STUDY OF AIRLINES' CARGO HUB AIRPORT SELECTION – A GLOBAL SURVEY

Dear Director/President/Executive,

I am a assistant professor at Penghu University. I am writing to you to ask if you would kindly participate in a survey of airlines' cargo hub airport selection decision-making behavior. This research project is supported by the National Science Foundation in Taiwan. The first part of the survey is focusing on the weight criteria have in cargo airport selection and how they influence your cargo hub airport choice. The second part of the survey is airport specific; it aims to find out overall performance of the four major cargo hub airports in the great China region, namely, Shanghai, Hong Kong, Singapore, and Taipei. Please complete the questionnaire from your viewpoint. This is an academic research and survey results will not be disclosed to any third party. Any geographical or other comparisons will not identify companies by name.

Since there are only a few large air carriers, your opinion is vitally important for my academic research. If you are not sure of the answer to a question, please provide your best-estimated response. If you wish to receive a summary of the survey findings, please return the completed tear-off slip below to me separately and I will be happy to send the summary to you when the research is over. Please send the slip in a separate envelope if you want to safeguard the anonymity of the questionnaire.

I would like to thank you in advance for your kind participation in this survey.

Your faithfully,
Γ.C. Lirn

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I • Questionnaire Structure: The research aims to look into three major critical service attributes influencing airlines' cargo hub airport selection,

namely, airport quality, airport location, and third party influences.

- (1) Airport quality: Labor force quality, airport ground access, infrastructure, airport user charge, airside congestion and delay.
- (2) Airport location: Operational availability (e.g. typhoon, snow), local demand, geography of airports, competition from nearby airports.
- (3) Third party influence: Airport marketing, freight forwarders/shippers/consignees, government legislation, bilateral agreement, environmental restrictions, political risk.

II • Explanation and examples of terms and scales used:

If you think criterion A is 9 times more important than criterion B in airlines cargo hub airport decision making, then please circle as follows:

CRITERION		Intensity of Relative Importance													CRITERION			
Airport Quality (A)	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Airport Location (B)

Circling ⁽⁹⁾ means: From global carriers' perspective, (A) factor (Airport Quality) has extreme importance for airlines cargo hub decision making when compared with (B) factor (Airport Location).

If you think the C criterion is 7 times more important than B criterion in airlines cargo hub airport decision making, then please circles as follows:

CRITERION		Intensity of Relative Importance													CRITERION			
Airport Location (B)	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Third Party Influences (C)

Circling ⁽⁹⁾ means: From global carriers' perspective, (C) factor (Third Party Influences) has extreme importance for airlines cargo hub airport decision making when compared with (B) factor (Airport Location).

Scales of relative importance:

Intensity of Relative Importance	Definition
9	Extreme importance
8	Demonstrated to extreme importance
7	Demonstrated importance
6	Strong to demonstrated importance
5	Essential or strong importance
4	Moderate to strong importance
3	Moderate importance of one over another
2	Equal to moderate importance
1	Equal importance

III **•** The survey

Part one: The Criteria Comparison

1. First Tier Comparison: the relative importance of each major criterion for cargo hub airport selection decision

CRITERION	Intensity of relative importance														CRITERION			
Airport quality	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Airport Location
Airport quality	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Third Party Influences
Airport Location	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Third Party Influences

2. Second Tier Comparison: Relative importance of each sub-criterion for cargo hub airport selection

(1) Airport Quality: Labor force quality, airport ground access, infrastructure, airport user charge, airside congestion and delay.

SUBCRITERION	Intensity of relative importance										SUBCRITERION							
Labor force quality	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	airport ground access
Labor force quality	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	infrastructure
Labor force quality	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	airport user charge
Labor force quality	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	airside congestion and delay
airport ground access	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	infrastructure
airport ground access	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	airport user charge
airport ground access	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	airside congestion and delay
infrastructure	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	airport user charge
infrastructure	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	airside congestion and delay
airport user charge	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	airside congestion and delay

SUBCRITERION		Intensity of relative importance										SUBCRITERION						
Operational availability	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	local demand
Operational availability	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	geography of airports
Operational availability	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	competition from nearby airports
local demand	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	geography of airports
local demand	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	competition from nearby airports
geography of airports	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	competition from nearby airports

(2) Airport Location: Operational availability (e.g. typhoon, snow), local demand, geography of airports, competition from nearby airports.

SUBCRITERION						Inte	ensit	y of r	elativ	ve im	porta	ance						SUBCRITERION
Airport marketing,	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Freight forwarders/
																		shippers/consignees
Airport marketing	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Government legislation
Airport marketing	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Bilateral agreement
Airport marketing	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Environmental restrictions
Airport marketing,	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Political risk
Freight forwarders/	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Government legislation
shippers/consignees																		
Freight forwarders/	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Bilateral agreement
shippers/consignees																		
Freight forwarders/	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Environmental restrictions
shippers/consignees																		
Freight forwarders/	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Political risk
shippers/consignees																		
Government legislation	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Bilateral agreement
Government legislation	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Environmental restrictions
Government legislation	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Political risk
Bilateral agreement	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Environmental restrictions
Bilateral agreement	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Political risk
Environmental restrictions	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Political risk

(3) Third Party Influences: Airport marketing, freight forwarders/ shippers/consignees, government legislation, bilateral agreement, environmental restrictions, political risk.

Part Two: Evaluating major hub cargo airports' performance in Chinese countries

Please circle one of the five ratio scales 1, 2, 3, 4, 5 to evaluate the performance of the 15 sub-criteria for each airport. Circling (5) means an airport has the highest possible performance with reference to the specific sub-criterion; Circling (1) means the lowest possible performance)

	<u>+</u>	6	1	1 /
Hub cargo airports	Taipei Chiang Kai	Hong Kong Chek	Shanghai Pudong	Singapore Changi
Selection Sub-Criteria /	Shek Airport	Lap Kok Airport	Airport	Airport
1. Labor force quality	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2. Airport ground access	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3. Infrastructure	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4. Airport user charge	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
5. Airside congestion and delay	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
6. Operational availability (e.g. Typhoon, snow)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
7. Local demand	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
8. Geography of airports	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
9. Competition from nearby airports	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
10. Airport marketing	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
11. Freight forwarders/ shippers/consignees	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
12. Government legislation	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
13. Bilateral agreement	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
14. Environmental restrictions	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
15. Political risk	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Triangle fuzzy set utilized three values to represent a semantic wording. For example, a triangle fuzzy set A can be defined by μ . A. (x) = trianglemf(x,[10,40,60]), where A is the fuzzy set of semantic wording - "Very Poor".

Circling 1 out of the five ratio scales, it indicates the airport has a very poor performance on the sub-criterion, and the triangle fuzzy set values are



Circling 4, it indicates the airport has a **good** performance on the sub-criterion, and the triangle fuzzy set values are (_____, ____, ____).

Circling 5, it indicates the airport has an **excellent** performance on the sub-criterion, and the trapezoid fuzzy set values are (_____, ____,).