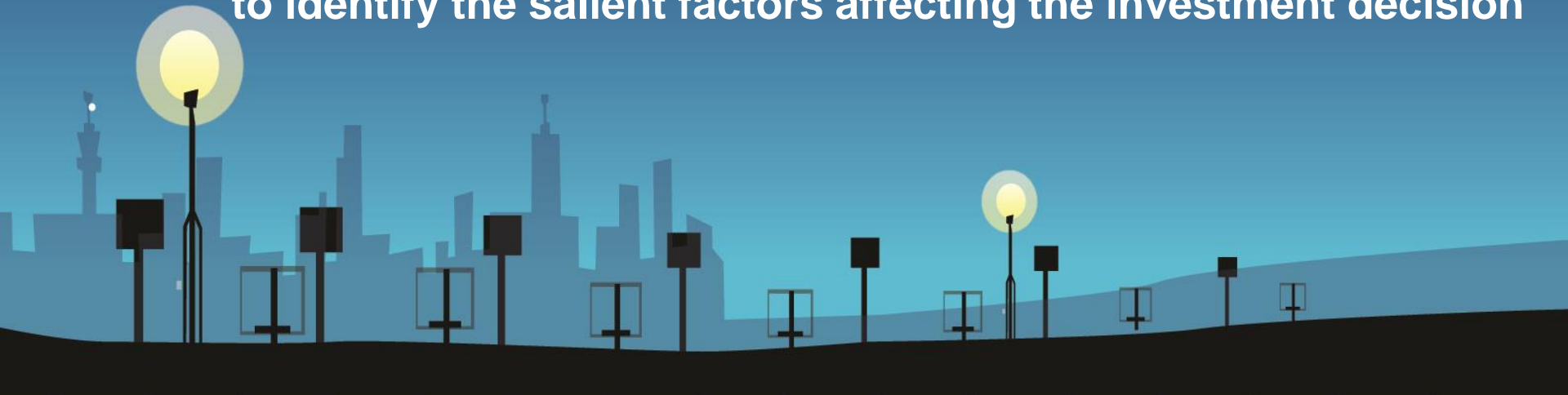




Airport low-cost terminals in Vietnam: Using best-worst scaling to identify the salient factors affecting the investment decision



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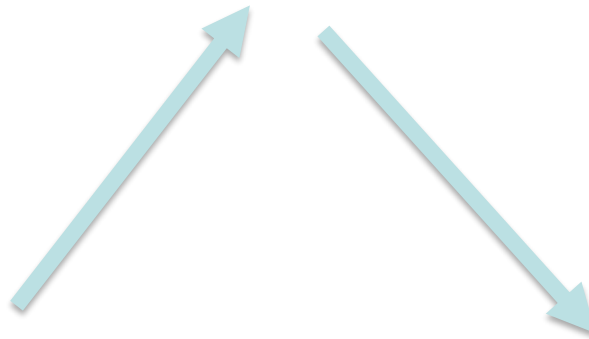


Introduction

create more jobs
enhance economics
promote tourism opportunities
(De Neufville, 2008; Njoya & Niemeier, 2011)

2017: 143 LCCs
worldwide, 60 LCCs Asia
Pacific (ICAO, 2017)

Market share of LCCs:
15.7% (2006) -> 31%
(2018) (Mazareanu, 2020)



Low-Cost Carrier
Terminal - KLIA2

Low-Cost Carrier
Terminal 2 at Kansai
Airport

Budget terminal at
Changi Airport

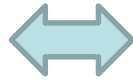


Introduction

Domestic transport market share (by 2018):
Vietjet Air: 50%
Pacific Airlines: 10%

Tan Son Nhat International Airport: 10
LCCs - 166 flights per day

Low-Cost Terminal in Vietnam: 0



Risky



No experience

When airport planners or managers in Vietnam pay attention to low-cost terminal investments,

which factors should be considered?



Literature review

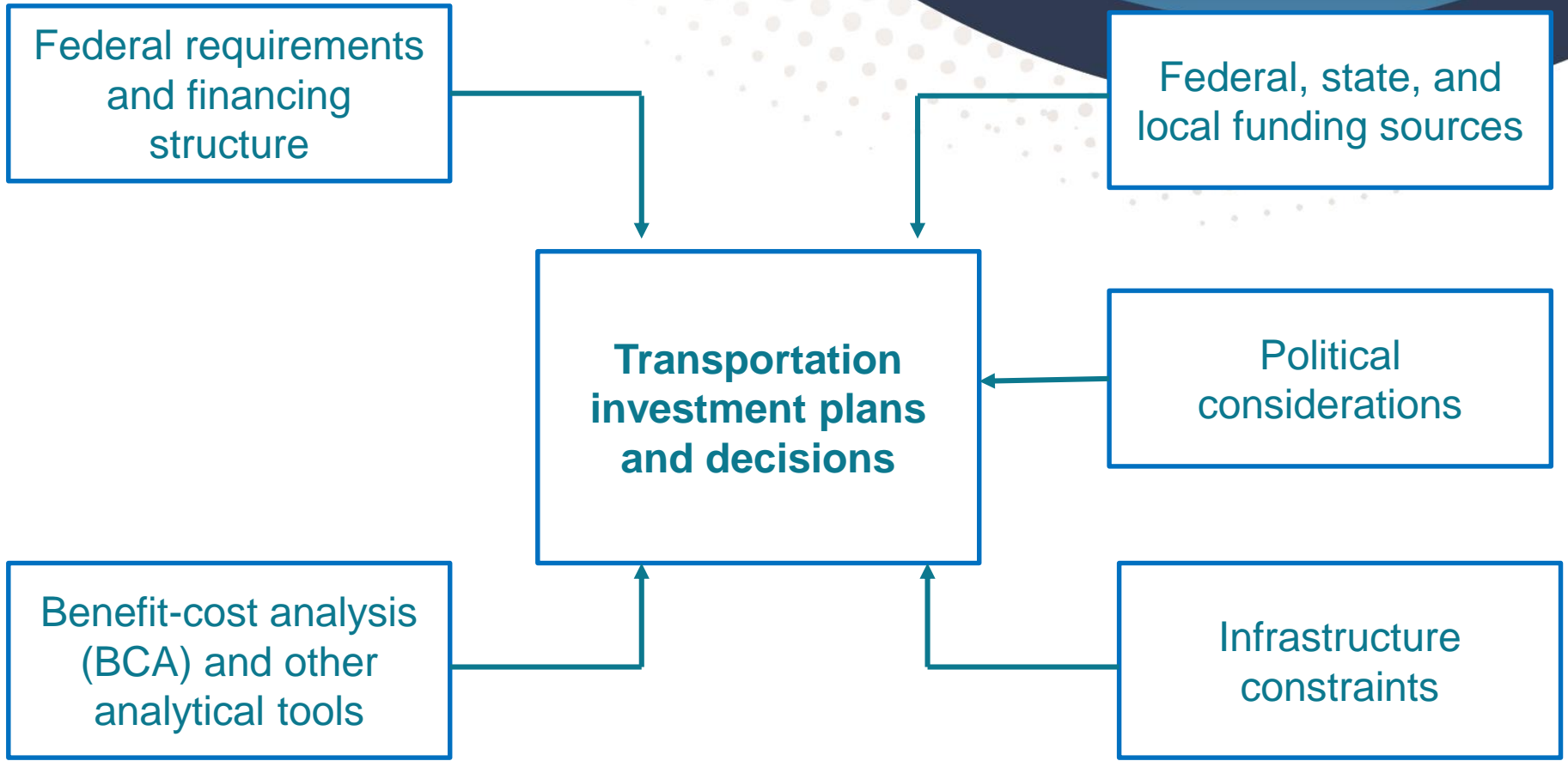


Fig. 1. Key factors affecting transportation planning decisions (Source: GAO, 2004)



Literature review

Transport infrastructure investment projects

Economic evaluation

Financial assessment

Technical evaluation

Trade assessment

Organizational evaluation

Social impact assessment

Considered factors when evaluating transport infrastructure investment projects

(Source: Adler, 1987)



Table 1. Proposed factors influencing the decision-making process of investing in LCTs

Group of factors	Code	Factor	Sources
Government policies	fac1	Investment in LCTs has been supported by state authorities	Adler (1987) GAO (2004)
	fac2	LCTs investment is more important than other airport investment projects	Adler (1987) GAO (2004)
Benefit-cost analysis (BCA)	fac3	LCTs have high-profit potential	GAO (2004) Vreeker et al. (2002)
	fac4	The project is economically feasible, LCTs have the potential to benefit the entire society	GAO (2004)
	fac5	Project benefits are properly distributed to different stakeholders	Adler (1987)
Funding sources	fac6	The project has sufficient funds throughout the life of the project	GAO (2004) Moutinho and Mouta (2011)
	fac7	State or local budgets finance the entire project	GAO (2004) Moutinho and Mouta (2011)
	fac8	Other investors (LCCs, construction companies, etc.) are interested and invest in the project	GAO (2004)
	fac9	Favorable and beneficial debt policy	Moutinho & Mouta (2011)
Political considerations	fac10	The project must be approved by the resident community	GAO (2004)
	fac11	The project must be approved by other stakeholders (local authorities, environmental agencies, ...)	GAO (2004)
Infrastructure constrains	fac12	The airport has enough space for a new LCT	GAO (2004)
	fac13	The other technical works of the airport are enough to serve a new LCT when it comes into operation	GAO (2004)



Methodology

Questionnaire design

Balanced Incomplete Block Design (BIBD)

$$a = 13$$

$$b = 13$$

$$k = 4$$

$$r = 4$$

R software

Best-Worst Scaling (BWS)

- BWS is a tool to quantify the importance of a group of factors affecting an issue of concern (Cohen, 2003)
- BWS more reliable than the rating scale (e.g., Likert scale) (Carson & Groves, 2007)
- BWS outperforms the ranking scale (Massey et al., 2015)

Methodology



Table 3. BIBD of 13 factors affecting investment decision

Set	a = 13		b = 13	
	k = 4		r = 4	
1	fac1	fac4	fac8	fac9
2	fac1	fac3	fac5	fac7
3	fac7	fac9	fac10	fac11
4	fac5	fac6	fac8	fac10
5	fac7	fac8	fac12	fac13
6	fac1	fac6	fac11	fac13
7	fac4	fac5	fac11	fac12
8	fac3	fac4	fac10	fac13
9	fac2	fac5	fac9	fac13
10	fac3	fac6	fac9	fac12
11	fac1	fac2	fac10	fac12
12	fac2	fac4	fac6	fac7
13	fac2	fac3	fac8	fac11

Table 4. Example of a BWS task

Most important (Best)	Set 1 (fac1, fac4, fac8, fac9)	Least important (Worst)
	fac1: Investment in LCTs has been supported by state authorities	
X	fac4: The project is economically feasible, LCTs have the potential to benefit the entire society	
	fac8: Other investors (LCCs, construction companies, etc.) are interested and invest in the project	
	fac9: Favourable and beneficial debt policy	X



Methodology

Sample and data analysis

Sample

- Officials and employees directly involved in the planning and operating of airports in Vietnam
- Valid responses: 35/42

Data analysis

- Descriptive analysis
- Calculating the square root value of the best /worst score (Louviere et al., 2015)

Results



Table 2. Descriptive analysis

Gender	Male	17	49.0 (%)
	Female	18	51.0 (%)
Age	25 - < 30	11	31.0 (%)
	30 - 40	15	43.0 (%)
	> 40	9	26.0 (%)
Degree	Master	7	20.0 (%)
	Bachelor	28	80.0 (%)
Work experience: 9 years			

Table 5. Best-Worst Results

Factor	Best (B)	Worst (W)	$\sqrt{\left(\frac{B}{W}\right)}$	standardized $\sqrt{\left(\frac{B}{W}\right)}$	Ranking
fac3: LCTs have high-profit potential	68	15	2.13	6.02	1
fac4: The project is economically feasible, LCTs have the potential to benefit the entire society	74	20	1.92	5.44	2
fac6: The project has sufficient funds throughout the life of the project	44	20	1.48	4.20	3
fac13: The other technical works of the airport are enough to serve a new LCT when it comes into operation	51	27	1.37	3.89	4
fac1: Investment in LCTs has been supported by state authorities	34	18	1.37	3.89	5
fac12: The airport has enough space for a new LCT	41	30	1.17	3.31	6
fac11: The project must be approved by other stakeholders (local authorities, environmental agencies, ...)	30	37	0.90	2.55	7
fac10: The project must be approved by the resident community	26	47	0.74	2.10	8
fac5: Project benefits are properly distributed to different stakeholders	20	43	0.68	1.93	9
fac9: Favourable and beneficial debt policy	20	50	0.63	1.79	10
fac8: Other investors (LCCs, construction companies, etc.) are interested and invest in the project	19	49	0.62	1.76	11
fac2: LCTs investment is more important than other airport investment projects	15	44	0.58	1.65	12
fac7: State or local budgets finance the entire project	6	48	0.35	1.00	13
Sum	448	448			



Implications

If the project is profitable and has sufficient funding, it should be implemented, regardless of funding sources

The investment of LCTs can be approved by the authorities as long as the project profit investors, benefit other stakeholders, and has no technological problems.

Airport planners or managers should pay more attention to the voice of the resident community when considering investing in LCTs.

When resources are needed to invest LCTs, other projects that are more important than LCTs can be underestimated and excluded

Contribution



Adding to the limited research on the research stream

Using BWS: a novel method to rank and quantify the relative importance of the factors of interests

Enabling airport planners or managers to make better decisions when investing in LCTs, thereby maximizing the success of LCTs

Limitations & Future research



Context of Vietnam and respondents have no experience of making decisions regarding LCT investment

Lack of the viewpoint of different stakeholders



Thank you for listening!