket delivery

    5.4.3   Acknowledgement of transaction can be printed and sent to customer via e-mail, SMS, fax or mail

    5.4.4   No extra delivery charges and no extra charges for paper ticket

5.5 Privacy policy

    5.5.1   Full privacy policy statement available

    5.5.2   No personal information is forwarded to third parties without user's agreement

6   Technical aspects

   6.1   Loading speed

    6.1.1   Fast main page loading

    6.1.2   Fast page loading

    6.1.3   Consideration of non-broadband users

   6.2   Security

    6.2.1   Security protocols are used during the transaction

    6.2.2   Well-known security protocols used during the transaction

    6.2.3   Security protocols are used during the user registration

    6.2.4   Well-known security protocols used during the user registration

    6.2.5   Security systems accredited by authorisation organisations

   6.3   Browser

    6.3.1   Cross-browser compatibility

    6.3.2   Appropriate resolution and screen fitting

3   Evaluation method

The evaluator is called to answer if and to what degree the evaluated website meets the 'ideal' situation regarding each criterion. So, for each criterion, the evaluator gives the following scores. If the reality fits in with the 'ideal' case, then three points are given to this site for this criterion. If the reality is close to the 'ideal', then two points are given to this site for this criterion. If the reality is far from the 'ideal', then one point is given to this site for this criterion. Finally, if the reality is has no relation with the 'ideal', then zero is given to this site for this criterion. The evaluator can give either three or zero points for the following criteria: 2.2.3, 2.4.2, 3.1.3, 3.3.1, 3.1.4, 3.2.6, 4.2.5, 4.2.6, 4.2.1, 4.2.2, 4.2.3, 4.6.1, 4.6.2, 5.1.1, 5.1.4, 5.1.5, 5.2.5, 5.2.9, 5.2.10, 6.2.1, 6.2.3, 6.2.5.

4   Evaluation results and discussions

We evaluated the websites of ten European airlines, ten Asian airlines and ten US and Oceania airlines (Appendix). The next Tables 1–6 provide the average score and the maximum attainable score (MAS) for each category.

Regarding the site finding category (Table 1), it was easy to find all sites. Almost all sites had easy to remember and type urls.

Regarding the interface and presentation category (Table 2), the European sites scored higher than the rest. BritishAirways.com achieved the highest score (46 points). The sites provided appropriate input and output fields, e-forms and tables. All sites

(especially Asian sites) scored low regarding flexibility. A variety of languages should be supported by a site. Few sites (e.g., BritishAirways.com, Lufthansa.com, KLM.com, AuA.com, Emirates.com, RegionalExpress.com.au, AmericanAirlines.com, AirCanada.com and United.com) provided some accommodation for persons with special needs. So, further accessibility improvements should be offered by all sites in order to facilitate the access to the sites by people with disabilities and special needs. Vision and speech as communication channels would be also exploited (Porta, 2007). Users prefer simple and playful interaction (Groth et al., 2007).

Table 1   Site finding average scores

		MAS	Europe	Asia	USA and Oceania	Total average
1	Finding	6	5.6	5.4	6	5.667

Table 2   Interface and presentation average scores

		MAS	Europe	Asia	USA and Australia	Total average
2	Interface and presentation	48	41.2	36.4	38.5	38.7
2.1	Site visually attractive	15	14	12.3	13.4	13.23
2.2	Flexibility	12	8.3	6.4	7.1	7.267
2.3	Multimedia	12	10.2	9.1	9.2	9.5
2.3	Text	9	8.7	8.6	8.8	8.7

Regarding navigation (Table 3), the US and Oceania sites outperformed in all the subcategories except in the structure subcategory where the European sites achieved the highest average. However, most sites presented inefficiencies regarding the internet booking engine as well as the internal search engine. Half of the evaluated sites achieved less than 15 points regarding the internet booking engine. Also, half of the evaluated sites provided an internal search engine. Internet users are getting used in web surfing via search engines and they would like this facility in every site in order to find what they want quickly and easily. So, a search engine should be considered as a standard tool. European and Asian sites failed in providing a reliable search engine. Regarding overall navigation, United.com achieved the higher score (61 points). CathayPacific.com was the only one to score perfectly regarding navigational necessities.

Table 3   Navigation average scores

		MAS	Europe	Asia	USA and Australia	Total average
3	Navigation	63	47.6	44.2	49.7	47.17
3.1	Structure	15	11.7	11.1	10.9	11.23
3.2	Internet booking engine	21	16.6	13.6	17.2	15.8
3.3	Search engine	6	2.3	2.7	3.8	2.933
3.4	Navigational necessities	21	17	16.8	17.8	17.2

Regarding the content category (Table 4), there were not large differences among the geographical segments' averages. The airlines would provide not only check-in at the counter and check-in machine, but also online check-in, SMS check-in and phone check-in. Information about the airline network, the assistance of elderly, special needs persons (e.g., wheelchairs, oxygen), infants, pregnant, children travelling alone, pets, etc., are welcome. Destination guides regarding weather, currency exchange rates, health (e.g., vaccination), safety, customs and immigration (e.g., visas), airport transportation, local news, language, tourism, sightseeing, hotels, restaurants, etc., would help a traveller. Invitation for advertisements on the site, investments on the airline, careers and jobs would support the airline's development. Also, last minute sales, promotions, offers to frequent travellers and corporate travellers are appreciated by customers. A full description of the current flight status (e.g., fare, class, aircraft type, age, capacity, fullness, arrival/departure time/date, gate, delay, cancellation, mileage from departure and to destination, meals, entertainment and duty free items) is useful.

Table 4 Content average scores

		MAS	*Europe*	*Asia*	*USA and Australia*	*Total average*
4	Content total	90	72.7	69	72.5	71.4
4.1	Services information	21	20.5	20	20.3	20.27
4.2	Special offers and frequent flyer program	21	15.7	12.2	14.2	14.03
4.3	Company information	6	6	6	5.9	5.96
4.4	Advertisement	9	8	8	8.4	8.13
4.5	Support for site users	15	10.8	13.2	12.9	12.3
4.6	Services for site users	12	7.3	6.4	6.4	6.7
4.7	Competency of the provided assistance	6	4.4	3.2	4.4	4

However, many sites (especially Asian sites) did not take serious attention on the special offers and frequent flyer program subcategory. More specifically, half of the sites did not consider special offers for online customers and most of the frequent flyer programs were not organised well. Lufthansa.com, Iberia.com, AuA.com, Ana.co.jp, Emirates.com, AirCanada.com and United.com achieved the best score in this subcategory. Regarding the services for website users' subcategory, all European sites scored high by offering boarding pass printing and quick check-in capability for the site users. Regarding the support for website users and the competency of the provided assistance subcategories, only seven sites (Lufthansa.com, KoreanAir.com, Cathaypacific.com, AirNewZealand.com, Delta.com, AirCanada.com and United.com) achieved the perfect score in this subcategory. Regarding the services for website users' subcategory, European sites scored higher than the rest mainly because they offered boarding pass printing and quick check-in. Most sites did not support any Web 2.0 and social networking facilities. Only seven sites (Lufthansa.com, KoreanAir.com, Cathaypacific.com, AirNewZealand.com, Delta.com, AirCanada.com and United.com) achieved the highest scores in the support of website users and the competence of the provided assistance subcategories. This fact is alarming because the provided help to the site users is of vital importance. If an online customer does not get support and help from

a site whenever he wants it and the way he wants it, then he will just click to another site. AirCanada.com achieved the highest score (87 points) regarding content. It would be considered as a reference guide for content.

Regarding reliability (Table 5), the Asian sites achieved the highest average score by gaining extra points especially in the transaction procedure and the privacy policy subcategories. Most sites did not achieve good scores in the transaction procedure subcategory with the exception of Lufthansa.com and Emirates.com, which achieved over 25 points. Most sites did not offer alternative methods of payment except from credit cards. Moreover, most sites did not offer both forms of ticketing (paper ticket and e-ticket). These insufficiencies should be resolved and the sites should provide more alternative methods of payments like prepaid cards, debit card, electronic money, electronic wallet, cash on delivery, etc. Furthermore, they should consider that some customers value both forms of ticketing as important. In the reliability category, only Lufthansa.com, CathayPacific.com, Emirates.com and Ana.co.jp succeeded in getting more than 45 points (out of 51).

Table 5   Reliability average scores

		MAS	Europe	Asia	USA and Australia	Total average
5	Reliability	51	36.4	37.5	35.7	36.53
5.1	Registration	15	13.5	11.5	12.2	12.4
5.2	Transaction procedure	30	18.5	20.6	18.5	19.2
5.3	Privacy policy	6	4.4	5.4	5	4.933

Regarding the technical aspects (Table 6), Asian sites achieved the highest average. The best sites were: AuA.com, Qantas.com and AirNewZealand.com. As expected, almost all sites achieved high scores in the security subcategory. However, there were some problems in the loading speed and browser subcategories especially for the European sites. Finally, the sites should support all major browsers (e.g., Internet Explorer, Mozilla Firefox, Netscape Navigator and Opera).

Table 6   Technical aspects average scores

		MAS	Europe	Asia	USA and Australia	Total average
6	Technical aspects	30	23.7	25.5	25.1	24.77
6.1	Loading speed	9	5.5	6.8	7.3	6.533
6.2	Security	15	14.4	14.4	13.8	14.2
6.3	Browser	6	3.8	4.3	4	4.033

Overall, US and Oceania sites (average score = 227.5) as well as European sites (average score = 227.2) scored higher than the Asian sites (average score = 218). The United.com (264 points), AuA.com (258 points) and Emirates.com (257 points) were the best sites as they approached the maximum possible score (285 points). They would be considered as best practice cases by web developers and airline managers who want to build a reliable, customer-oriented and easy-to-use site.

5 Accessibility considerations

It was clear that the sites presented many shortcomings with respect to the special needs persons' considerations. The web administrators should improve the accessibility of their sites. They should support tools to enable elderly and people with disabilities to use their sites easily and effectively. The sites should be accessible by users with any type of disabilities (visual, hearing, speech, cognitive and/or physical).

People with visual disabilities (e.g., blindness, loss of centralised vision, tunnel vision, partial/poor vision, poor acuity, night blindness and colour blindness) have difficulty with visual media (e.g., graphics, photos, flashes and movies). Small font sizes and certain font types may cause problems for those with partial or poor sight. The use of certain colours and in some combinations (e.g., red and green) may cause difficulties for those with low vision and colour blindness to distinguish them. So, the web pages should support adjustable font size, colour discrimination, increased contrast between text and background, solid-colour background, alternative text and/or audio description of visual content, etc.

People with hearing disabilities have difficulty with audio content. Any audio content should be accompanied by descriptive text. People with speech disabilities have difficulty in producing speech that is recognisable by software for voice recognition.

People with cognitive disabilities (e.g., dyslexia, attention deficit disorder, and intellectual and memory impairments) have reading or learning disorders. The web pages should have simple and well-structured content and presentation. Distracting objects should be avoided. Also, page flickering or animated banners blinking may cause problems to people with seizures disorders (e.g., epileptics). Light text on dark background should be avoided.

People with physical disabilities (e.g., hand or arm movements' problems, muscle weakness or involuntary movement, tremor or loss of fine motor control) have difficulty in using the keyboard and/or the mouse. So, alternatives to mouse and keyboard should be supported.

Users with disabilities face severe social exclusion due to technical barriers when using the websites. It is important to secure an inclusive society that provides equal opportunities for all. The World Wide Web Consortium/Web Accessibility Initiative (W3C/WAI) provides accessibility guidelines in order for the web administrators to make their sites more accessible to users with disabilities and older people. The W3C/WAI guidelines are recognised as a de facto standard for the design of accessible sites by all (universal design). The US section 508 is a similar guideline.

The sites should at least meet the priority one level of the web content accessibility guidelines. For example, they should provide a text equivalent for every non-text element. Most airlines' sites included many tables that are difficult to be accessed by special needs persons. Blind people 'read' web pages via a screen reader or audio browser, which reads the text out loud and/or provides a Braille output. However, some web pages format content in tables. So, special codes would be used to describe the table's structure to the screen-reader. Row and column headers should be identified for data tables. Markup should be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers. Many clear and meaningful headings in their content would also help. HTML alternatives should be provided for any JavaScript.

Equivalent alternatives for any multimedia presentation should be synchronised with the presentation. Web pages should be designed so that all information conveyed with colour is also available without colour. Users with colour deficiencies should be able to discriminate colour combinations. Foreground and background colour combination should provide sufficient contrast when viewed by someone having colour deficits or when viewed on a black and white screen. A text-only page, with equivalent information and/or functionality, should be provided. Links should be descriptive starting with relevant keywords. Most sites used electronic forms. Special needs persons should be able to access the information, complete the field elements and submit the form.

6 Web 2.0 and social networking

The airlines sites should invest on Web 2.0 and social networking tools to increase users' interactivity, communication and participation. Web 2.0 tools (e.g., blogs, wikis, media sharing, social tagging and recommendation) would be useful to attract potential customers and retain current customers in engagement with the airline's site. An airline would either develop its own Web 2.0 and social networks or participate in other popular tools (MySpace, Facebook, Twitter, WikiTravel, YouTube, Travelistic, Flickr, SecondLife, etc.). Supporting Web 2.0 and social networks, an airline would increase brand name recognition, become innovation leader, increase visibility, popularity and search engine ranking. Using such tools, an airline would make market research, competition analysis and consumer behaviour research. It would investigate its customers' opinions regarding its services, its site's attributes, its competitors, popular destinations, etc. It would also use this channel to solve any customers' problems. It would influence consumers, make them stay long time on its site feeling like home, make them come again and again, make them trust it and become loyal customers. The personal interaction with real people gives a human taste in business.

Using Web 2.0 tools, the travellers would communicate and interact with the airline and other travellers. They would obtain, produce and share information, views, opinions, experiences, photos, videos, etc. They would post travelogues and photos, ask about travel destinations, share travel experiences, make suggestions to other travellers as well as to the airline, rate travel services, resources, destinations, etc. For example, a traveller would create a blog where he would describe his holiday giving a personal touch and perspective. Furthermore, a traveller would organise and categorise various items (e.g., destinations, attractions, comments, photos, videos) by tagging them according to his personal view. Finally, the travellers would not only provide comments and advice to others but also review, criticise and evaluate others' opinions, reviews and recommendations. In this way, the reliability of a person's comments is evaluated and the trust on his opinions is validated.

More specifically, the sites would support the following areas:

- surveys and polls regarding
  - the airline' services
  - the airline's website
  - destinations
  - others

- blogs
  - the airline's blog
  - travellers' blogs, travel journals, diaries, favourite hotels, destinations, attractions, monuments, hotels, activities, etc.
- wikis
- forums and threaded discussions
- reviews (positive/recommendations and negative/complaints)
- ratings
- sharing, podcasting, tagging and folksonomies
  - photos
  - videos
  - music
  - experiences and advices
  - links, bookmarks, etc.
- contests and competitions
  - photos
  - videos
  - advices, etc.
- social networks (MyProfile, MyFriends, MyFavorites, etc.)
- connecting and meeting people
  - find a co-traveller, co-trekker, co-sail boater, co-cyclist, etc.
  - share car, hotel room, etc.
  - exchange house, car, etc.
- really simple syndication (RSS), instant messaging (IM) and alerts
  - last minute offers according to customer's interests
  - current festivals, cultural events, sports events, etc.
  - current warnings (epidemic diseases, earthquakes, hurricanes, tsunami, crime, terrorist attacks, etc.)
  - specific topics according to customer's interests
- maps and mush-ups
  - photos on maps
  - routes on maps
  - emergency events on maps.

It would be convenient to organise some of the areas above (e.g., forums and discussions, reviews, rating, etc.) according to the following topics:

- airline's services (price, on-time arrival/departure, personnel, food, seating comfort, baggage management, etc.)

- airline's website attributes (usability, flexibility, booking engine, etc.)

- itineraries, driving tours, etc.

- destinations, countries, islands, cities, villages, etc.

The following topics would either be included in the destinations topic or be independent topics:

- accommodation (hotels, B&B, resorts, spa, camping, etc.)

- restaurants and nightlife

- transportation (ferries, trains, buses, taxis, car rental agencies, etc.)

- cruises

- tour operators

- travel books/guides

- outdoor areas (beaches, parks, rivers, lakes, caves, ski, golf, etc.)

- travel activities (hiking, rafting, sailing, skiing, diving, ballooning, fishing, etc.)

- cultural heritage (museums, galleries, planetarium, historic sights, monuments etc.)

- thematic parks, amusement parks, zoos, etc.

- religious sights, churches, etc.

- events (arts, culture, theaters, movies, concerts, festivals, fairs, sports, etc.)

- health, safety, etc.

- others.

In order to increase the users' participation, sharing and contribution, the airline would provide rewards and benefits (e.g., vouchers, discount coupons, class upgrade and free tickets) to quality contributions.

7   Trust, confidentiality and privacy

Many studies pointed out the importance of customer's trust for successful e-commerce (Schubert and Dettling, 2002; Slyke et al., 2004; Serva et al., 2005; Chen, 2006; Kim et al., 2009). The airlines should gain the customers' trust during the whole customer-airline business cycle: site navigation, search, booking, payment, delivery and after-sales.

Investigating the airlines' sites, there were many unanswered questions regarding the security, privacy, confidentiality and integrity of user information. In all sites, it was not clear what exactly personal information was recorded; why this information was needed;

who could have access to it; how it would be secured; how it would be used, shared, transferred and processed; by whom; for what purpose and for how long. Many sites did not take responsibility for almost anything. For example, the following text was included in a site:

> "The materials and information you find on the… website are provided 'as is' and to the extent permitted by law, …gives no warranty of any kind, either express or implied, including without limitation any warranties of condition, quality, performance, merchantability, fitness for a particular purpose or non-infringement in relation to information, services or products provided through or in connection with the… website."

> "To the extent permitted by law, …disclaims liability on behalf of itself and its agents and contractors (which agents and contractors are third party beneficiaries under these terms and conditions) for any damages or injury caused by any failure of performance, error, omission, interruption, deletion, defect, delay in operation or transmission, computer virus, communication line failure, theft or destruction or unauthorised access to, alteration of, or use of record, whether as a result of breach of contract, tortious behaviour, negligence or under any other cause of action. You specifically acknowledge that… is not liable for your defamatory, offensive, infringing or illegal materials or conduct, or that of third parties."

Although many sites stated that the user had control over his personal information, actually he had no control at all. If he had to visit the site and make business with it, he was obliged to provide many personal details.

All sites collected and kept user's data through various methods such as voluntarily, ubiquitously or via other agencies. They requested personal information by the user not only to let him buy services but also to let him proceed to various parts of their site. However, they also collected user information without his explicit permission. In addition, they collected user information from other agencies (e.g., credit card account).

When a user visited an airline's site, the user's country, IP-address of his internet provider, the site from which he was visiting it, the web pages he was visiting, the date and the duration of his visit were recorded. Usually, cookies were used to identify and remember the user (country, personal information, preferences, language, visits, etc.) as well as track which sections of the site he visits. Third party cookies were also enabled for tracking traffic coming from advertisements on third parties' sites. In addition, some of the airlines' business partners (e.g., tracking utilities) used cookies on the airlines' sites and the airline had not access to or control over these cookies. Furthermore, they used web beacons to record the user's action when surfing the web pages. Finally, the airlines collected user date when sending e-mail to users. They embedded web beacons into HTML e-mails to record whether the users has opened or previewed these e-mails or even accessed the sites using links in the e-mails.

In addition, the airlines asked the customer to declare various personal data. Although they explained that they collect such kind of information to better serve the customers, they could make such information available to third parties. Of course, they could not guarantee what these third-party agencies will do with this personal information. Furthermore, they are obliged by several countries' laws to make such information available to border control agencies. The customs and immigration authorities of some countries require personal information and travel arrangement of passengers passing through their country. In addition, many countries have laws that require the collection and disclosure of passenger information to law enforcement and other governmental

authorities. In addition, many other agencies have access to passenger information. Such agencies include airport staff, which had access to passenger lists and destinations to ensure proper routing of luggage.

For example, the following text was included in some sites:

> "…may disclose personal information if required to do so by law, court order, subpoena or other legal process, as requested by a governmental or law enforcement authority, or when we believe in good faith that it is in the interests of aviation security or that disclosure is otherwise necessary or advisable."

> "…may process your information or combine it with other information that we have about you or that is publicly available."

Finally, the airlines stated that they could share customer's information with other companies. For example, the following text was included in some sites:

> "...may share this information with third parties for the purpose of providing you with services, information or promotional opportunities that may be of interest to you. We provide information collected from you to airlines, car rental agencies, hotels, travel agencies or other contracted third parties to facilitate the successful fulfilment of your travel arrangements or for the specific purpose for which you provided the information. As an added service, subject to your opting out as described below, your purchase behaviour may also be analysed to identify and present offers that may be of interest to you."

> "…may enter into agreements with third party companies to serve advertisements and information to site users."

> "…may use its cookies when working with these companies to provide them information regarding use of the site or to serve you advertisements when you visit our site. These companies may use the non-personally identifiable information about your visit to make available goods and services of interest to you."

Finally, the airlines did not take any responsibility of customer's data stolen. For example, the following text was included:

> "We cannot be responsible for the acts of those who gain unauthorised access and we make no warranty, express, implied or otherwise, that we will prevent unauthorised access to your private information."

> "Although… takes reasonable steps to safeguard and to prevent unauthorised access to your private information, it cannot be responsible for the acts of those who gain unauthorised access, and… makes no warranty, express, implied or otherwise, that we will prevent unauthorised access to your private information."

> "While we make every effort to protect your information on our websites, we do not control the policies of other sites (including those we may link to). We have no control over other sites' privacy policies or use of any personal information you or others may share with them."

Regarding security, secure socket layer (SSL) was used to secure communications between the user and the airline site. SSL is a scheme to protect data transmission over the internet by two-way authentication adopting digital signature and encrypted communication. SSL encrypts the user data and credit card information, before the data is transmitted to a server. Therefore, no third person can read them. Most sites used 128-bit encryption to encrypt all data transmitted during online booking. Furthermore, a firewall

and anti-virus measures had been installed to prevent disclosure, appropriation, alteration, etc., of personal information.

Third-party certification agencies would increase the user's trust on the site's security. In order to assure their security, several sites displayed seals that they have been certified by third-party authorities as adopting security or privacy practices.

Security seals (e.g., Verisign, Comodo and GeoTrust) validate that a company has SSL protection for transmission of sensitive data via web forms. For example, VeriSign (http://www.verisign.com) provides firewalls, intrusion detection and prevention, vulnerability protection, e-mail security (anti-spam, anti-virus), strong authentication (tokens and remote access validation), as well as the original digital certificate/SSL business including the most recent extended validation (high assurance) SSL certificates.

Although these seals certify the secure transmission of data, they do not certify the proper storage and usage of these data. In order to maintain the accuracy of the customers' data, as well as prevent from unauthorised access, the sites used various security technologies. However, no site explicitly stated the security mechanisms used to protect user personal information. They were not taken responsibility of any damage to the customer. Note that there are risks not only from outsiders and hackers but also from business partners (Patel-Predd, 2008) and even distrusted employees. Actually, a global study of 500 security breaches found that the percentages of security attacks were 73% outside an organisation, 39% implicating business partners and 18% from internal sources (Verizon, 2008). Even the UK Royal Air Force service personnel data were stolen (Charette, 2008a, 2008b). UK Ministry of Defence (MoD) acknowledged that three hard drives containing the personal data of over 50,000 current and former Royal Air Force service personnel had been stolen from a 'double-secured' area of the service personnel and veteran's agency's offices. In addition, another loss of a MoD hard drive happened, this time by a contractor from another 'secure' facility. The hard drive contained data on 100,000 members of the British Armed Forces such as their next of kin details, passport and national insurance numbers, drivers' licence and bank details and national health service numbers, as well as 1.7 million potential recruits, including their names, addresses and phone numbers of the applicants. The drives were not encrypted because they were located in a (supposedly) secure facility (Charette, 2008a, 2008b).

A site would gain the users' trust by explicitly declaring that it uses cryptography, public key encryption [e.g., Microsoft Point-to-Point-Encryption (MPPE)], electronic signatures [e.g., Pretty Good Privacy (OpenPGP), Secure/Multipurpose Internet Mail Extensions (S/MIME)], as well as other security mechanisms [e.g., transport layer security (TLS), Layer 2 Tunnelling Protocol (L2TP), Internet Protocol Security (IPSec)].

Third-party privacy seals (e.g., TRUSTe, ESRB Privacy) signify that a company respectfully uses the users' personal information he provides. For example, some sites had a licensee of the TRUSTe Privacy Program. TRUSTe (http://www.trustee.org) is an independent, non-profit organisation whose mission is to build users' trust and confidence on a certified site. TRUSTe may evaluate and certify that a site follows several privacy guidelines. If a user has a dispute regarding privacy matter with a site that is a TRUSTe member, TRUSTe will review his complaint and mediate a solution. Typical problems include the following: unable to unsubscribe; shared personal information; e-mail sent without permission; unable to close account; unauthorised profile with personal information.

Governments, citizens' unions or even United Nations would establish guidelines and assign security and privacy seals to airlines sites. At least, the customer should be aware of and authorise the validity of his full personal data file that is kept by the airlines or others. He should be able to authorise the reveal of his personal data to third parties for every case independently. In addition, personal data would be kept for limited period (e.g., customer's travel period). Then, they should be deleted permanently.

8   Conclusions

This paper provided a holistic framework for evaluating an airline site from the customer's point of view. Designers and developers of airline sites would use this framework to evaluate the current status of their sites and take appropriate actions in areas where they face inefficiencies.

In addition, 30 airlines sites were evaluated using this framework. Although there were no significant differences among geographical regions, some sites outperformed. These sites would be considered as guides for improved site design. Different versions of the site would be available for different persons (e.g., regular passenger, corporate passenger, travel agency, special needs persons; language variety). However, most sites did not take into serious consideration the persons with special abilities. Also, a reliable internal search engine should be provided. Furthermore, flexibility in various ways (e.g., method of payment, ticket type, ticket delivery, seat selection, meal selection) should be supported. Specifically for booking, a user would be able to declare a time span of several days and times in order to find the cheapest flight. Alternative flight options would be also presented, for example:

1   cheapest flight

2   shortest-in-total-time flight route

3   shortest-on-air flight route

4   flight route with minimum number of stop-over.

It would be useful to present various information using maps, for example: maps would describe the airline network, the affiliate airlines network, the specific flight route (including arrival/departure time/date at all stop-over airports, mileages, visa requirements, etc.) and the current flight position on a map.

The sites would also support Web 2.0 tools (e.g., blogs, wikis, media sharing, social tagging and recommendation) to increase users' interactivity, communication and participation. The users would post travelogues and photos, ask about travel destinations, share travel experiences, make suggestions to other travellers as well as to the airline, rate travel services, resources, destinations, etc. Finally, mobile services would be available to users. A user with a mobile device should be able to find information about timetables, flight schedules, flight availability, flight status, his itinerary, weather, health and safety conditions, currency exchange rates, airport, his frequent flyer status, to buy a ticket, to select his seat and meal, to do check-in, etc. SMS notification about flight arrival/departure times, gates, changes, connecting flights, etc., would be also appreciated.

Future research could examine the improvements made over time. Also, a single airline site would be evaluated by many users of various ages, educational and social levels in order to discover any differences in their preferences as well as special needs. Continuous evaluation of an airline site is needed in order to keep up with customers' needs, desires and expectations as well technological advances. Log file analysis, online surveys, focus groups surveys and interviews would help administrators to continually improve the site. Finally, the concepts presented in this paper could be extended to other domains.

References

Barnes, S.J. and Vidgen, R.T. (2001) 'Assessing the quality of auction web sites', *Proceedings of the 34th Hawaii International Conference on System Sciences*, IEEE.

Barnes, S.J. and Vidgen, R.T. (2002) 'An integrative approach to the assessment of e-commerce quality', *Journal of Electronic Commerce Research,* Vol. 3, No. 3, pp.114–127.

Benckendorff, P. (2006) 'An exploratory analysis of traveller preferences for airline website content', *Information Technology & Tourism*, Vol. 8, pp.149–159.

Charette (2008a) *Right on Queue: UK Government Loses More Sensitive Data*, available at http://blogs.spectrum.ieee.org/riskfactor/2008/10/right_on_queue_uk_government_d.html (accessed on 10 October 2008).

Charette (2008b) *Adding to the Queue; UK Government Loses Still More Data*, available at http://blogs.spectrum.ieee.org/riskfactor/2008/10/adding_to_the_queue_uk_governm.html (accessed on 10 October 2008).

Chen, C. (2006) 'Identifying significant factors influencing consumer trust in an online travel site', *Information Technology & Tourism*, Vol. 8, pp.197–214.

Dutta, S. and Segev, A. (2001) 'Business transformation on the internet', in Barnes, S. and Hunt, B. (Eds.): *E-Commerce and V-Business*, Butterworth-Heinemann, Oxford, pp.5–22.

Groth, K., Bogdan, C., Lindqvist, S. and Sundblad, Y. (2007) 'Simple and playful interaction for informal communication and learning', *International Journal of Knowledge and Learning*, Vol. 3, Nos. 2/3, pp.191–208.

Harison, E. and Boonstra, A. (2008) 'Reaching new altitudes in e-commerce: assessing the performance of airline websites', *Journal of Air Transport Management*, Vol. 14, pp.92–98.

Heijden, H. and Verhagen, T. (2002) 'Measuring and assessing online store image: a study of two online bookshops in Benelux', *Proceedings of the 35th Hawaii International Conference on System Sciences*, IEEE.

Jones, N.B., Provost, D.M. and Pascale, D.S. (2006) 'Developing a university research web-based knowledge portal', *International Journal of Knowledge and Learning*, Vol. 2, Nos. 1/2, pp.106–118.

Kim, S.E., Shaw, T. and Schneider, H. (2003) 'Web site design benchmarking within industry groups', *Internet Research: Electronic Networking Applications and Policy*, Vol. 13, No. 1, pp.17–26.

Kim, H., Kim, T. and Shin, S.W. (2009) 'Modeling roles of subjective norms and e-trust in customers' acceptance of airline B2C e-commerce websites', *Tourism Management*, Vol. 30, No. 2, pp.266–277.

Koppius, O., Speelman, W., Stulp, O., Verhoef, B. and van Heck, E. (2005) 'Why are customers coming back to buy their airline tickets online? Theoretical explanations and empirical evidence', *Proceedings ICEC'05*, ACM, pp.319–326.

Law, R. and Leung, R. (2000) 'A study of airlines' online reservation services on the internet', *Journal of Travel Research*, Vol. 39, pp.202–211.

Law, R. and Leung, K. (2002) 'Online airfare reservation services: a study of Asian-based and North American-based travel web sites', *Information Technology & Tourism*, Vol. 5, pp.25–33.

Liu, C., Arnett, K.P. and Litecky, C. (2000) 'Design quality of web sites for electronic commerce: Fortune 1000 webmasters' evaluations', *Electronic Markets*, Vol. 10, No. 2, pp.120–129.

Lytras, M.D. and Sicilia, M.A. (2005) 'The knowledge society: a manifesto for knowledge and learning', *International Journal of Knowledge and Learning*, Vol. 1, Nos. 1/2, pp.1–11.

Lubbe, B. (2007) 'The effect of internet apprehension and website satisfaction on air travellers' adoption of an airline's website', *Journal of Air Transport Management*, Vol. 13, pp.75–80.

Merwe, V.D. and Bekker, J. (2003) 'A framework and methodology for evaluating ecommerce web sites', *Internet Research: Electronic Networking Applications and Policy*, Vol. 13, No. 5, pp.330–341.

Olsina, L. and Rossi, G. (1999) 'Towards web site quantitative evaluation: defining quality characteristics and attributes', *Proceedings of IV International WebNet Conference, World Conference on the WWW and Internet*, Hawaii, USA, Vol. 1, pp.834–839.

Pallas, J. and Economides, A.A. (2008) 'Evaluation of art museums' web sites worldwide', *Information Services & Use*, Vol. 28, No. 1, pp.45–57.

Patel-Predd, P. (2008) 'Data theft by partner companies on the rise', *IEEE Spectrum Online*, available at http://spectrum.ieee.org/sep08/6652 (accessed on 10 October 2008).

Porta, M. (2007) 'E-learning and machine perception: in pursuit of human-line interaction in computer-based teaching systems', *International Journal of Knowledge and Learning*, Vol. 3, Nos. 2/3, pp.281–298.

Reifer, D. (20002) 'Ten deadly risks in internet and intranet software development', *IEEE Software*, March–April, pp.12–14.

Schubert, P. and Selz, D. (2001) 'Measuring the effectiveness of electronic commerce websites with the web assessment method', in Hunt, B. (Ed.): *E-Commerce and V-Business*, Imperial College, London.

Schubert, P. and Dettling, W. (2002) 'Extended web assessment method (EWAM) – evaluation of e-commerce applications from the customer's viewpoint', *Proceedings of the 35th Hawaii International Conference on System Sciences*, IEEE.

Serva, M.A., Benamati, J.S. and Fuller, M.A. (2005) 'Trustworthiness in B2C e-commerce: an examination of alternative models', *ACM SIGMIS Database, The DATABASE for Advances in Information Systems*, Vol. 36, No. 3, pp.89–108.

Shchiglik, C. and Barnes, S.J. (2004) 'Evaluating web site quality in the airline industry', *The Journal of Computer Information Systems*, Vol. 44, No. 3, pp.17–25.

Shon, Z-Y., Chen, F-Y. and Chang, Y-H. (2003) 'Airline e-commerce: the revolution in ticketing channels', *Journal of Air Transport Management*, Vol. 3, pp.325–331.

Slyke, C.V., Belanger, F. and Comunale, C.L. (2004) 'Factors influencing the adoption of web-based shopping: the impact of trust', *ACM SIGMIS Database*, Vol. 35, No. 2, pp.32–49.

Terzis, V. and Economides, A.A. (2005) 'Job site evaluation framework (JSEF) and comparison among Greek and foreign job sites', *Human Systems Management*, Vol. 24, No. 3, pp.223–237.

The Nielsen Global Online Survey (2008) Available at www.nielsen.com (accessed on 10 October 2008).

Verizon (2008) *2008 Data Breach Investigations Report*, available at http://www.verizonbusiness.com/resources/security/databreachreport.pdf (accessed on 10 October 2008).

Zarifopoulos, M. and Economides, A.A. (2009) 'Evaluating mobile banking portals', *International Journal of Mobile Communications*, Vol. 7, No. 1, p.66–90.

Appendix

List: evaluated web sites

Europe	
Air France (FR)	http://www.airfrance.com
Alitalia (IT)	http://www.alitialia.com
British Airways (UK)	http://www.britishairways.com
Aegean Airlines (GR)	http://www.aegeanair.com
Lufthansa (DE)	http://www.lufthansa.com
Iberia (ES)	http://www.iberia.com
Austrian Airlines (AT)	http://www.aua.com
Czech Airlines (CZ)	http://www.czechairlines.com
KLM (NL)	http://www.klm.com
Swiss Air (CH)	http://www.swiss.com
Asia	
Korean Air (KR)	http://www.koreanair.com
ANA (JP)	http://www.ana.co.jp/
Singapore Airlines (SG)	http://www.singaporeair.com
Emirates (AE)	http://www.emirates.com
Thai Airways (TH)	http://www.thaiairways.com
Malaysia Airlines (MY)	http://www.malaysiaairlines.com
Sri Lankan Airlines (LK)	http://www.srilankan.aero/
Gulf Air (BH)	http://www.gulfairco.com
Cathay Pacific (HK)	http://www.cathaypacific.com
PIA (PK)	http://www.piac.com.pk/
USA and Australia	
Qantas (AU)	http://www.qantas.com
Air New Zealand (NZ)	http://www.airnewzealand.com
Regional Express (AU)	http://www.regionalexpress.com.au/
Skywest (AU)	http://www.skywest.com.au/
Delta Airlines (US)	http://www.delta.com
American Airlines (US)	http://www.americanairlines.com
Aeromexico (MX)	http://www.aeromexico.com
Air Canada (CA)	http://www.aircanada.com
Varig (BR)	http://www.varig.com
United Airlines (US)	http://www.united.com