

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

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

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

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

SUBCRITERION	Intensity of relative importance																	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/ shippers/consignees	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Government legislation
Freight forwarders/ shippers/consignees	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Bilateral agreement
Freight forwarders/ shippers/consignees	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Environmental restrictions
Freight forwarders/ shippers/consignees	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Political risk
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

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)

Selection Sub-Criteria / Hub cargo airports	Taipei Chiang Kai Shek Airport	Hong Kong Chek Lap Kok Airport	Shanghai Pudong Airport	Singapore Changi 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 $\mu_A(x) = \text{trianglemf}(x, [10, 40, 60])$, 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 2, it indicates the airport has a **poor** performance on the sub-criterion, and the triangle fuzzy set values are (_____, _____, _____).

Circling 3, it indicates the airport has a **fair** 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 (_____, _____, _____).