

FACTORS AFFECTING THE SUCCESS OF AIR-RAIL INTEGRATION IN THAILAND

ABSTRACT

The existing airport rail link project in Thailand has proven to be an unsuccessful air-rail integration, despite the fact that this type of relationship is favorable, especially for passengers in Europe and Eastern Asia. As there are plans for future airport rail link projects, investment and operational challenges were considered. However, factors associated the success of air-rail integration has not been examined. This research aims to fill such gap by using AHP to quantify the result. The model comprises of four dimensions and ten factors. The average CR value of 0.0464 validates the outputs. It was revealed that time was the leading factor, followed closely by seamless journey while career opportunity has the least significance impact to the success of air-rail integration.

Keywords: air-rail integration, airport rail link, Thailand.

1. Introduction

The Airport rail links or railways that connect airport to city center or other cities may have complimentary effect (air-rail integration) to air transport as well as competitive effect (air-rail competition). In Thailand, the only airport rail link (ARL) that operates from city center (with a city air terminal) to Suvarnabhumi International Airport, the major airport of Bangkok and Thailand, was designed and built to provide and support seamless journey between train services and airlines. However, the ARL encountered operating and managerial issues and subsequently suspended all air-rail integration services since 2014 and now serves as a commuter.

Considering the future and ongoing airport rail link projects in Thailand, including the Don Mueang-Suvarnabhumi-U-Tapao high-speed railways, the light railways system in Phuket, and the light railways system in Chiang Mai, the air-rail relationship tends to be complimentary (air-rail integration) as these railway projects were planned to either connect between airports or connect an airport to the city center. Although operational challenges of the ARL with the extended service to the three airports has been analyzed by Weerawat et al. (2020) and investment approaches of the high-speed rail linking the three airports has been studied by Sresakoolchai and Kaewunruen (2020), the success factors of those projects or the air-rail integration have not been studied.

2. Literature Review

The authors reviewed several literatures to identify potential success factors of the air-rail integration including the work of Li et al. (2018) which had not only indicated the partnership's key features for the air-rail integration but also pointed out that infrastructure integration (including train station's proximity) has significant impact on ease in passenger transfer between airports. Also, Ke et al. (2020) suggested that the increase in number of

synchronizations between air and high-speed rail services and improvement in accessibility are the result of rail adjusted timetable. More dimensions and factors are extracted from the work of Peetawan and Suthiwartnarueput (2018).

3. Hypotheses/Objectives

The goal of this research is to identify the factors affecting the success of air-rail integration for future airport rail link projects in Thailand, quantifying the significance of the factors and prioritizing the factors by using the AHP model.

4. Research Design/Methodology

In this research, authors have reviewed the dimensions and factors through literatures and an expert interview, resulted in four dimensions and thirteen factors. After the initial model was constructed, an expert was interviewed to verify the model's validity. The final model consists of four dimensions and ten factors. The pairwise comparisons were completed through face-to-face interviews. Both respondents are air and rail transport expert who work at Thailand's Ministry of Transport (MOT) for 12 and 18 years, respectively.

5. Data/Model Analysis

Figure 1 depicts the AHP model. The global weights and factor rankings are summarized in Table 1. The overall consistency ratio is 0.0464. Local weights and CRs from each respondent are shown in Appendix A.

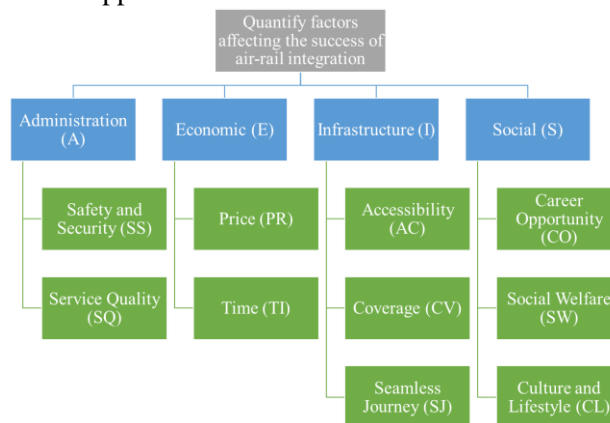


Figure 1 – the AHP model

Table 1 – Weights and Ranking

Ranking	Factor	Global Weight
1	Time (TI)	0.2266
2	Seamless Journey (SJ)	0.2120
3	Accessibility (AC)	0.1854
4	Price (PR)	0.1619
5	Coverage (CV)	0.0513
6	Service Quality (SQ)	0.0437
7	Culture and Lifestyle (CL)	0.0429
8	Safety and Security (SS)	0.0370
9	Social Welfare (SW)	0.0274
10	Career Opportunity (CO)	0.0117

6. Limitations

The major limitation of this work is the variety of respondents because the authors have collected data exclusively from the transport policy makers. To cope with this limitation, more data should be collected from not only government officials beyond MOT but also academia, train operators, airlines, airport authorities, and selected users so that there would be more insightful outcome which can improve the reliability of the result.

7. Conclusions

The quantitative output revealed that time, seamless journey, accessibility, and price are the leading factors contributing the success of air-rail integration in Thailand. As this research was conducted under the memorandum of understanding with the MOT, the MOT can further utilize the output, suggestion, and recommendation with the future air-rail integration projects. The authors propose that first, more data should be collected in accordance with the mentioned limitation. Second, ANP should be applied to compare factors across dimensions (i.e., time against seamless journey). Third, partnership model should be applied to determine the level of required partnership in order to bring the future projects to actual success with more solid framework.

8. Key References

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9. Appendices

Appendix A
Local Weights, Global Weights, Rankings and CRs

	Local Weights			Local Ranking	CR	Global Weights	Global Ranking
	Respondent		Average				
	1	2					
Dimension Level					0.0628		
Administration	0.0518	0.1097	0.0808	4			
Economic	0.4387	0.3383	0.3885	2			
Infrastructure	0.4057	0.4918	0.4487	1			
Social	0.1037	0.0603	0.0820	3			
Factor Level							
<i>Administration</i>					0.0000		
Safety and Security	0.2500	0.6667	0.4583	2		0.0370	8
Service Quality	0.7500	0.3333	0.5417	1		0.0437	6
<i>Economic</i>					0.0000		
Price	0.3333	0.5000	0.4167	2		0.1619	4
Time	0.6667	0.5000	0.5833	1		0.2266	1
<i>Infrastructure</i>					0.0492		
Accessibility	0.3601	0.4663	0.4132	2		0.1854	3
Coverage	0.1279	0.1007	0.1143	1		0.0513	5
Seamless Journey	0.5119	0.4330	0.4725	3		0.2120	2
<i>Social</i>					0.0272		
Career Opportunity	0.1263	0.1593	0.1428	3		0.0117	10
Social Welfare	0.4160	0.2519	0.3339	2		0.0274	9
Culture and Lifestyle	0.4577	0.5889	0.5233	1		0.0429	7
Overall CR	0.0509	0.0419			0.0464		