

# An Analysis of AHP on Investment Project Evaluation: A case Study of Matsu Integrated Resort

by

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# Contents

- Introduction
- Literature review
- Methodology
- Results
- Conclusion

# Introduction

- **Background**

- Governments are increasingly liberalizing gambling in hope of reaping economic and developmental benefits.
- The business models of gambling industry are developing toward the concept of large, **integrated resort-casino**.

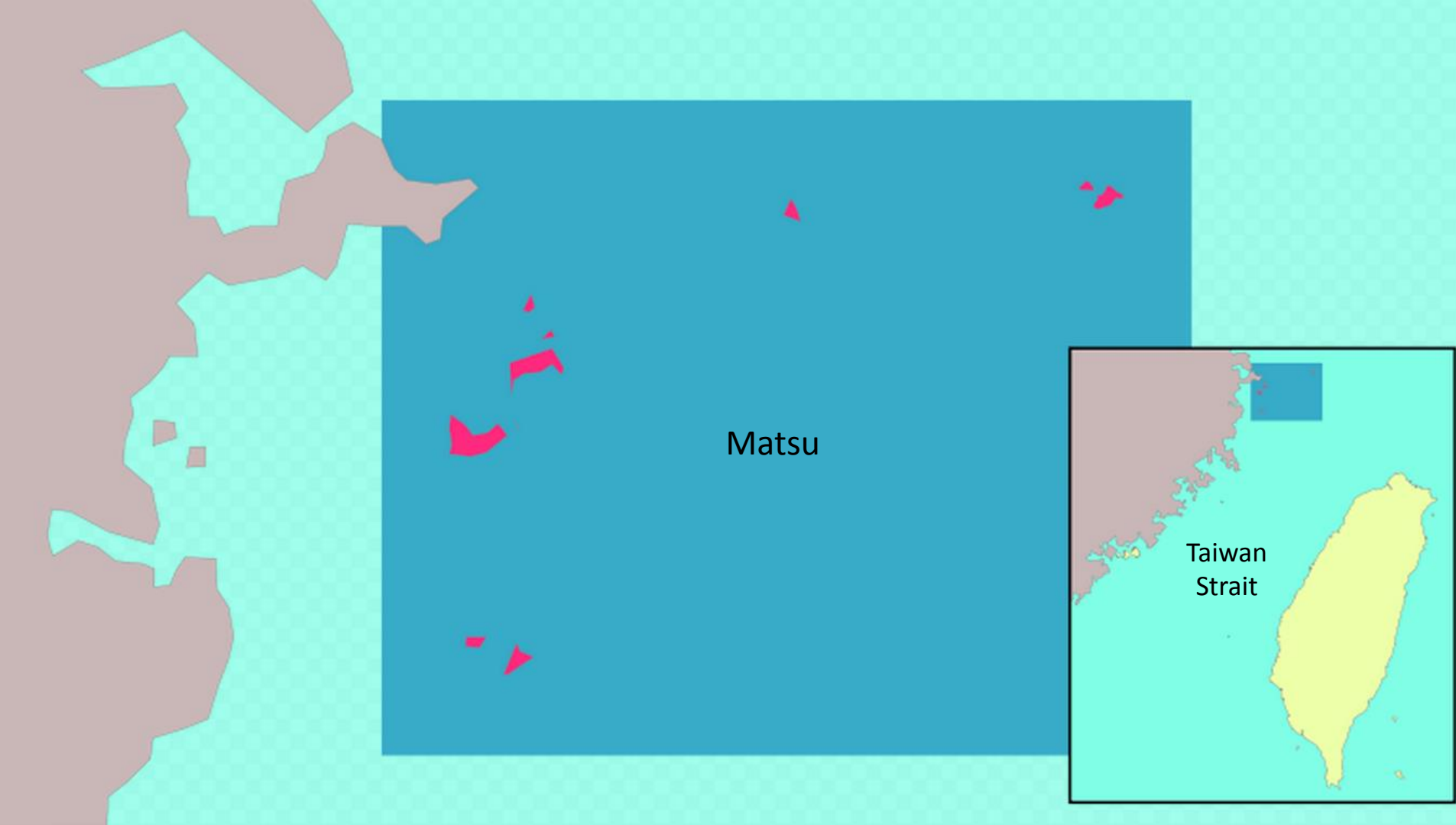


# Introduction

- **Background**

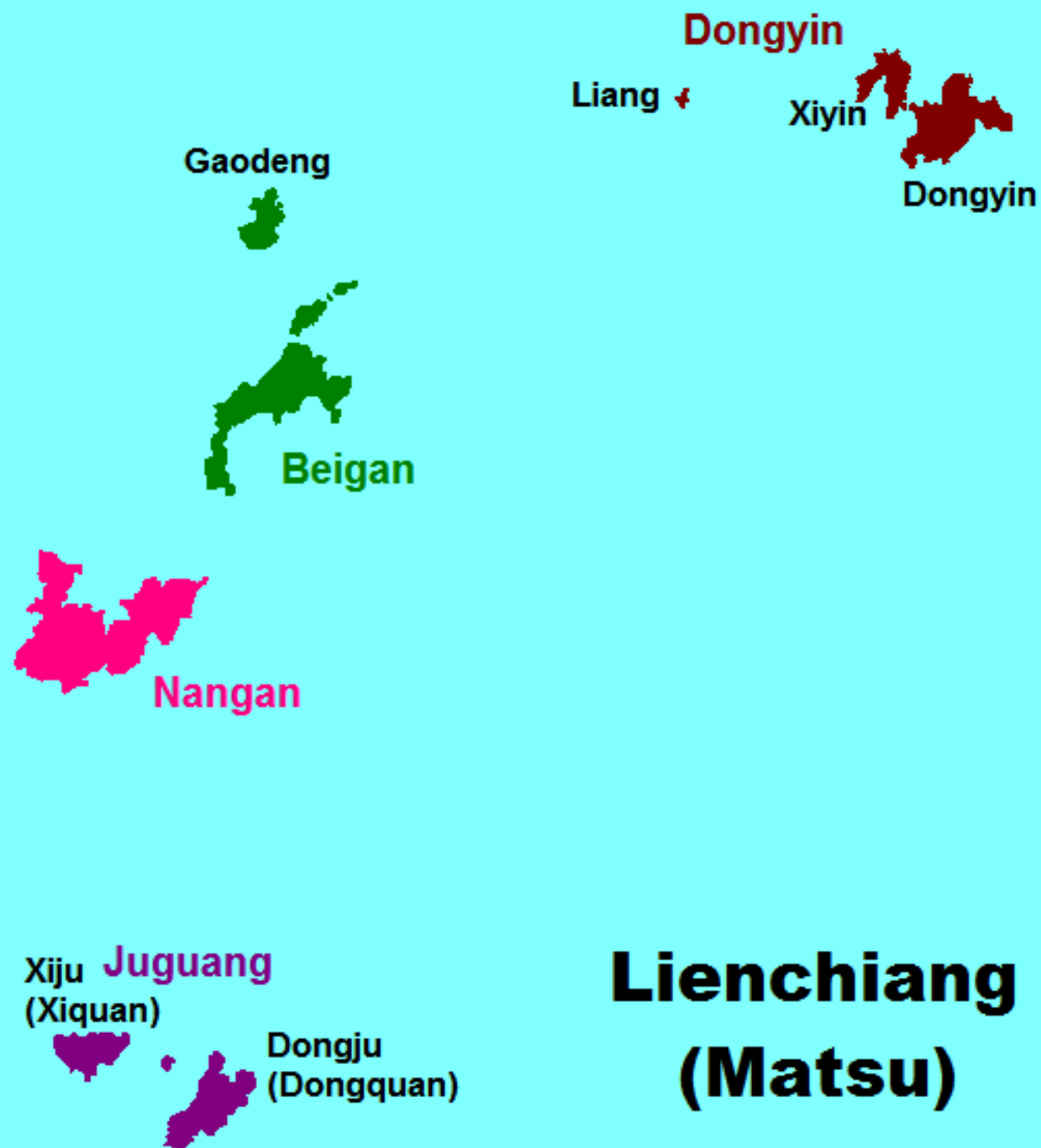
- The referendum of allowing casino gaming business in Matsu was passed on July 7th, 2012.
- It is expected to improve transportation facilities, boost local economy and tourism.
- This gives Matsu the opportunity to build the first integrated resort-casino in the Taiwan area.





The **Matsu Islands** are islets in the Taiwan Strait administered as **Lienchiang County** under Fujian Province of the Republic of China.





# Introduction

- **Motivation**

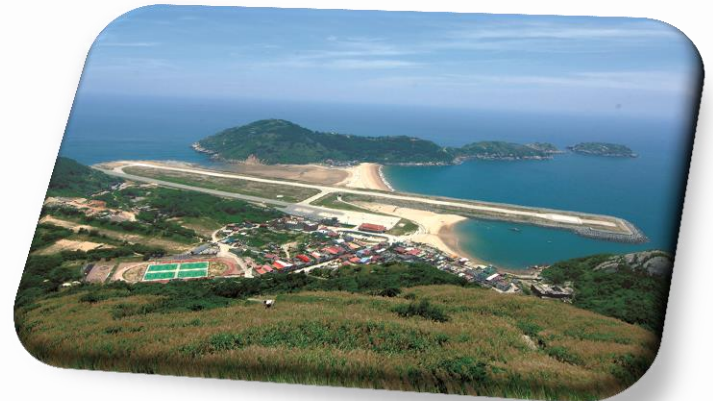
- However, Integrated resort (IR)'s local contribution has been controversial.
- To avoid IR suppliers to internalize visitor expenditures within the resort precinct, there is a need to select a proposal with comprehensive planning of business model which can contribute to locals.



# Introduction

- **Objective**

- To construct a framework of selection criteria for IR suppliers.
- To help local governments to evaluate the feasibility of IR suppliers.



# Literature review

- To select the IR supplier, we refer the literature regarding **supplier selection**.
  - Chang and Hung (2010) sort out 14 pieces of previous literatures to grasp which evaluation method.
  - Based on Chang and Hung's work, the **current research integrates the criteria in relevant literatures listed in Table 1.**

Table 1 References of proposed selection criteria for supplier selection

<b>Researcher</b>	<b>Year</b>	<b>Evaluation items</b>
<b>Dickson</b>	1966	Quality, cost delivery performance (the most important tree)
<b>Cusumano and Takeish</b>	1991	Finance, price, quality, delivery, technology
<b>Weber and Current</b>	1993	Price, delivery, product quality
<b>Chaudhry et al.</b>	1993	Quality, capability of delivery, feedback of price
<b>Swift</b>	1995	Product, usability, degree of trust, experience, price
<b>Choi and Hartley</b>	1996	Finance, consistency, relationship, flexibility, technology capability, service, reliability, price
<b>Jayaraman et al.</b>	1999	Quality level, production capacity, lead time, storage capacity
<b>Lee et al.</b>	2001	Cost, quality, delivery, service
<b>Muralidharan et al.</b>	2001	Quality, technical facilities, delivery

Table 1 (continued )

<b>Researcher</b>	<b>Year</b>	<b>Evaluation items</b>
<b>Muralidharan et al.</b>	2002	Quality, delivery, price, technical capability, financial position, past performance attribute, facility, flexibility, service
<b>Prahinski and Benton</b>	2004	Quality, delivery performance, price, reaction to demand change, service of support
<b>Kreng and Wang</b>	2005	Cost, quality, reliability of delivery, lead time, delivery on time
<b>Pi and Low</b>	2005	Quality, delivery on time, price, service
<b>Chang et al.</b>	2007	R&D, cost, quality, service, response
<b>Ting and Cho</b>	2008	Purchasing costs, product quality, delivery reliability, customer services, cooperation and partnership, financial status
<b>Chang and Hung</b>	2010	Quality, price, delivery performance, service, flexibility
<b>Chen and Chao</b>	2012	Suppliers conditions, price and delivery, quality, professional techniques

# Literature review

- The criteria for selection of IR supplier is in accordance with the **PAINT** theory.
- PAINT is an acronym which stands for
  - Partners
  - Architecture
  - Investment
  - Novelty
  - Tourism





# Literature review

- **PAINT** is useful when considering attributes that need to be promoted and addressed by a gaming company when developing or considering **concepts for a new IR with casino** in a jurisdiction that is considering - or has recently authorized - casino gaming (MacDonald & Eadington , 2012)



# Literature review

- Four dimensions of IR supplier selection are concluded as
  - Tourism attractions and uniqueness
  - Local feedback
  - Development schedule and financial plans
  - Reputation and the managerial capabilities
- Table 2 summarizes the criteria for selecting IR suppliers.

Table 2. Criteria for selection of IR supplier

Main Criteria	Sub-criteria	Contents of the Evaluation
1. Tourism attractions and uniqueness	1.1 Plans and constructions (hardware) of the IR	Infrastructures and plans (constructions and plans of IR's hardware)
	1.2 Event planning (software)	Designs and plans of the tourism activities
	1.3 Connections to the local tourism resources	Levels of connections to the local tourism features, plans of the surrounding scenery spots, and the ability to integrate the tourism resources
2. Local feedback	2.1 Hiring local human resources	The percentage of hiring local residents
	2.2 Using local materials	The percentage of using local resources (such as using local building materials, local food, materials and etc.)
	2.3 Being friendly to the local environment	Funds of society, education, and decorating and protecting the environment
	2.4 Real feedback	Direct and substantial feedbacks to the local communities (the percentage of feedback premium to local residents/ feedback plans of public infrastructure/ free invitations offered to the local residents for IR entrance)

Table 2. (continued )

Main Criteria	Sub-criteria	Contents of the Evaluation
3. Development schedule and financial plans	3.1 Size of the investment	Bidding offers from the competitors (which is the price or the cost the government must pay)
	3.2 Reliability of the quality	Collecting development funds, financial plans, developer's experiences and successful precedents
	3.3 Ability of continuous and stable execution of the development project	Emergency plans
	3.4 Schedules and time managements	Time managements of developments (development schedules, stable progresses and completion in time)
4. Reputation and the managerial capabilities	4.1 Business partnership	Size of the enterprise, past experiences, and the cooperated companies in the past
	4.2 Financial status	Financial credit rating of the enterprise
	4.3 Organizations and human resources	The organization and allocation of human resources of the enterprise
	4.4 Quality of plans	Operation plans, marketing plans, and benefits of the investments

# Methodology

- **General survey**: Identification of critical criteria for selection IR supplier.
  - Literature review was utilized to construct a framework of selection criteria.
- **The Analytic Hierarchy Process (AHP) survey**: Prioritizing and assigning important weightings for the criteria.

# Methodology

- The **AHP** method
  - One of Multi Criteria **decision making method** that was originally developed by Prof. Thomas L. Saaty.
  - Evaluating the comparability of the perceived selection criteria.
  - Allowing both **qualitative and quantitative approaches** to solve complex decision problems.

# Methodology

- In this study
  - To analyze the survey findings, the judgment matrices were pair-wise compared and computed via **Expert Choice 11**.
  - Invited **19 experts** including industry, government and academic **in architecture, tourism, transportation, security, law and gaming management** undertake the survey.



# Methodology

- In this study
  - By evaluating the consistency level of the collected questionnaires, 19 questionnaires appeared to have acceptable consistency and would enter into analysis.
  - The distributive summary in [Table 3](#) suggests that each criteria for selection of IR supplier have different prioritization.

# Results

- Main Criteria

1. Reputation and the managerial capabilities (0.460) was perceived as the **most important** main criterion for selection of IR supplier : addressable
2. development schedule and financial plans (0.281)
3. Tourism attractions and uniqueness (0.190)
4. Local feedback (0.069)

# Results

Table 3. Priorities of the selection criteria of the IR supplier

Priorities with Respect to :		Combined
Goal : Criteria for IR supplier selection	weight	Priority
1. Tourism attractions and uniqueness	0.190	3
2. Local feedback	0.069	4
3. Development schedule and financial plans	0.281	2
4. Reputation and the managerial capabilities	0.460	1
C.R.	0.005	
C.I.	0.005	C.R. $\times$ R.I.
$\lambda_{\max}$	4.015	$m + (C.I. \times (m-1))$

$\lambda_{\max}=4.01596$ , Inconsistency=0.00532, CR = 0.59%  $\leq$  0.1 (acceptable)

# Results

- Sub-Criteria
  - As shown in Table 4, financial status (0.168) was justified as the most important sub-criteria for the selection of IR supplier.

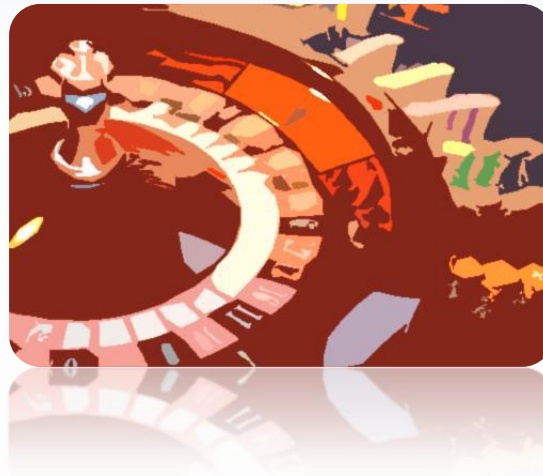


Table 4. Relative priorities of the selection criteria of the IR supplier

Main Criteria	weight	Priority	Sub-criteria	weight	Priority
Tourism attractions and uniqueness	0.190	3	Plans and constructions (hardware) of the IR	0.084	5
			Event planning (software)	0.034	11
			Connections to the local tourism resources	0.072	6
Local feedback	0.069	4	Hiring local human resources	0.017	14
			Using local materials	0.010	15
			Being friendly to the local environment	0.024	12
			Real feedback	0.019	13
Development schedule and financial plans	0.281	2	Size of the investment	0.049	10
			<b>Reliability of the quality</b>	<b>0.104</b>	<b>3</b>
			Ability of continuous and stable execution of the development project	0.069	7
			Schedules and time managements	0.060	9
Reputation and the managerial capabilities	0.460	1	Business partnership	0.088	4
			<b>Financial status</b>	<b>0.168</b>	<b>1</b>
			Organizations and human resources	0.069	8
			<b>Quality of plans</b>	<b>0..135</b>	<b>2</b>

# Conclusion

- This exploratory study evaluated and identified the crucial selection criteria for the IR supplier.
- A model for selection IR supplier was established.
- Our findings suggested that each criteria for supplier selection was determined by a disparate set of selection criteria with different weightings.



# Conclusion

- Amongst all main selection criteria, 'Reputation and the managerial capabilities' was perceived as the most important, while 'development schedule and financial plans', and 'Tourism attractions and uniqueness' were also considered to be significant.

# Conclusion

- Two sub-criteria, 'Financial status' and 'Quality of plans', were ranked highly important by respondents.
- This implied that 'Reputation and the managerial capabilities' was the major concern of many owners and decision makers.

# Conclusion

- However, the examination of relationships was limited to the selection criteria with the use of the AHP method in this study.
- The interrelationships amongst the selection criteria remained unexplored.
- Future research would examine the underlying inter-relationship amongst the criteria, i.e. by using the analytical network process (ANP).

***Thank You For  
Listening***

