

CHAPTER FIVE

DESIGNING AND IMPLEMENTING BLUE AIR TRAVEL WEBSITE

5.1 Design Process Overview

This chapter describes the design and implementation of the Blue Air Travel website as shown in Figure 5.1. The design and building an interactive version stages are highly interrelated. It is hard to distinguish between each of this stage. Throughout this chapter the word design describes either one of this stage. Firstly, the card sorting activity is carried out by the elderly to organize the information of the Blue Air Travel website. Then this findings help to initiate the design of the Blue Air Travel website using paper prototype (low-fidelity prototype) together with requirements gathered from chapter 4 (Functional Requirements and User Interface Requirement). This paper prototype is user tested through task scenarios to identify usability problem which derives a list of usability requirements. This finding is then applied to the high-fidelity prototype 1 along with the most recommended guidelines from chapter 2 (table 2.3). This interactive version of high-fidelity prototype 1 is user tested to find usability problems which helps to derive a list of usability requirements. These requirements are then incorporated into the design and implementation of Blue Air Travel website (high-fidelity prototype 2).

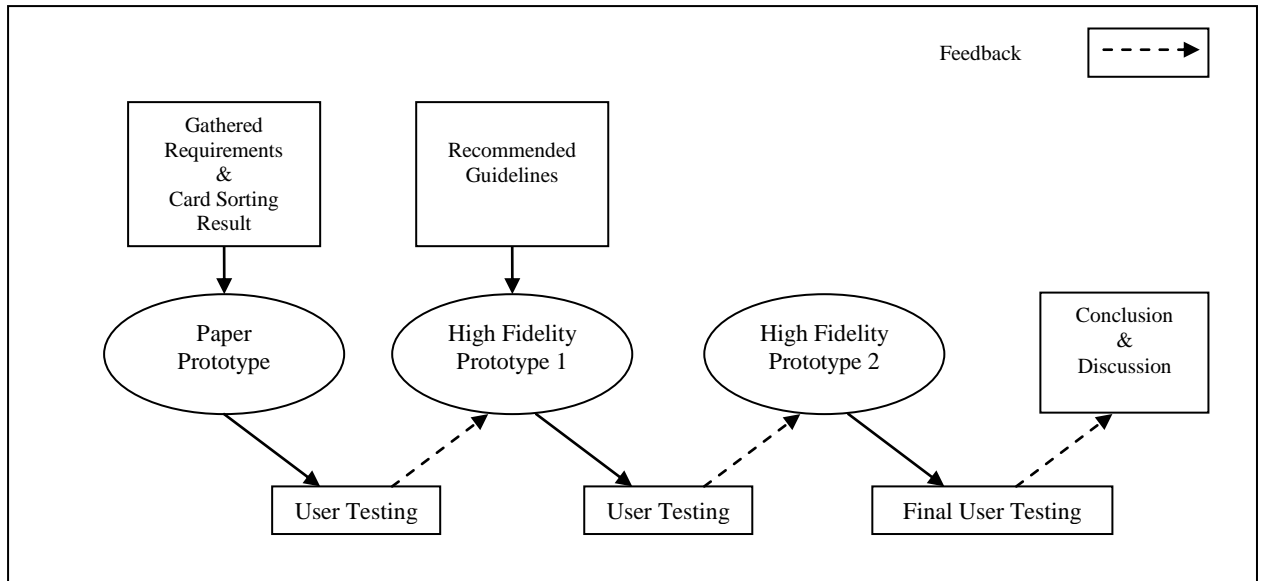


Figure 5.1: The Design and Implementation Process of the Blue Air Travel Website

5.2 Card Sorting Session

The designing process starts with the card sorting session. This technique identifies the most logical way the elderly organize the information into category for the Blue Air Travel website. The information here is the verbs and nouns which represent the tasks and content of the pages. Card sorting activity produces card sort analysis (or dendogram) that clearly shows the information's divided into separate categories.

The following steps are taken to conduct the card sorting:

1. Preparing for the Card Sort Session
2. Arranging and Conducting the Card Sort Session
3. Observation of the Participant
4. Card Sorting Analysis and Discussion

5.2.1 Preparing for the Card Sort Session

Preparation for the card sort begins with getting the titles of the cards ready. Several relevant and important titles are selected from existing traveling websites and from

task analysis from chapter 4. The titles of each card are the objects (nouns) and actions (verbs) used. They represent the information on the website. Table 5.1 presents a list of verbs and nouns. Then three travel website are selected and these titles are compared with the three websites. Each similar title is ticked. The titles with 2 or 3 ticks (√) are selected. These selected titles are printed on a white paper. Each title is cut separately and is paste on a bright yellow manila card sized at 15cm x 10cm. A total of 63 cards with relevant titles are prepared. It appears big and clear for ease of use during the session with the elderly. Other preparations for the session are the place, stationeries and a wide table.

Table 5.1: Titles from Three Selected Traveling Websites

No	Titles	Air Asia	Singapore Airlines	Tiger Airways
1	Book A Flight		√	
2	Book now/Get Flight		√	√
3	Search	√		
4	Flight	√	√	√
5	Flight Schedule	√	√	√
6	My Booking		√	
7	Check & Change	√		
8	Checking/view a booking			√
9	Itinerary	√	√	√
10	Hotel	√	√	√
11	Search for Hotel/Get Hotel		√	√
12	Select -Time n date travel			√
13	Package Booking	√		
14	Hotel Search Result			√

15	Item Requirements(hotel)			√
16	Current value in Basket(Hotel)			√
17	Promotions	√	√	√
18	Flights and Fares		√	
19	How To Book	√	√	
20	How We Price	√		
21	Before you Fly	√	√	√
22	Schedules & Timetable	√	√	
23	Select -Time n date travel	√		√
24	Confirmation -confirm the itinerary	√	√	√
25	Review Itinerary	√	√	
26	Guests Info	√		√
27	Passenger Info		√	
28	Our Planes And People	√		
29	Holiday	√		
30	Travel Services	√	√	
31	About Us	√	√	√
32	Terms and Condition of Carriage	√	√	√
33	In-flight Entertainment		√	√
34	At the Airport		√	√
35	Upon Arrival		√	√
36	Register as Member	√	√	
37	Get A Package	√	√	
38	Travel Agent	√	√	
39	Fee Schedule	√		
40	Destinations Search	√	√	√
41	Ground Arrangements	√		
42	details of taxi, buses n prices	√		
43	Get Hostel	√		

44	Info about hostel around the world	√		
45	Car rental agents	√	√	√
46	Get Cruise	√		
47	Schedule of cruises		√	
48	Hotel Information's	√	√	√
49	DIY Package	√		
50	Theme Package	√		
51	Group Booking	√	√	
52	Airspace Advertising	√		
53	Travel Tools	√		
54	Travel guides	√		
55	Destination Events	√		
56	Help	√	√	√
57	Travel Tips & Preparation	√	√	√
58	Experience in the Flight	√	√	
59	Fleets Information	√	√	√
60	Safety	√		
61	Maintenance	√		
62	Call Ask Us	√	√	√
63	Faqs	√	√	√

5.2.2 Arranging and Conducting the Card Sort Session

There were three sessions of card sorting conducted at three different locations. The first participant chose to be tested in his house, second participant at the computer class and the last chose the Science Faculty at University of Malaya. Convenient location was selected in order to provide comfortable settings and to get the best result. An acknowledgement letter and a consent form (as shown in Appendix B and C) were also given to participant to tell them what is exactly required from them.

During the card sorting session, a set of instructions was read out to the participant.

Below is the set of instructions (Instructions taken from ZDNet Developer, 1999).

1. Please sort these cards into piles such that things that you think go together are in the same pile.
2. You are allowed to have as many piles of the cards as you like.
3. The piles do not need to contain the same number of cards some piles may be very big and others may have one or two cards if you do not think they are sufficiently similar to anything else.
4. You can change your mind and move cards around and merge or split piles as you go.

After the instructions were given, the participants were given some grace time to clarify any doubts. Then the cards were given to them. They were also provided with marker pen and extra empty cards measuring the same size in case they wanted to rename the titles or add a new title. Rubber bands were also given to tie the group of related cards together.

All participants were told to think aloud during their session. For each session no time limits were imposed but the observations were done and the researcher stood by to answer queries from participants. Jacob Nielsen stressed that the card sorting results are only part of the findings in the session but the other half that needs almost the same attention is the qualitative insights that was gained in the testing sessions that is listening to the participants comments as they sort their cards (Nielsen, 2004).

5.2.3 Observation of the Participant

Mr. Paul

The first session was with Mr. Paul, held in his house. He was really looking forward to this session. He was not given any clue what was going to be done till the last minute. He took almost one hour categorizing them in different categories. Finally he managed to get them into 10 categories. This included a few new titles and change of card names which he preferred. This session was taped with a digital video camera.

Mr. Chong

Mr. Chong's card sort session was done in University of Malaya. It was conducted at the Science faculty canteen on a semester break to make sure there were no distractions and noise for him. Figure 5.2 refers to a photo of Mr. Chong during his card sorting session. He finished in 25 minutes. He also managed to categorize them in only four categories which were very different from the first participant.



Figure 5.2 Mr. Chong's Card sorting Session

Mr. Balakrishnan

The third participant was Mr.Bala. This session was done in the researcher's house. It took Mr.Bala almost one hour to get the cards sorted. He managed to come up with eight categories.

5.2.4 Card Sorting Analysis and Discussion

Throughout the sessions the think aloud method did not work out as the participants were busy trying to concentrate on their card sort rather than talk out loud what they were thinking and doing. It is due to the inability to do multi tasking among the elderly people (Schwender et al., 2006).

All the cards from each participant, from three different sessions were carefully separated into different bags and each time a participant had grouped the card it was tied with a band. This made entering the results into the IBM's EZSort Beta Edition (IBM, EZSort) system easier. EZSort (IBM, EZSort) is a free cluster analysis software tool produced by IBM to help interface designers in organizing information based on users' expectation. This tool includes two application, they are USort 1.8 Beta and EZCalc 1.3 Beta. USort helps in organizing card virtually by each individual participant but in this research the researcher does the sorting manually. All three participant's results were keyed into USort 1.8 (Beta edition) by the researcher. This was to avoid consumption of time on training the elderly users to use the system. The EZCalc 1.3 Beta then managed the sorted cards from multi participants and gave clear dendogram output which showed the categorization very well. The difference in the categories was determined and areas of similarities contribute in the design process.

The results are shown on Figure 5.3. The result shows the ease of the categorization when it is on color. The different colours represent different groupings.

The horizontal axis describes all the titles that are sorted and the vertical axis represents the threshold lines measurements. The threshold lines are represented by the green line and the pink lines. If it is showing directly at 1.0 means that none of the participants have put these verbs and nouns together with any group that was formed. These are labeled as title of each page or each category. Then the most chosen cards are all those vertical lines at 0.0 which mean that it is the strongest related card. Distance of 0 means that all participants placed two cards together for example 'Hotel' and 'Hotel Information' are put together by all three participants. It also means that it must be put under the same category within that bracket. The Dendogram's threshold or the criterion is set to 0.70 and there are four big groups and four small groups. The groups which have more than four labels in it are identified as big groups. Altogether there are eight groups formed. From the participant's feedback the groups that was formed from the top of figure 5.4 was 'Hotel', 'Promotions', 'Flights', 'Package', 'Fleet and Destination Informations', 'Help and Term and Condition', 'Travel Tips and Preparations' and 'Before, During and After'. Categorized of the contents are still feasible for changes in the next section which is the paper prototyping.

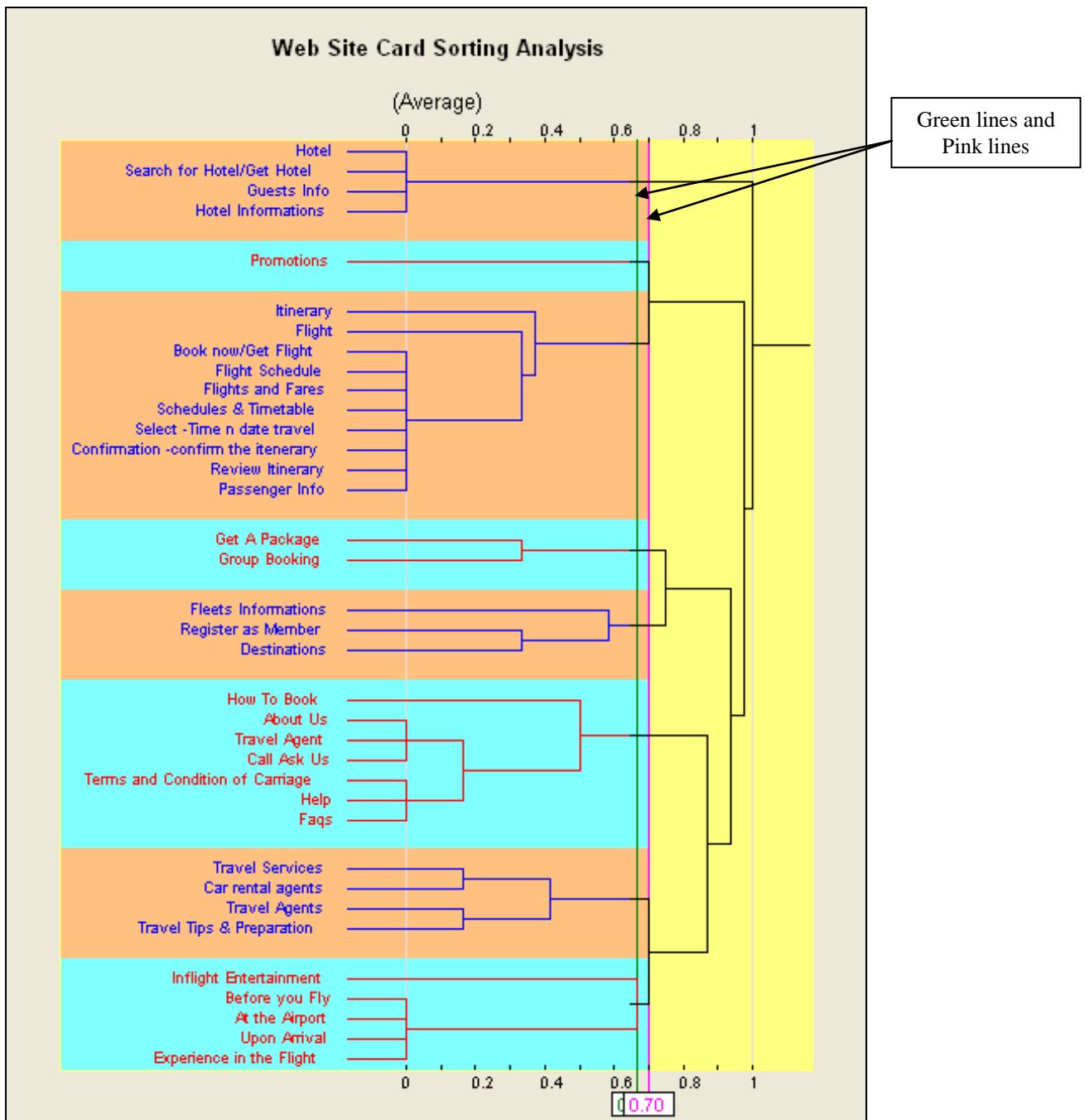


Figure 5.3: Dendrogram of the Card sorting Analysis-The Categorization of Content for Blue Air Travel Website.

5.3 Paper Prototyping

This section describes the initial design of the Blue Air Travel Website. The initial design is done using the paper prototype. The designs initiated on the paper prototype are based on the participant's findings from Chapter 4 (user interface requirement and

functional requirements) and card sorting activity. The purpose of the Blue Air Travel paper prototype is to identify the usability problems. This technique is considered the cheapest way to make changes to the design as it can be made immediately to the paper prototype.

5.3.1 Preparation for the Paper Prototyping

Computer-generated browser header is printed and pasted onto the A4 size papers to present the window mockup screens of the "computer". The post-it papers are used to stick some of the verb and nouns for easier changes of labels.

5.3.1.1 Paper Prototype-Flight booking Module

Figure 5.4 shows design of the Main page of the Blue Air website. It shows the seven categories in a button form and the promotion as an icon with link. There is also the text 'Increase' and 'Decrease' button. These buttons are used for increasing and decreasing the fonts on the page. The Main page shows a simple design with very few items on the screen. The top most will be the banner which comprises the title on the left, the slogan in the middle and the logo on the right hand side. Every page has the same banner on top to indicate consistency.

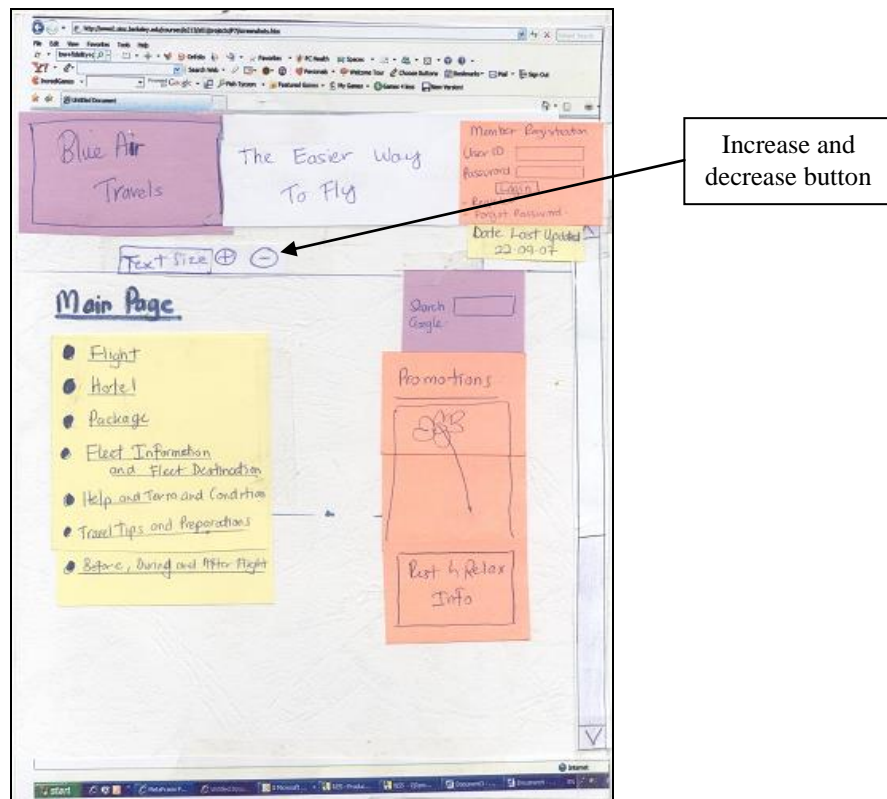


Figure 5.4: Main Page - Paper Prototyping

Next is figure 5.5 which shows the link ‘flight’s main page which is labeled flight booking. In this description it will concentrate on the ‘Flight Booking’. The other button is the ‘Schedule and Time table.’ The search criteria are to be entered in the box provided. The box shows the search page for the preferred flight. There is the radio button to select either ‘return’ or ‘one way’. Then there is the drop down menu to view and select the ‘departing’ and ‘destination’ country or city. Another drop down menu for the ‘departure date’ and the ‘arrival date’ of the trip is provided. At the bottom there is two drop down menu for the number of passenger: one is for adults and one is for infants. Then a ‘book now’ button is added there for the convenience of the participants to know the next step.

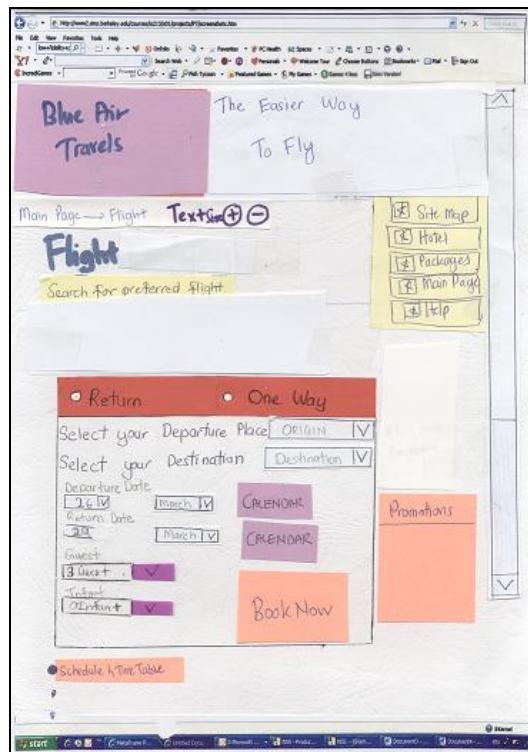


Figure 5.5: Flight Main Page - Paper Prototyping

Figure 5.6 shows the available flight for departure and arrival according to the search criteria previously. Then there is a radio button for selection purpose. A 'Next' button is inserted on this page to go to the next step.

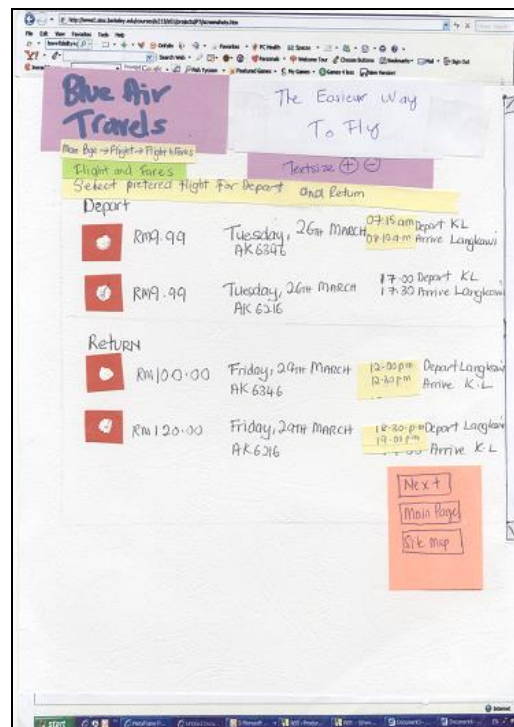


Figure 5.6: Flight and Fares Page - Paper Prototyping

Figure 5.7 shows details of the price breakdown and the rules of ticketing are provided just beside it. Next is the request for passenger details. If there is more than one passenger then the step has to be repeated. First, the cards holders' name and address have to be entered on the text box provided. Then the radio button requires the credit card type: whether it is Visa or Master Card. Then the card number and the PIN number are requested. Lastly if everything on the page is confirmed then the 'Agree' or 'Don't Agree' radio button is provided. If participant agree then they have to proceed to 'Confirm' button. 'Confirm' button is inserted to reach the final process. It also means the passenger agrees to pay the amount and agree with the schedule of the flight.

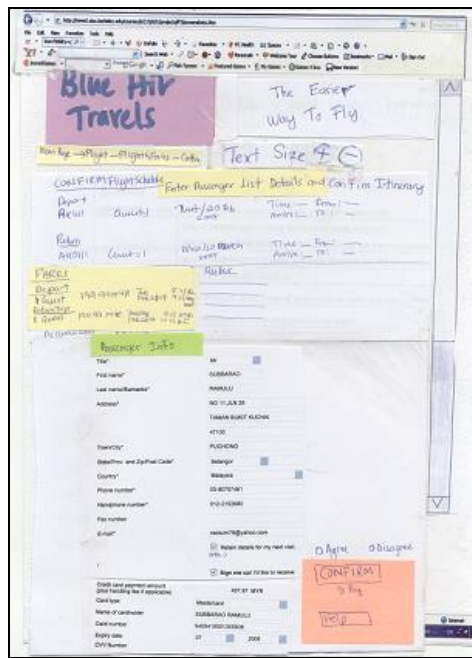


Figure 5.7: Flight Confirmation - Paper Prototyping

Lastly a flight itinerary as page shown on figure 5.8 is displayed. It displays a review of the confirmed itinerary. A reservation code is displayed for reference.

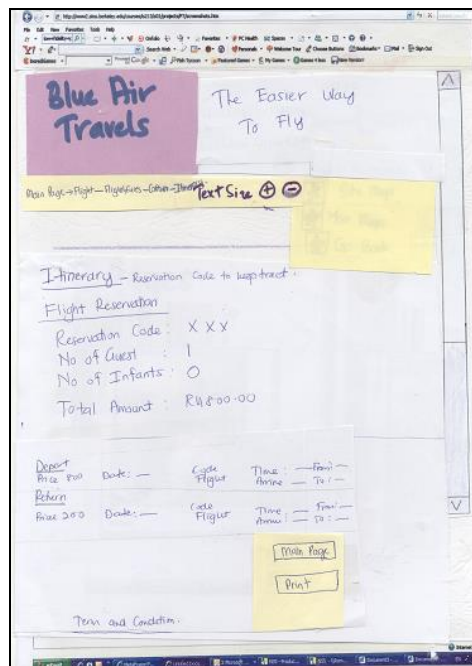


Figure 5.8: Flight Itinerary - Paper Prototyping

However throughout the chapter the discussion only concentrates on main page and the flight booking module. The rest of the modules screen shots are attached in the Appendix A.

5.3.2 The Procedure to Conduct the Session

The procedure includes the environment setup and the process of conducting the session.

5.3.2.1 Setup of Environment

The environment arrangements are made half an hour before the participant arrives at the place. Separate paper prototype sessions are conducted among the three participants. All three sessions are conducted at participant's place of convenience. Referring to McCracken et al, 2004, there is several protocols on the format, roles and team building during which should be tackled carefully in order to perform these sessions properly.

The format is room arrangements. Figure 5.9 shows how the paper prototype representing the computer is placed in the 'P'. This can be seen clearly in figure 5.11 where it is pasted in front of participant's position, so that each paper will only placed inside that screen area. The researcher sat beside the test participant in order to converse easily and is completely out of line of sight from the participant but can see the prototype. Two observers whom records each expression and comments of the participant made sat across the participant and beside the participant each. Combining the two views into a single screen swing a small inset of the participant's facial reaction while the rest of the screen shows the participants actions.

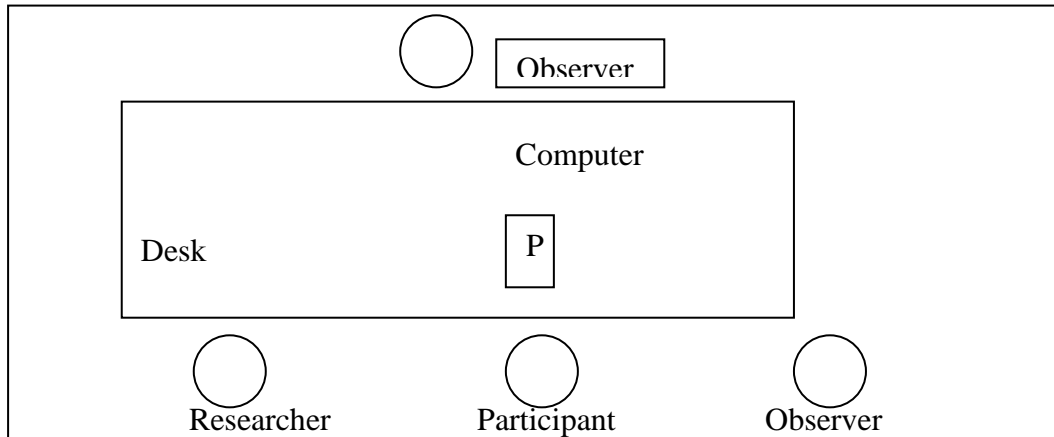


Figure 5.9: The Seating Arrangement. (McCracken et al.; 2004)

Then three task scenarios are prepared for this session similar to the previous task scenarios used at the evaluation of Air Asia Website. It is separated in three different cards so that participants are not given any clue about the next task scenario. This is to increase accuracy of the timing.



Figure 5.10: The Screen Layout was pasted on the Table

5.3.2.2 Conducting the Paper Prototype Session with the Participant

When the participant arrives, the researcher firstly gets permission to conduct it through the informed-consent agreement which can be referred at Appendix B. During each participant's session, the researcher explains and introduces the observer and their role. It is to make the participant feel as comfortable as possible. Researcher conducts a demo to show how a simple task scenario works; it is to make them see web pages in action on paper prototypes. This way, the participants learn to use the paper prototype by imitating the demonstration. Participants are also instructed to "think aloud" during the test, verbalizing their thoughts, interpretations of the interface and suggestions.

<p>Task Scenario Task One-Easy 1. Please find which link of the website shows the flight services.</p> <p>Task Two-Moderate 2. Please book a flight for 2 adult from Langkawi to Kuala Lumpur from 26th March 2006 till 29th March 2006. On the evening flight. State the total price here RM_____.</p> <p>Task Three-Difficult 3. Please book a package to go Melaka and a hotel room in Melaka, The date to book is from 20th March till 25th March 2007. Choose a hotel on the range of RM200 to RM250 per night. Please state the total amount here. RM_____.</p>

Figure 5.11: Task Scenarios for Paper Prototype

Figure 5.11 shows that task scenarios that were conducted by the participants. The tasks were divided to easy, moderate and difficult based on the number of steps to accomplish each task as stated in chapter 4 task analysis. For paper prototyping each task were separated into individual cards. The researcher gives out the card one by

one to participant. The participants put the main page on the white screen before starting. They are told to start their task from the main page. During the session the observer took notes on the participant's comments, suggestions and their thoughts that they say aloud. The researcher prompted participants with questions when it seemed they are thoughtful or confused, but refrained from trying to help. When necessary, changes are made by the researcher to paper prototypes to fulfill with the participant's suggestion, while the observer keeps track of any changes. After each task scenario, the researcher asks for comments and feedback about the design to identify more usability problems. This is in case the participant forgets the problems they encountered. Figure 5.12 shows the paper prototype aids used during this session while figure 5.13 shows the paper prototype session conducted with Mr. Chong.



Figure 5.12: Sample of the Paper Prototype Aids Used For the Project



Figure 5.13: One of the Sessions with Mr. Chong

5.3.3 Result from Paper Prototyping

Table 5.2 is the participant's feedback from task scenario of the paper prototype. The time taken to complete each task scenario is recorded in table 5.3 to see how well the website (paper prototype) is accessed by the elderly users. Table 5.4 describes the summary of the participant's feedback.

Table 5.2: Task scenario Feedbacks during Paper Prototyping

Participant /Task scenario	Mr. Chong	Mr. Paul	Mr. Krishnan
<p>Task scenario 1</p>	<p>- The task scenario was very easy for Mr. Chong. He gave suggestions to include Step 1 ,Step 2.as the starting of each instruction 1.45 minute</p>	<p>- Read every single word on the page till he found the related verb. He also commented that the first page should be simpler. He suggested that the page should have ‘Table of contents’ - Even though our researcher showed him a sign to think aloud he did not as he was really concentrating on what he was looking for. - He said it was easy. - Task scenario 1 was done without hiccups 1.27 min</p>	<p>-Commented the button was very easy to find. -Complimented the main page was looking clear and straight to the point -He suggested that the main functions should be bolded and to use phrases like hotel booking, flight booking, package booking and a short description of what its function. 1.40 minute</p>
<p>Task scenario 2</p>	<p>-He was stuck due to the radio button confusion on the flight and fares page. He suggested the title of the page to be called ‘Flight and Fares. He could not differentiate the going and coming back option as all looked alike.</p>	<p>-He looked less tense than the earlier task scenario and as he wanted to finish fast and did not read everything on the page. Like the first one. He quickly went to the flight booking.(Book Now) -He commented that he preferred to have am and pm.</p>	<p>- He was doing slowly and steadily. -He commented that the process was lengthy and asked too many personal details. He asked what the login was for participants. So it was explained and he found that to be his</p>

	<p>-He suggested color difference on the top and below to differentiate the departure and return flights.</p> <p>-He also suggested that the buttons to be on the left hand side bottom not the top right.</p> <p>5.05 minutes</p>	<p>Easier to identify the timing of the flight.</p> <p>-On the confirmation of flight booking he commented that he wanted the word 'return' to be changed to 'return trip'.</p> <p>-He also commented that the term and condition is too difficult to read as it is too long.</p> <p>He also asked what is the reason for the + and _ button for. When he was explained the purpose he suggested to include the phrase 'Increase Text' and 'Decrease Text' so that the purpose of the button is obvious.</p> <p>4min 13 sec</p>	<p>solution. Yet he could not test it as it was on low-fi only.</p> <p>-Suggested the register the membership to be in each page so that it will be not difficult to find.5min 32sec</p>
<p>Task scenario 3</p>	<p>-This task scenario was also handled very well.</p> <p>-He did not have any problem encountering it.</p> <p>-The part he was slow in was when he saw the confirmation of the booking as he paused to double check all content and was confused at how they</p>	<p>-He was curious why other hotels are not viewable at hotel list.</p> <p>-Hotel booking was carried well and the task carried out easily. He commented that the 'main page' be changed to 'first page'.</p> <p>- He also suggested the</p>	<p>- He said that the package booking should have already set packages instead of choosing the packages himself. He suggested like a tour base so the elderly will book easily if they prefer.</p> <p>6min 11sec</p>

<p>calculated it.</p> <p>-He suggested that part should be clearer. Clearer in the sense of showing the breakdowns of each charge in bold and big. Each day must be stated there. (Thursday or Friday)</p> <p>He suggested the package to be one set and commented that it is difficult to understand the connections of date, hotel, flight and fares. So he suggested having a package for one destination every month. So when they want they just select that package.</p> <p>-The colors are not a problem for him. He commented that the site looks clearer to him and he has no confusion at all. 5.08 minute</p>	<p>breadcrumb provided to be highlighted or bolded in the pages he visits</p> <p>- He suggested to have the calendar only as it will show both month and date. He do not like the drop down menu provided.</p> <p>He commented the task of doing package booking is difficult.</p> <p>-He also suggested that the flight booking, hotel and package be set as tabs.</p> <p>5 minutes and 49secondss</p>
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