



Using the Analytic Hierarchy Process for Strategic Alliances: Analysis of Partner Selection Decisions between Travel Agencies

Wen-Hwa Lee^{a,*}, Ya-Ling Huang^b, and In-Fun Lee^c

^a Graduate School of Management, Ming Chuan University, Taipei, Taiwan

^b Graduate School of Management, Ming Chuan University, Taipei, Taiwan

^c Graduate School of Management, Ming Chuan University, Taipei, Taiwan

Abstract

This article presents a comprehensive methodology for selection of a partner between travel agencies in strategic alliances. The purpose of this study is to examine which partner characteristics affecting the performance of strategic alliances between travel agencies. The result of the analytic hierarchy process analysis showed that resource complementary resource supplementary both have significant and positive effect to alliance performance. Our results also showed that the market characteristics are also the important factors when travel agencies choice their partners. That is, the market characteristics also enhance alliance performance. But the result shows that market position is more significant than interpartner market commonality. About organization characteristics, organizational culture got the lowest score in our result. Furthermore, social network is other important element of enhancing alliance performance.

Keywords: Travel agency; Strategic alliance; Resource characteristic; Market characteristic; Organization characteristic; Performance.

1. Introduction

Strategic alliances are an increasingly popular strategy in an era characterized by blurring industry boundaries, fast-changing technologies, and global integration (Das and Teng, 2003). A surprising and by now a well recognized feature of alliances is their high instability and failure rates (Koza and Lewin, 2000), and firms are turning in increasing number to strategic alliances to help them compete (Artz and Brush, 2000).

The travel and tourism industry has had a long history of alliances (Dev, Klein, and Fisher, 1996), such as Star Alliance, One World Alliance, Qualiflyer group, Asia Miles, Asian Hotels Alliance (AHA), International Youth Hostel Federation (IYHF), and so on. The travel agency industry is composed of many small firms, whose principal supplier is comprised of a relatively few large firms- the airline industry for example (Bronson, Krauss and Dougan, 2001). The

benefits of being a partner in an alliance are especially relevant for small firms that have limited resources and limited market presence (BarNir and Smith, 2002). The travel industry in Taiwan has the common phenomenon. The formation of a collective strategy allows the participating firms to minimize cost, to share risks and, ultimately, to increase economic performance (Bronson, Krauss and Dougan, 2001).

It is common knowledge now that the rate of alliance formation has been dramatic in recent years, and increasing research attention is being focused on how alliances can be managed to gain competitive advantage (Ireland, Hitt, & Vaidyanath, 2002). According to some researchers, about 60 percent of alliances can be considered as failures (Beamish, 1985; Das & Teng, 2000b). So it is very important for a firm when seeking an alliance partner.

Among with previous discussion, the aim of the

* Corresponding author. E-mail: joy02201978@yahoo.com.tw

research is to study how a travel agency can find a good partner in strategic alliance. The methodology of the study is to analyze the opinions of the executives/top managers in order to find out the important factors. To analyze the responses of the questionnaire we employed the Analytic Hierarchy Process (AHP) methodology. According to the empirical results, it was proposed some managerial implications and future research for travel practitioners within this article.

2. Literature Review

There have not been many academic studies related to partner selection of travel industry. In this part, we mainly aimed at identifying the criteria that need to be considered when travel agencies seeking partners.

2.1 Resource Characteristic

Das and Teng (2000) suggest that there are four types of partner resource alignment: supplement, surplus, complementary and wasteful. Miller and Shamsie (1996) differentiate resources as protected either by property rights (property-based resource) or by knowledge barriers (knowledge-based resources). Barney (1991) lists four resource characteristics that form the foundation for sustained competitive advantage: valuable, rare, imperfectly imitable, and imperfectly substitutable. Therefore, based on the above studies, we know complementary and supplementary are very important aspects when researchers discuss the characteristics of resource. Das and Teng (2003) suggest that complementary means when dissimilar resources are contributed and these resources are fully performing for the achievement of alliance goals. Some studies indicate that resource complementary contributes to maintaining the quality of the products and delivering punctual ability, and offer partner the information about laws, politics, public relation, customs, human resources etc (Lewis, 1990; Willian and Lilley, 1993; Brouthehers, Brouthers and Wilknsn, 1995). One of the key notions in the IJV literature is that these additional benefits will accrue only through the retention of a partner who can provide the four 'Cs': compatible goals, complementary skills, cooperative culture, and commensurate risk (Brouthehers, Brouthers and Wilknsn, 1995).

Complementary in technology is most obviously needed to establish the basis for a partnership (Doz, 1988). He also suggested that resource supplementary exists when the partner firms contribute similar resources that are performing in the alliance. Trough joint venture partnership, partner firms can offer the joint venture a greater set of skill and resource than could any one partner alone. This type of complementary exists only when the partners bring distinctive competencies that are different and nonoverlapping.

Otherwise, the primary advantages gained in the joining of partners are a larger, redundant resources base, or risk sharing (Hill and Hellriegel, 1994).

2.2 Market Characteristic

Strong market power often implies a firm's strong industrial background, superior market position, and well established networks with suppliers and buyers. It also gives the firm an ability to shape market competition and transaction value (Luo, 2002). It was found that in Gernger's research (1991) that "Trademark" is a criteria of partner selection, and it also illustrated that the importance of it. Besides, Das and Teng (2003) suggest that when two alliance partners compete mainly in similar product categories and market segments, their market share—and therefore their market power—will be a direct sum of the shares. By comparison, it is more difficult for partners that compete in different markets and industries to garner similar market power. Hence, it is proposed that the market characteristics of the partners include market position and interpartner market commonality.

2.3 Organization Characteristic

Regarding to business' culture, Messmer (2001) believed that it is the intangible 'style' or overall image projected by a corporation. Geringer (1991) declared that the cooperation experience within the company and similarities in organizational culture could affect alliance performance. Lau and Wong (2001) also believed business culture of individual partner companies is one of the key success factors in selecting manufacturing partners. Thus, organizational culture is one of the important factors in partner selection.

In Chinese society, *guanxi* is a general term for social networking and is been often translated as "relationship" or "connection" (Yeung and Tung, 1996). *Guanxi* refers to the establishment of a connection between two independent individuals it builds a bilateral flow the transaction to ensure the continuation of such a relationship. Gulati (1998) highlighted the importance of a social network perspective on strategic alliance as well. There is near unanimous agreement that the performance of alliances usually falls short of expectations (George and Farris, 1999). Researchers often mention similar reasons for the high rate of failure and poor performance of strategic alliances. That is not only the structural factors (e.g., insufficient complementary of resources and inappropriate organizational structures and process) but also the social factors (e.g., lack of trust and inadequate communication) do. The sense of trust emerges from the social networks (Tsai and Ghoshal, 1998). As social networks strengthen, trust develops. Thus, the management of social networks is an important issue in alliances.

3. Research Methods

AHP is one of the multi-criteria making method, which has been applied to a variety of decision making situation. This method is developed by Saaty (1997, 1980, 1990) which is a mathematical method and can be used in analyzing complex decision making and gathering data through survey based on pair-wise comparison judgments. Similar to many other multi-criteria analyses, what it does is aggregate the separate performance indicators in to integrated performance indicators (Bouma et al., 2000).

A hierarchical decision schema should be constructed by decomposing the decision problem into its decision elements in order to apply the AHP method. After that, the importance or preferences of the decision elements are examined in a pair-wise comparison to the elements in the hierarchy. The parameters are estimated using pair-wise comparisons between the importance of the attribute or decision element in the function using data made by each responder. There are 5 steps of analysis in the decision-making process using the AHP method as follow:

Step 1: Define the decision problem and goal.

Step 2: Structure the alternative hierarchy from the top to the lowest level.

Step 3: By using a relative scale measurement, constructed the matrices of pair-wise comparisons for each of the lower levels with one matrix for each element in the level. In comparisons, a ratio scale of 1-9 is used to compare any two elements. Table 1 shows the measurement scale defined by Saaty (1977, 1980, 1990).

The matrix of pair-wise comparisons is

$$A = (a_{ij}) = \begin{bmatrix} 1 & w_1/w_2 & \dots & w_1/w_n \\ w_2/w_1 & 1 & & w_2/w_n \\ & & \dots & \dots \\ w_n/w_1 & w_n/w_2 & \dots & 1 \end{bmatrix}$$

And we have

$$a_{ij} = w_i/w_j \quad i, j = 1, 2, \dots, n$$

Step 4: Calculate the eigen-values of the matrix, consider the largest one and calculate the associated eigenvector, which would be the relative weights we are looking for.

Then summing up all of j, the matrix is equivalent to: $Aw = nw$.

The vector w means the principal right eigenvector of matrix \hat{A} corresponding to the eigenvalue n. Then compute: $\hat{A}\hat{w} = \lambda\hat{w}$.

The matrix \hat{A} contains the pair wise judgments of

the decision maker. And λ is an eigenvalue of \hat{A} and \hat{w} is the estimated vector of weights then use the largest eigenvalue λ_{max} of \hat{A} solving $\hat{A}\hat{w} = \lambda_{max}\hat{w}$.

Step 5: Weights analysis of consistency and consequence.

Measure the consistencies of pair-wise comparisons by consistency index formula

$$CI = \frac{(\lambda_{max} - n)}{n - 1}$$

Finally, compute the consistency ratio by the following formula

$$CR = 100\left(\frac{CI}{RI}\right)$$

Where CI is the consistency index; RI is the random index (see Table 2); n is the number of columns. RI depends on the order of the matrix. CR of 10% or less is considered acceptable (Saaty, 1980).

Table 1. Measurement Scale of AHP

Intensity of relative importance	Definition
1	Equal importance
3	Weak importance of one over the other
5	Essential or strong importance
7	Demonstrated importance
9	Absolute importance

Table 2. Average Random Consistency (RI)

Size of matrix	1	2	3	4	5	6	7	8	9	10
Random consistency	0	0	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.49

The AHP decision model of this study is constructed as Figure 1. In this framework, we summarize the goal and major factors. Table 3 shows the sub-elements of AHP model.

The executives/top managers are often the establishers and also the keepers of strategic alliances between cooperating travel agencies, and they could be the persons who most informed about the details of alliances. We believe that executives/top managers are the appropriate informants in the case of our particular issue. Response rates to mail questionnaires are poor and face-to-face interviews ensure that the questions are fully understood (Amber, Styles and Wang, 1999). A face-to-face investigation to executives/top managers in travel agencies was used for our data collection. After the process of survey, we achieved 20 usable responses. The gathered data was analyzed by using the AHP methodology to formulate a model.

4. Results

As we discussed above, we used AHP method to

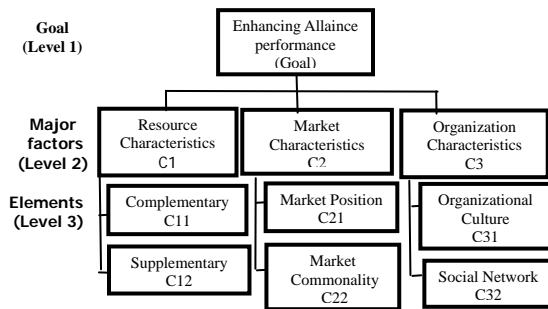


Figure 1. AHP-based Model for the Selection of a Partner of Strategic Alliance

Table 3. AHP Decision Model: Sub-elements

Sub-elements (level 4)	Level/ factor
Seat (on flight)	C111
Capital	C112
The ability of group control	C113
The ability of product design	C114
Service skill of tour leader	C115
Marketing skill	C116
The ability of price adjustment	C117
Seat (on flight)	C121
Capital	C122
The ability of group control	C123
The ability of product design	C124
Service skill of tour leader	C125
Marketing skill	C126
The ability of price adjustment	C127
Brand and image	C211
Prestige/ Reputation	C212
Competitiveness	C213
Target market	C221
Product	C222
Similar organizational culture	C311
Compatibility of management team	C312
Social relationship	C321
Attend the activities of association frequently	C322

formulate a model which was developed by Saaty (1977, 1980, 1990). The analysis was conducted by means of the Expert Choice 11.5 program. A total of 20 usable questionnaires from the managers of the top 20 travel agencies in Taiwan were achieved after the efforts of data collection.

The results show as Table 4. According to our results, market characteristic is the most important factor that improves alliance performance. It is more important than resource and organization characteristic. The results show that our respondents perceive a high degree of complementary, supplementary, market commonality and organizational culture towards their cooperating partners. It means that the cooperating partners possess various tangible and intangible resources, some are similar and some are different to themselves. Resource characteristics got the lowest score in the major factor. The factor of resource characteristic is composed of two elements: resource complementary and supplementary. However, these resources are not substituted and imitated difficultly.

Market characteristic is the most important factor when travel agencies choose their partners. That is, the market characteristics enhance alliance performance significantly. It is composed by market position and market commonality. But the result shows that market position is less significant than interpartner market commonality. But market position and market commonality are both significant to alliance performance.

Table 4. Result of AHP Analysis

Goal (level 1)	Major factors (level 2)	Elements (level 3)	Sub-elements (level 4)
Enhancing Alliance Performance	Resource Characteristics C1(0.244)	Complementary C11(0.500)	Seat (on flight) C111(0.147)
			Capital C112(0.168)
			The ability of group control C113(0.121)
			The ability of product design C114(0.197)
			Service skill of tour leader C115(0.122)
			Marketing skill C116(0.121)
	Supplementary C12 (0.500)		The ability of price adjustment C117(0.124)
			Seat (on flight) C121(0.100)
			Capital C122(0.135)
			The ability of group control C123(0.158)
			The ability of product design C124(0.184)
			Service skill of tour leader C125(0.158)
Market Characteristics C2(0.411)	Market Position C21 (0.457)	Marketing skill C126(0.134)	
		The ability of price adjustment C127(0.132)	
		Brand and image C211(0.361)	
		Prestige/ Reputation C212(0.419)	
		Competitiveness C213(0.220)	
		Target market C221(0.610)	
Market Commonality C22 (0.543)		Product C222(0.390)	
		Similar organizational culture C311(0.500)	
		Compatibility of management team C312(0.500)	
		Social relationship C321(0.500)	
		Attend the activities of association frequently C322(0.500)	
		Organization Characteristics C3 (0.345)	Organizational Culture C31(0.543)
Social Network C32(0.457)	Attend the activities of association frequently C322(0.500)		

It means that the cooperating partners possess some influences and prestige in the industry usually and appear in the same market. A well fit is obtainable between cooperating partners.

About organization characteristic, it is also composed of two elements: organizational culture and social network. Strong social connections and ties also appear between cooperating partners. The members of strategic alliance almost confirm without doubt that they had achieved a well outcome through the cooperating relationships.

5. Conclusions

The study tried to figure out the important factors and elements which can enhance the performance of strategic alliance between travel agencies. The findings of this research could also aide tourism industry managers in making strategic alliances. It was revealed that that the factor of market characteristic is more important than the factor of resource and organization characteristics.

By strategic alliance, partners can gather their complementary or supplementary resources to gain the performance but firms still have better to defend their resources and keep them uniquely present only in their firm. Beware of the firm that learns faster will have less need for cooperating with other firms. Different skill sets between partners can be complementary and lead to successful strategic alliances (Dacin, M. T., Hitt M. A., Levitas E., 1997). By strategic alliance, partners can gather their complementary or supplementary resources to gain the performance. Harrison, Hitt and Ireland (1991) also argue that different but complementary resource flows may be more likely to create unique and private synergy than similar flows. Barney (1991) suggests that sources of sustained competitive advantage are firm resources that are valuable, rare, imperfectly imitable, and non-substitutable. That is, when resource imitability or substitutability is low, firms can better defend their resources and keep them uniquely present only in their firm. But it may change because of learning and come into interpartner conflicts. The firm that learns faster will have less need for cooperating with others. That could be a very important issue in travel industry.

Luo (2002) suggest that partnering with foreign business should consider organizational reputation. Our study showed managers should consider the market position of partners in order to gain the performance. For example, customer should believe in reliable and the firm which has the market position. In addition, Park and Ungson (1997) suggest that competitive ventures that also have a high degree of commonality are more likely to fail. And Dowling,

Roering, Carlin, and Wisnieski (1996) examine "multifaceted relationships" among partners, including the relationship of being competitors in some markets. The result showed that whereas partner firms with a high level of interpartner market commonality may have to follow a competitive approach, a low level of interpartner market commonality suggests that partner firms are more likely to complement each other. But it is the different situation in travel industry. According to the result of our study, we suggest that when two alliance partners own market commonality, they can prove the collective strengths to garner similar market power and reach the business achievement more easily.

On the other hand, similarities in organizational culture could decrease the degree of interpartner conflicts and affect alliance performance. Luo (2002) indicate that when partnering with foreign business should consider to blending of cultures and management styles with partner. Geringer (1991) also declared that the cooperation experience within the company and similarities in organizational culture could affect alliance performance. The result proved here indicates that proposed. And Medcof (1997) argue that organizational culture play a crucial role in alliance partner selection. Not only the partner should compatibility among people, there should also be compatibility among the operating procedures of the partners. Operating procedures include the methods for carrying out activities in functions such as R & D, marketing and manufacturing. Incompatibility can be a source of disruption which may sully a relationship or make it unworkable. Such difficulties can usually be overcome if the people work well together, but smoothing operational disharmonies can be frustrating and time-consuming work which detracts from more productive activity. The obvious and hidden costs of incompatibility can be high.

According to the results of our study, social network is also an important elements when choose a partner of strategic alliances. This is showing no difference with Hu and Korneliussen (1997) based on horizontal strategic alliances of small firms and Ingram and Roberts (2000) based on Sydney hotel industry. Ingram and Roberts (2000) suggest that the friendships with competitors can improve the performance of organizations through the mechanisms of enhanced collaboration, mitigated competition, and better information exchange. This may help to explain the situation of strategic alliances between travel agencies. Form a practical perspective; if there are strong social networks between cooperating parties in a strategic alliance, it means members in an alliance may possess common idea and principle due to the same or similar

background. Hence, the social networks play a function as excellent lubricant in the cooperative relationships. Furthermore, it is also easy to make collective efforts and to exert the synergy due to possessing the same or similar objective. For example, members in an alliance may increase the rate of grouping or average number of travelers in each package group, obtain better and cheaper supplies by raising the position to negotiate, moreover, prevent from price war and then to preserve better profits.

References

- Amber, T., Styles, C., & Wang, X. (1999). The effect of channel relationships and guanxi on performance of inter-province export ventures in the People's Republic of China. *International Journal of Research in Marketing*, **16** (1), 75-87.
- Artz, K. W., & Brush, T. H. (2000). Asset specificity, uncertainty and relational norms: An examination of coordination costs in collaborative. *Journal of Economic Behavior & Organization*, **41** (4), 337-362.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, **17**, 99-120.
- BarNir, A., & Smith, K. A. (2002). Interfirm alliances in the small business: The role of social networks. *Journal of Small Business Management*, **40** (3), 219-232.
- Beamish, P. W. (1985). The characteristics of joint venture in developed and developing countries. *Columbia Journal of World Business*, 13-19.
- Bouma, J., Brouwer, R., van Ek, R., 2000. The use of integrate-dassessment methods in Dutch water management: a comparison of cost – benefit and multi-criteria analysis. In: Third International Conference of the European Society for Ecological Economics, Vienna, 3 – 6 May.
- Brouthers, K. D., Brouthers, L. E., & Wilkinson T. J. (1995). Strategic Alliances: Choose Your Partners. *Long Range Planning*, **28**, 18-25.
- Bronson, J. W., Krauss, J. L., & Dougan, W. L. (2001). Consortium affiliation and travel agency performance: Evidence of strength in numbers. *Journal of Travel & Tourism Marketing*, **11** (1), 1-15.
- Dacin, M. T., Hitt M. A., Levitas E., (1997). Selecting Partners for Successful International Alliances: Examination of U.S. and Korean Firms. *Journal of World Business*, **32** (1), 3-16.
- Das, T. K., & Teng, B. (2000). A resource-based theory of strategic alliances. *Journal of Management*, **26** (1), 31-61.
- Das, T. K., & Teng, B. (2003). Partner analysis and alliance performance. *Scandinavian Journal of Management*, **19**, 279-305.
- Dev, C. S., Klein, S., & Fisher, R. A. (1996). A market-based approach for partner selection in marketing alliances. *Journal of Travel Research*, **35** (1), 11-17.
- Dowling, M. J., Roering, W. D., Carlin, B. A., & Wisnieski, J. (1996). Multifaceted relationships under cooperation: Description and theory. *Journal of Management Inquiry*, **5** (2), 155 – 167.
- George, V. P., & Farris, G. (1999). Performance of alliances: Formative stages and changing organizational and environmental influences. *R & D Management*, **29** (4), 379-389.
- Gernger, M. J.(1991). Strategic Determinants of Partner Selection Criteria in International Joint Ventures. *Journal of International Business Studies*, **22** (1), 41-62.
- Gulati, R. (1998). Alliances and Networks. *Strategic Management Journal*, **19**, 239-317.
- Harrison, J. S., Hill, M. A., Hoskisson, R. E., & Ireland R. D. (1991). Synergies and post-acquisition performance Differences versus similarities in resource allocations. *Long Range Planning*, **17** (1), 173-190.
- Hill, R. C., & Hellriegel, D. (1994). Critical contingencies in joint venture management: Some lessons from managers, *Organization Science*, **5**, 594-607.
- Hu, Y., & Korneliusen, T. (1997). The effectiveness of personal ties and reciprocity on the performance of small firms in horizontal strategic alliances. *Scand. Journal of Management*, **13** (2), 159-173.
- Ingram, P., & Roberts, P. W. (2000). Friendships among competitors in the Sydney hotel industry. *American Journal of Sociology*, **106** (2), 387-423.
- Ireland, R. D., Hitt, M. A., & Vaidyanath, D. (2002). Alliance management as a source of competitive advantage. *Journal of Management*, **28** (3), 413-446.
- Koza, M., & Lewin, A. (2000). Managing partnerships and strategic alliances: Raising the odds of success. *European Management Journal*, **18** (2), 146-151.
- Lau, C. W. & Wong, T. T. (2001). Partner selection and information infrastructure of a virtual enterprise network. *International Journal Computer Integrated Manufacturing*, **14** (2), 186–193.
- Lewis, J. D. (1990). Making strategic alliances to work. *Research Technology Management*, **33**, 12-15.
- Luo, Y. (2002). Partnering with foreign businesses: perspectives from Chinese firms. *Journal of Business Research*, **55**, 481–493.
- Medcof, J.W.(1997) Why too many alliance end in divorce. *Long Range Planning*, **30**, 718-732.
- Messmer, M.(2001). Capitalizing on corporate culture. *The Internal Auditor*, **58** (5), 38-45.
- Miller, D., & Shamise, J. (1996). The resource-based view of the firm in tow environments: The Hollywood firm studios from 1936 to 1965. *Academy of Management Journal*, **39**, 519-543.
- Park, S. H., & Ungson, G. R. (1997). The effect of national culture, organizational complementarity, and economic motivation on joint venture dissolution. *Academy of Management Journal*, **40**, 279-307.
- Saaty, T.L. (1977). A Scaling Method for Priorities in Hierarchical Structures. *Journal of Mathematical Psychology*, **15**, 234-281.
- Saaty, T.L. (1980). *The Analytic Hierarchy Process*, third ed. McGraw-Hill, New York.
- Saaty, T.L. (1990). How to make a decision: the analytic hierarchy process. *European Journal of Operational Research*, **48**, 9-26.
- Tsai, W., & Ghoshal, S. (1998). Social capital and value creation: the role of intrafirm networks. *Academy of Management Journal*, **4** (4), 464-476.
- Williams, R. G., & Lilley, M. M. (1993). Partner selection for joint

venture agreements. *International Journal of Project Management*, **11**, 233-237.

Yeung, Y. M. & Tung, L. (1996). Achieving Business Success in Confucian Societies: The Importance of Guanxi(Connections). *Organizational Dynamics*, **25** (2), 54