



International Civil Aviation Organization

**The Twentieth Meeting of the APANPIRG ATM/AIS/SAR Sub-Group
(ATM/AIS/SAR/SG/20)**

Singapore, 05 – 09 July 2010

Agenda Item 5: Consider problems and make specific recommendations concerning the provision of ATM/AIS/SAR in the Asia/Pacific Region

BOBCAT ACTIVITIES UPDATE SINCE BOB-RHS/TF/2

(Presented by Thailand)

SUMMARY

This paper presents updates on AEROTHAI ATFM activities in the Bay of Bengal region including operations of the BOBCAT ATFM system.

This paper relates to

Strategic Objectives:

- A: Safety – Enhance global civil aviation safety*
- C: Environmental Protection – Minimize the adverse effect of global civil aviation on the environment*
- D: Efficiency – Enhance the efficiency of aviation operations*

Global Plan Initiatives:

- GPI-6 Air Traffic Flow Management*
- GPI-7 Dynamic and flexible ATS route management*
- GPI-8 Collaborative airspace design and management*
- GPI-16 Decision support and alerting systems*

1. INTRODUCTION

1.1 The meeting would recall that on AIRAC Date 5 July 2007, international long range ATFM procedure using the BOBCAT system became fully operational.

1.2 It was agreed at the 12th Meeting of the ATFM Task Force held in July 2008 that monthly traffic data collection in samples of seven consecutive days each month would continue. The traffic data would be collected by all States for one agreed week each month, send to the ATFMU for analysis by the BOBCAT Development Team for presentation to the periodic meetings of the ATFM Task Force.

1.3 It is unfortunate that no ATFM Task Force meetings have been held since ATFM/TF/12 in July 2008 in Cairo, Egypt. Nevertheless, due to participations by most States involved with BOBCAT matters, BOBCAT issues have been discussed at various Bay of Bengal Reduced Horizontal Separation Implementation Task Force (BOB-RHS/TF) meetings. As a consequence, the meeting is invited to note and comment on outstanding operational issues which are expressed in this working paper as well as status updates of the BOBCAT since BOB-RHS/TF/2 meeting.

2. DISCUSSION

2.1 Throughout the 30 months since operational implementation of the ATFM procedures between AIRAC Date 5 July 2007 and 31 May 2010, 57,366 westbound aircraft have submitted slot request to enter the Kabul FIR, with 93 percent accepting a slot allocation through the Kabul FIR. It should also be noted that between June 2009 and May 2010 an average of 56 aircraft per night submitted slot request compared to 38 aircraft per night in July 2006 with the commencement of the ATFM Operational trials. Aircraft not accepting a slot allocation may have had various reasons such as aircraft delay, route availability and sometimes weather which showed a more efficient and cost-effective route outside the Kabul FIR.

2.2 Based on IATA estimates in 2007, it can be estimated that, with the current traffic volume, the BOBCAT ATFM procedure has been able to save approximately 14 million kilograms of fuel per year, equivalent to approximately 60 million kilograms of carbon dioxide emissions per year as well as annual approximate of US\$ 14 million airline operating cost savings.

Overall Data Analysis – Traffic Volume

2.3 The meeting is invited to note the traffic demand distribution based on BOBCAT Slot Request in Figure 1. The figure shows that a nightly traffic reached a peak of 73 aircraft per night in April 2009. Average nightly traffic between June 2009 and June 2010 have been consistently between 55-60 aircraft with the exception of April 2010 when volcanic ash cloud situation slightly reduced traffic demand for the month.

2.4 The meeting is advised that BOBCAT traffic demand in May 2010 has grown by 23 percent when compared to the commencement of operational trials in July 2007.

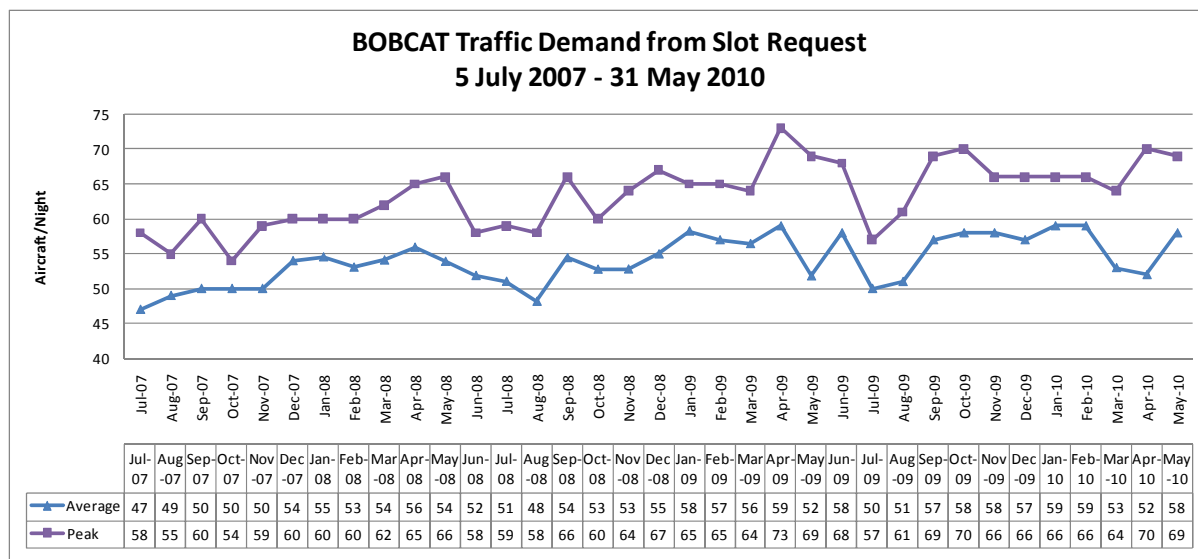


Figure 1: BOBCAT Traffic Demand from Slot Request Information (July 2007 – May 2010)

Effect of Volcanic Ash Situation

2.5 The meeting is advised that during the month of April 2010, when there were volcanic ash situation in Europe, slot allocation fell by over 75 percent for the several days when European airspace were close to traffic. Naturally, this caused an overall effect on statistics produced within the paper.

Overall Data Analysis – Traffic Distribution by Airport

2.6 The meeting is invited to note the traffic demand distribution based on BOBCAT Slot Request organized by departure airport in Figure 2 between July 2007 and May 2010.

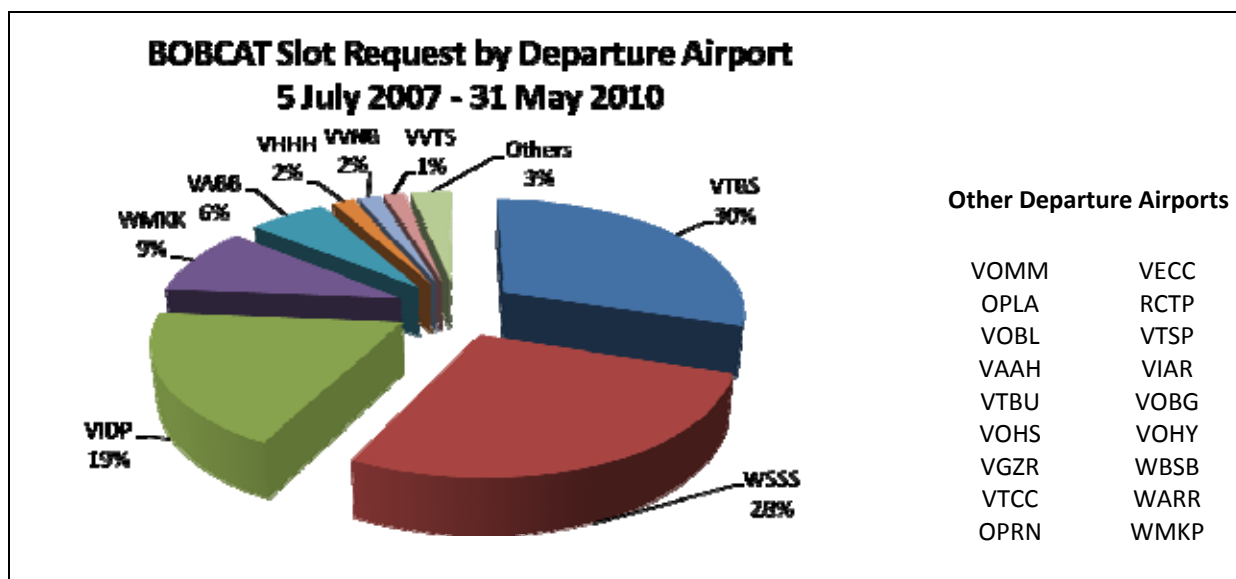


Figure 2: BOBCAT Traffic Demand from Slot Request Information organized by Departure Airport (July 2007 – May 2010)

2.7 Based on traffic distribution by departure airports in Figure 2, the top-8 airport providing the most traffic to the BOBCAT system are:

- a) **VTBS:** Bangkok, Thailand
- b) **WSSS:** Singapore
- c) **VIDP:** Delhi, India
- d) **WMKK:** Kuala Lumpur, Malaysia
- e) **VABB:** Mumbai, India
- f) **VHHH:** Hong Kong, China
- g) **VVNB:** Ha Noi, Viet Nam
- h) **VVTS:** Ho Chi Minh, Viet Nam

Flights Transiting the Kabul FIR at the Allocated or Higher Preferred Flight Level

2.8 The meeting is invited to note that the percentage of flights transiting the Kabul FIR at the allocated or higher preferred flight level according to collected ATFM data fluctuates between 85.36% in April 2010 and 92.31% in April 2010, while in some days all aircraft were able to transit the Kabul FIR at the allocated or higher preferred flight level.

Flights Transiting the Kabul FIR at a Flight Level Lower than Slot Allocation

2.9 The meeting is invited to note that, analysis of ATFM data collected between January and April 2009 in respect to aircraft transiting the Kabul FIR at a flight level lower than slot allocation in respect of causes diagnosed can be organized into Figure 3 with the following causes:

- a) Early or Late departures of the specific aircraft or another aircraft;
- b) EET inaccuracy;
- c) VIDF FL Orientation issue (tactical ATM);
- d) Eastern Bay of Bengal FL Orientation issue (tactical ATM);
- e) Departures without slot; and,
- f) Unknown reason due to insufficient data

**Flights Transiting the Kabul FIR at a Flight Level
Lower than Slot Allocation
October 2008 - April 2010**

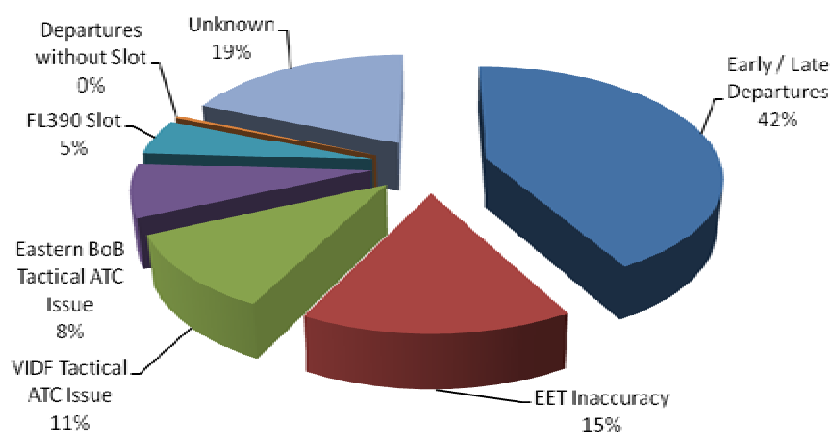


Figure 3: Flights Transiting the Kabul FIR at a Flight Level Lower than Slot Allocation (October 2008 - April 2010)

Early and Late Departures

2.10 The meeting is advised that, based on information in Figure 3, a major cause for aircraft having to transit the Kabul FIR at flight level lower than allocated was early or late departure of the particular aircraft or other aircraft affecting it.

2.11 Statistics of aircraft analyzed to have potentially caused other aircraft to transit the Kabul FIR at flight level lower than slot allocation is shown in Figure 4 and Figure 5 organized by airline and departure airport.

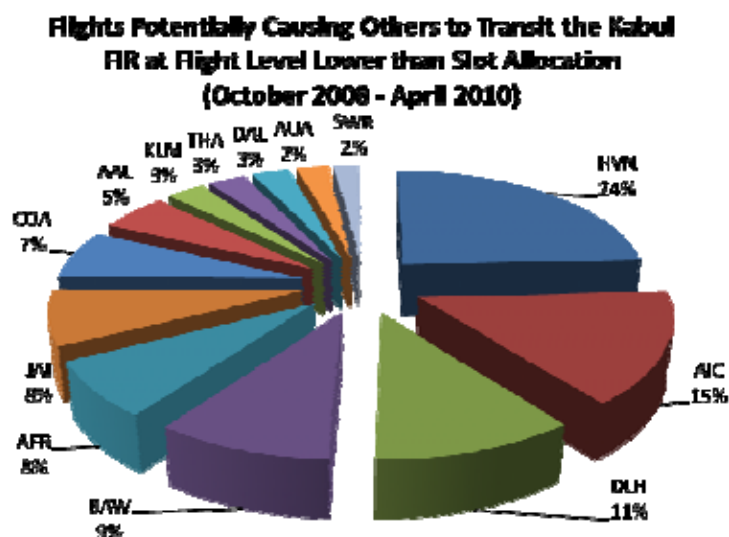


Figure 4: Flights Potentially Causing Others to Transit the Kabul FIR at a Flight Level Lower than Slot Allocation (January 2009 – April 2010) Organized by Airline Operator

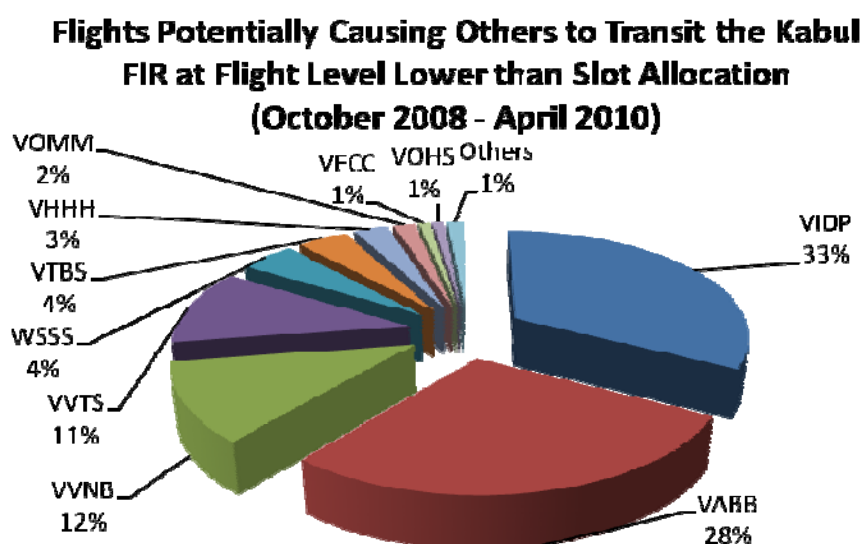


Figure 5: Flights Potentially Causing Others to Transit the Kabul FIR at a Flight Level Lower than Slot Allocation (January 2009 – April 2010) Organized by Departure Airport

2.12 The meeting is advised that, as traffic increases, it is likely that cases of early and late departures in respect to Allocated Wheels-Up Time (AWUT) would have more impact on the overall performance of the system. In effect, everyone pays more for the lack of compliance.

2.13 The meeting is invited to note, as the operator of the BOBCAT system and the Bangkok ATFMU, AEROTHAI is continuing to assist States and international airlines by answering queries and, at request of airlines and States, conduct appropriate training.

Participation in Data Collection

2.14 The meeting is informed of participation in ATFM Data Collection between January 2010 and May 2010 in Figure 6. Thailand would like to thank States involved for participating in the

ATFM Data Collection process, which could prove to be resource intensive, but could assist in highlight room for enhancements in various areas of the ATFM/BOBCAT procedure operations.

	January 2010	February 2010	March 2010	April 2010
WSFC	7 days	7 days	7 days	7 days
WMFC	7 days	7 days	7 days	7 days
VTBB	7 days	7 days	7 days	7 days
VYYY	7 days	7 days	7 days	7 days
VOMF	7 days	7 days	7 days	7 days
VECF	7 days	7 days	7 days	N/A
VABF	7 days	7 days	7 days	7 days
VIDF	7 days	7 days	7 days	7 days
OPKR	7 days	7 days	7 days	7 days
OPLR	7 days	7 days	7 days	7 days
OAKX	N/A	N/A	2 days	7 days

Figure 6: States' Participation in Data Collection by FIR

Operational Messages Sent to the Bangkok ATFMU

2.15 The meeting is reminded that, according to the ATFM Users Handbook, “[aircraft] operators shall also address flight plan and related ATS messages (e.g. DEP, DLA, CNL, CHG) to the Bangkok ATFMU.” Nevertheless, some flight plans and ATS messages are still not transmitted to the Bangkok ATFMU, especially for departures west of the Bay of Bengal.

2.16 The meeting is advised that these ATS messages can be used in future ATFM data analysis, namely in determining potential cause of aircraft transiting the Kabul FIR at flight level lower than slot allocation as well as alerting potential issues arising from aircraft departing early or late outside AWUT window, which is a crucial cause of aircraft transiting the Kabul FIR at a flight level lower than slot allocation.

2.17 The meeting is invited to note in Figure 7 and Figure 8 percentage of flight plan and departure messages received by the Bangkok ATFMU from major departure airports contributing BOBCAT traffic between January 2010 and April 2010.

% FPL Receipt	January 2010	February 2010	April 2010
VTBS	100.00%	100.00%	100.00%
WSSS	97.92%	100.00%	93.33%
VIDP	75.00%	74.65%	88.24%
WMKK	100.00%	93.94%	90.48%
VABB	0.00%	0.00%	0.00%
VHHH	100.00%	77.78%	80.00%
VVNB	100.00%	100.00%	100.00%
VVTS	100.00%	100.00%	85.71%

Figure 7: Percentage of Flight Plan Messages Received by the Bangkok ATFMU (January 2010 – April 2010)

% DEP Receipt	January 2010	February 2010	April 2010
VTBS	100.00%	100.00%	100.00%
WSSS	94.79%	86.21%	85.00%
VIDP	72.73%	30.99%	66.67%
WMKK	100.00%	93.94%	90.48%
VABB	0.00%	0.00%	0.00%
VHHH	100.00%	77.78%	80.00%
VVNB	100.00%	85.71%	100.00%
VVTS	100.00%	71.43%	85.71%

Figure 8: Percentage of Departure Messages Received by the Bangkok ATFMU (January 2010 – April 2010)

BOBCAT Airlines Satisfaction Survey

2.18 The meeting is invited to note that, in cooperation with IATA, AEROTHAI conducted a BOBCAT Airlines Satisfaction Survey with the key objective of obtaining possible room for enhancements in ATFM/BOBCAT Procedures as well as the BOBCAT system software. The result in **Appendix 1** has been presented at the BOB-RHS/TF/3 meeting. As a result of discussions at the meeting, AEROTHAI is currently investigating time involved in implementing feature sets suggested in the survey in order to further coordinate with States involved as well as IATA and their member airlines to obtain agreement on future development of the BOBCAT system.

3. ACTIONS BY THE MEETING

3.1 The meeting is invited to

- a) note data collected by the Bangkok ATFMU, discuss results and, if necessary, consider appropriate actions;
- b) note results of the BOBCAT Airline Satisfaction Survey;
- c) urge parties concerned to forward flight plans and related ATS messages of aircraft with BOBCAT slot allocation to the Bangkok ATFMU as shown in Figure 7 and Figure 8; and,
- d) note that AEROTHAI will continue to support both States and airlines in enhancing the cooperative ATFM/BOBCAT procedure.

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BOBCAT Airlines Survey Result

In cooperation with IATA, AEROTHAI conducted a satisfaction survey of the airlines between January 2010 and March 2010. A total of 8 airlines replied to the survey, together contributing approximately 40 percent of total traffic.

Survey result can be summarized as follows:

1. Customer Satisfaction Index (CSI)

Satisfaction Level:

5 = Most important / Most satisfied

4 = Very important / Very satisfied

3 = Somewhat important / Somewhat satisfied

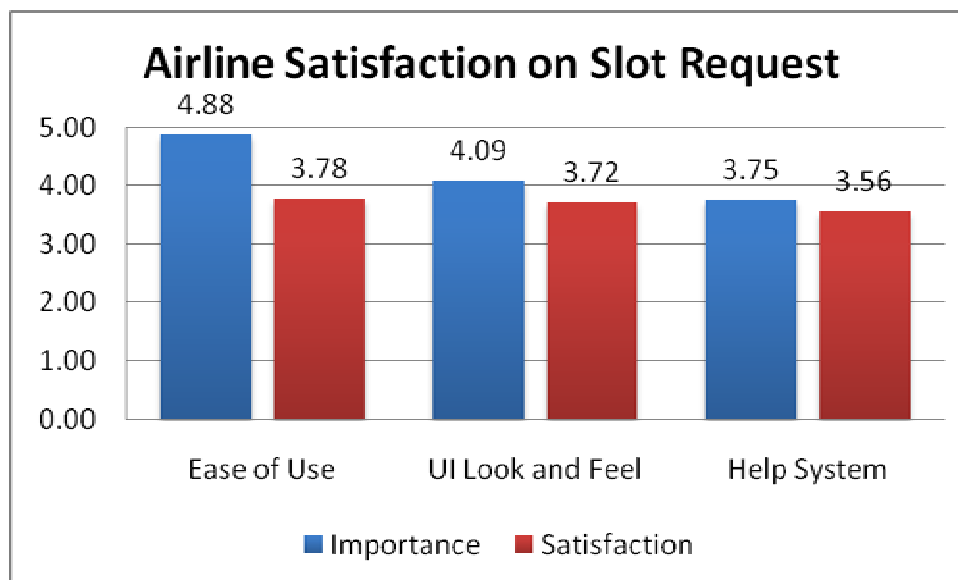
2 = Not very important / Not very satisfied

1 = Least important / Least satisfied

1.1 Airlines Satisfaction on Slot Request Functionality

Topic	Importance			Satisfaction Level	
	Average	Standard Deviation	Weight (%)	Average	Standard Deviation
1. Ease of Use	4.88	0.35	38.33%	3.78	0.90
2. User Interface Suitability (look and feel)	4.09	1.10	32.19%	3.72	0.70
3. Help System	3.75	1.16	29.48%	3.56	0.73

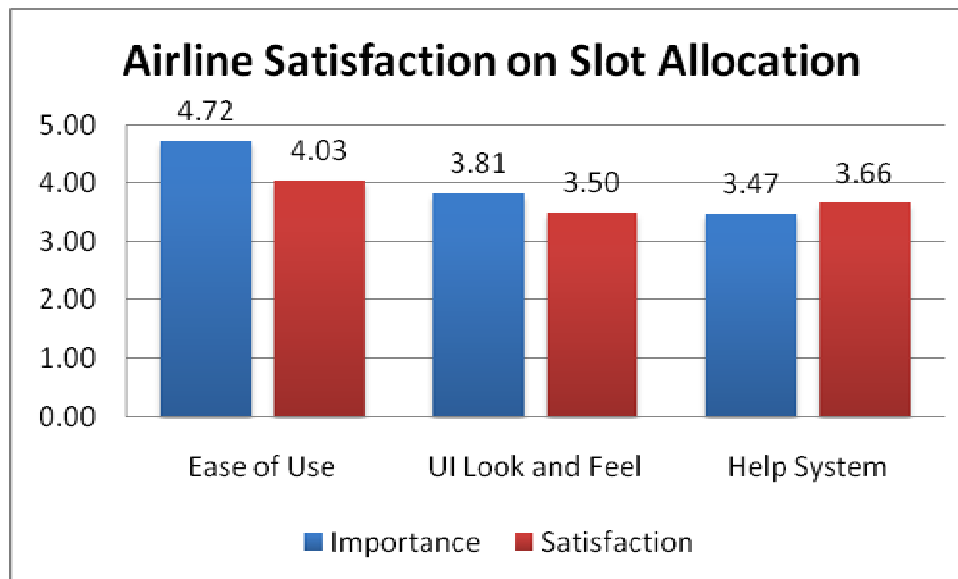
CSI = 73.93



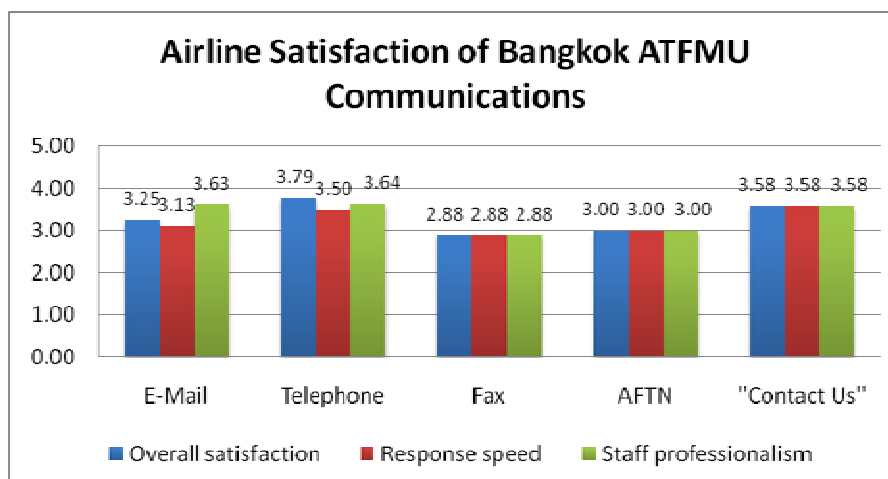
1.2 Airlines Satisfaction on Slot Allocation Functionality

Topic	Importance			Satisfaction	
	Average	Standard Deviation	Weight (%)	Average	Standard Deviation
1. Ease of Use	4.72	0.53	39.32%	4.03	1.07
2. User Interface Suitability (look and feel)	3.81	1.36	31.77%	3.50	0.93
3. Help System	3.47	1.18	28.91%	3.66	0.77

CSI = 75.08

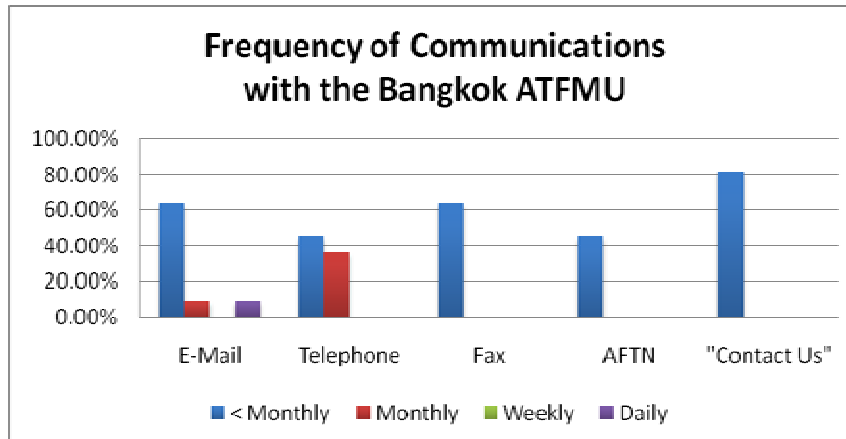


1.3 Airlines Satisfaction of Communications with the Bangkok ATFMU

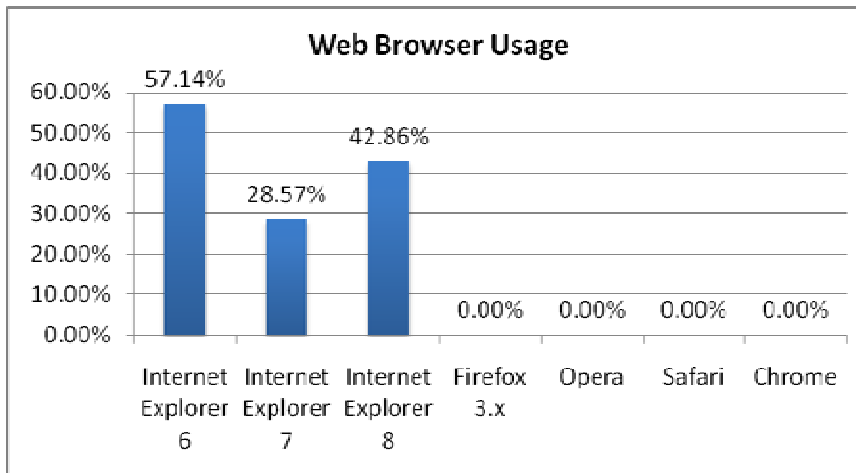


2. System Usage Information

2.1 Frequency of communications with the Bangkok ATFMU by Airlines



2.2 Percentage of Airlines Accessing the BOBCAT System using Various Web Browsers



3. Summary of Suggestions

3.1 Suggestions Related to Slot Request Functions

- Slot Request of call sign following an alphabet such as QFA31D should be possible
- Some form of "traffic demand" should be available during slot request phase

3.2 Suggestions Related to Slot Allocation Functions

- "Waypoint Allocation" should be modified to include actual traffic, which may come from processing of flight plan or departure messages
- Mechanisms used to select new slot should be adjusted so that airlines can input multiple routes' EET and select from multiple options simultaneously

3.3 General Suggestions

- Password resets via e-mail should be possible without the use of forms mailed to the Bangkok ATFMU
- Airlines should be able to give priority level to their slot requests

3.4 Popularity of Potential New Features

