

Service Alliance in Competition: A Game Theory Perspective

Research-in-Progress

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ABSTRACT

This research focuses on services based on alliance and devises a novel concept called service alliance. Service alliance uses service as the unit that companies can exchange, furnish, and share services in the alliance. Service alliance emphasizes on the representation and exchange for value of single service from an individual company. This research utilizes game theory to discuss the best action of service alliance in competition. We use airline industry as the example and expect to contribute to any service industry. The results show that four strategies are similar to the process from competition to cooperation. The best case is that the members in the alliance co-fund a new service team to serve all members. We hope the proposed concept can be applied to all service industry and create a new operation model for alliance.

Keywords

Service alliance, Airline alliance, Game theory, Customer perceived value

INTRODUCTION

Owing to the globalization and emergent of new information technology, traditional airline companies are more difficult to provide seamless traveling services. This results in the decreasing of benefit continuously. Additionally, airline companies are forced to strategic alliance globally due to the limitation of the merge of firms or multinational investment (Gialloredo, 1988; Tretheway, 1911). Hence, three alliances are emerged in airline industry, which are Star Alliance, SkyTeam Alliance, and Oneworld (O'Toole and Walke, 2000). Airline alliance is similar to united nation or WTO, which provides a tight platform to members to expand routes and expects members to complement each other (Park and Zhang, 1998). According to the literature, the degree of airline alliance can be divided into eleven types: ground support, equipments sharing, mileage recognition, code sharing, block-space sale, schedule negotiation, flight attendant support, co-development of systems, marketing alliance, maintenance support, and co-purchase (Oum, Park, and Zhang, 1996; Park, 1998).

In reality, airline companies in the alliance cannot exert the competitive advantage. Mostly, firms only focus on code sharing, block-space selling, and CRS. In particular, certain small companies are superior to a big company to join the airline alliance (Gudmundsson and Lechner, 2006). Airline industry emphasizes on economies of scale. The sharing of resources in the alliance can help companies decrease cost to earn benefit. However, it is a complicated process for individual airline company to access resources in the alliance in order to beneficial itself. According to the viewpoint of game theory, selfishness of individual cannot maximize the benefit to all members. The balance among members is extremely important; otherwise, the alliance will collapse. On the other hand, the significance of service has been noticed recently. Airline industry is considered as a big service industry. In particular, the concept of service blueprint can help companies divide services into several components in order to reallocate resources (Shostack, 1992) as shown in Figure. 1.

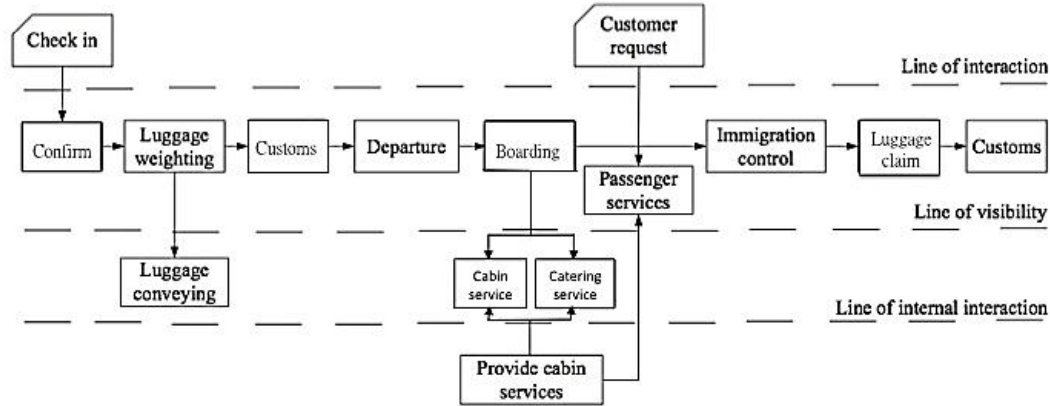


Figure 1 A sample of service blueprint for airline industry

According to service blueprint in Figure. 1, the traveling service can be divided into several simple services. It is difficult to provide complete services based on limited resources (WitandMuehleemann, 1995). Traditional strategic alliance focuses on long-term planning of strategy and mostly takes into account cost. However, service is different from product that the value of service comes from customer perception. Service is also heterogeneous (Parasuraman, Valarie, and Leonard, 1988) without standards to exchange. Hence, the benefit of service exchange decreases if the quality of service is unstable (Weber and Sparks, 2004). This research focuses on services based on alliance and devises a novel concept called “service alliance”. Service alliance uses service as the unit that companies can exchange, furnish, and share services in the alliance. Service alliance emphasizes on the representation and exchange for value of single service from an individual company. The importance of service alliance is an enterprise cannot provide comprehensive services owing to the limited resources and varied type of services. This may cause inefficient services and waste resources. As a result, service alliance emphasizes on sharing services in the alliance that results in superior usage of resource allocation and services. This research utilizes game theory matrix to discuss the best action of service alliance in competition. We use airline industry as the example and expect to contribute to any service industry. The major contribution of this research is to help companies allocate resources of services strategically for a new type of alliance.

LITERATURE REVIEW

Strategic Alliance

Poteand Fuller (1986) defined strategic alliance is an official activity and a long-term cooperative but not merge to connect companies that mainly focuses on cooperation and mutual trust. Yoshino (1995) proposed strategic alliance is two or above companies put effort on key technical resources to pursue the goal of mutual beneficial together. In addition, those companies share the benefit and supervise the performance of alliance to maintain the position in the alliance. According to the certain literature (Aaker, 1992 ; Parkhe,1993 ; Varadarajan et al,1995 ; Yoshino,1995), we consider strategic alliance is simply defined as two or above companies pursue a consensus goal by beneficial to individual company. The contract exists to connect the relationships among member in the alliance. According to the report (from 1986 to 2010), three airline alliances have more the 55% of carrying passengers and 67.7% of market share in Table 1.

Table 1 Market share of airline alliance

	No. of Passengers (m)	Market share	Revenue (\$m)	Market share
Star Alliance	545	24.5%	154,138	32.0%
SkyTeam	384	17.2%	87,563	18.2%
OneWorld	298	13.4%	84,754	17.6%
Totalof alliance	1,227	55.1%	326,455	67.7%
Total of airline industry	2,228		482,000	

The reasons for airline companies to form alliances include external and internal factors (Lorange and Roos, 1991; Glaister and Buckley, 1996; Bennett, 1997). Internal factors include (1) risk sharing (sharing the operation risk with partners (Porter et al., 1986)), (2) economies of scale (concentrating on resources can produce more benefit and decrease cost in alliance (OECD, 1997; Hanlon, 1996)), and (3) competitive advantage (turning competitors to partners is an efficient choice for small business enterprise (Jennings, 1996)). External factors include (1) information revolution (efficiently gaining useful information in the alliance) and (2) global competition (easily break the challenge of domestic laws of a country). The trend of strategic alliance for airline industry exists for a long time (Pels, 2001). That is, the competitive advantage for alliance is superior to individual operations in the new era of century

Service Blueprint

Service is a process of value co-creation for provider and customer (Edvardsson, Gustafsson, and Roos, 2005). Service blueprint can help companies decompose and analyze services. Service blueprint is used to solve the problem of too simple services with difficult explanation in terms of process, point of contact (onstage and backstage), and physical evidence. Service blueprint also provide a concrete picture of service process in details (Shostack, 1992). Certain researchers added the concept of customer value to strengthen the contact point between service and customer. Thus, companies can allocate resources efficiently to improve service processes based on the service blueprint (Lovelock, 1996; George and Gibson, 1991; Leppard and Molyneux, 1994). In Fig. 2, line of interaction, line of visibility, and line of internal interaction can separate different roles, actions, and supports of services (Kingman-Brundage, 1989). Service blueprint allows firms control service cost and helps understand perception of service from customers (Michel, 2001). It also contribute to after-service while service recovery is needed.

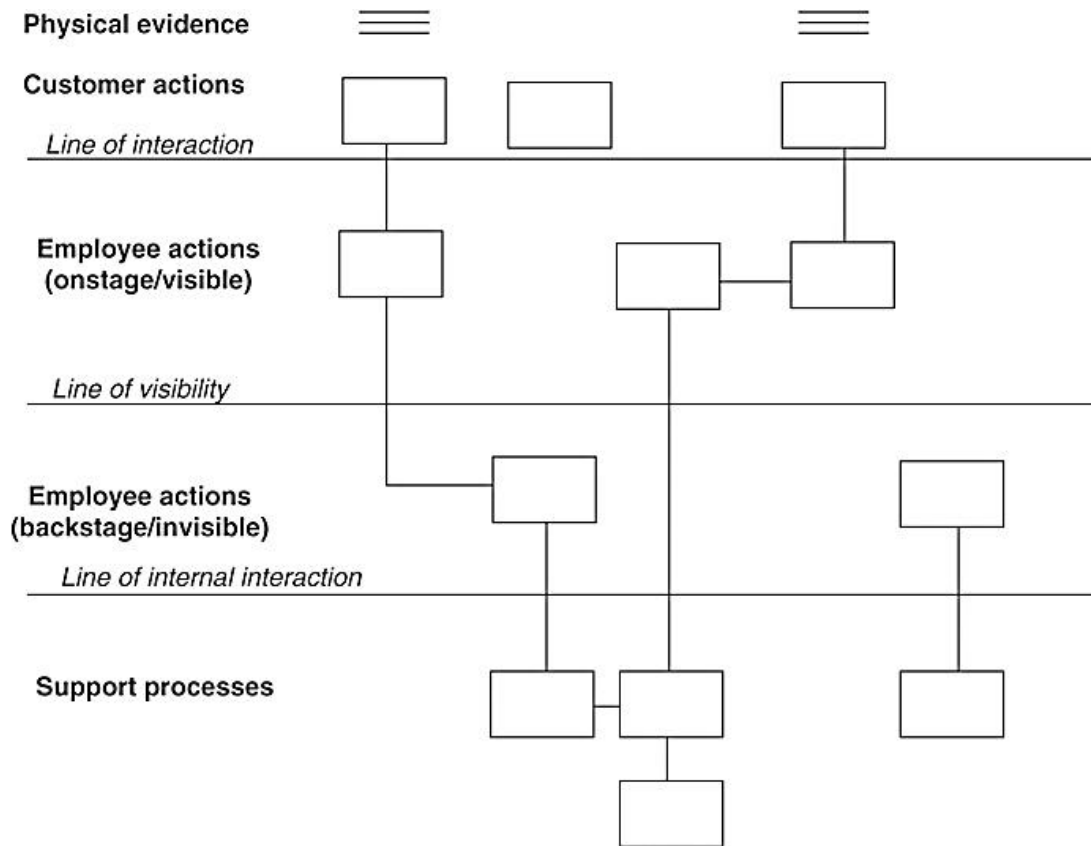


Figure 2 A framework of service blueprint

(Source: Zeithaml et al, 2000)

Customer Perceived Value

Customer perceived value is a conceptual term (Broekhuizen, 2006) and can be considered as the benefit of customer to exchange cost with service provider. The cost includes monetary, time, and mental cost of expecting services (Hu, 2012). Customer perceived cost includes utilitarian value, hedonic value, and consumption value (Leeand Overby, 2004; Overby, 2006). Utilitarian value is included in monetary cost. Hedonic value is obtained by self-sacrifice and interaction with other people. Consumption value is the perception of degree for exchanging (Hoffman, Kalsbeek, and Novak, 1996). Previous research also indicated that relational marketing has positive effect on customer perceived value (Palmatier, Scheer, andSteenkamp, 2007) and trust is the major factor. The result confirms customer loyalty and customer perceived value have positive relationship (Kotier, 2006; Yacout, 2010). Customers evaluate trust of service and trust of salesperson to make decision when choosing a specific service (Belanger, 2002). Paul, Hennig-Thurau, Gwinnera and Wiertz(2006) also proposed three factors of services from customer perspective: (1) service product (the ability of customization), (2) service delivery (expertise of employees), and (3) service environment (service atmosphere and place). Consequently, this research considers the value of service is not only the monetary but also the perceived value by service experience.

RESEARCH METHOD

According to the concept of service blueprint, the integrated services will be divided into several single services such as flight attendant service, sky catering service, and cargo service. In service alliance, each company will decide to share services based on own reasons. That is, game theory can be used for further explanation in this situation. This research uses non-cooperative and static game theory as the basis. Game theory was proposed in economics and used to describe the interaction among individuals (Von Neumann and Morgenstern, 1944). Two or above players consider others’ actions and influence others to choose own strategies (Kreps, 2011). In reality, previous researches indicated not all individuals join game theory decision rationally (Binmore, 2007; Gintis, Bowles,Boyd,and Fehr, 2005; Tomassini, 2008). Players adjust own decisions via learning game theory and adapting the environment (Tomassini, 2008). Existing researches mostly focused on the best combination of solutions. This research considers no best solution in service alliance but the most appropriate solution based on contingency theory. In addition, game theory can extend one to many players that fit the real world situation.

Players in game theory have different strategies to choose and the outcomes are different based on competitor’s decisions (Osborne and Rubinstein, 1994). Hence, this research considers members in the alliance will also consider own resources to influence or change decisions (Gudmundsson et al., 2006). This study will only discuss three firms owing to the size of matrix of game theory. The reason for using non-cooperative game theory is because each company can select own action. Cooperation indicates the agreement between two companies; as a result, the selected action should be the best move based on maximum benefit. On the other hand, several elements are needed to form a game theory, including participant, message, action, strategy, payoff, and equilibrium (Rasmusen, 1994) as shown in Table 2.

Table 2 Elements of game theory

Element	Definition
Participant	Individuals which make decisions in the game.
Message	Relevant information in the game.
Action	Available decisions for participant.
Strategy	The formed function to match the strategy.
Payoff	The maximum payoff of individual which is selfishness.
Equilibrium	The results of interactions among participants.

Nash (1951) extended the concept of game theory to non-cooperative games, which investigates the process of interactive decisions for multiple players in non-cooperative situation. Surely, it includes the concept of Nash equilibrium. This research will utilize the concept of non-cooperative games as the basic model. In order to elaborate our concept, we simplify three players (A, B, C) of airline companies. Fig. 3 illustrates the matrix of our model. Actions in this game are 0 and 1, while 0 means outsource and 1 means provide the service.

		C			
		1		0	
		B			
		1	0	1	0
A	1	(1,1,1)	(1,0,1)	(1,1,0)	(1,0,0)
	0	(0,1,1)	(0,0,1)	(0,1,0)	(0,0,0)

Figure 3 Matrix of the proposed model

According to the matrix, four different results will be derived if we only consider possible solutions. (1,1,1) means all firms provide the service themselves. (1,1,0) means one firm outsources the service. (1,0,0) means two firms outsource the service. (0,0,0) means all firms outsource the service. This research will explain the possible solutions based on service alliance in the following section

ANALYSIS

This research assumes three airline companies under a static game. In Table 3, we list the match of elements and four strategies. In addition, this research will illustrate the strategies based on customer perceived value and characteristics of services.

Table 3 Explanation of the proposed model

Element	Definition in this research			
Game Type	Non-cooperative and static game theory			
Participant	A, B, C airline company in the alliance			
Message	Other participants' service quality			
Action	Provide the service itself		Outsource	
Strategy	(1) Number of firm to outsource: 3 (2) Number of firm to provide the service itself: 0	(1) Number of firm to outsource: 2 (2) Number of firm to provide the service itself: 1	(1) Number of firm to outsource: 1 (2) Number of firm to provide the service itself: 2	(1) Number of firm to outsource: 0 (2) Number of firm to provide the service itself: 3

Strategy 1 - All Firms Provide Services Themselves (1,1,1)

We use unit service as the example in this situation. The core of airline industry is to provide unit service, including the airplane and pilots. The value of unit service is security and assurance. Hence, most companies train own pilots and purchase own airplanes in practice. In this situation, the service quality is stable and reliable. Consequently, this strategy is accepted for most practices even in the concept of service alliance.

Strategy 2 - Two Firms Provide Services One Firm Outsource (1,1,0)

The most part to influence the judgment of service value from customers is flight attendant service. The reason is this kind of service is direct and long-term contact. That is, the service quality is extremely important. According to the report from SKYTRAX, the best awards of flight attendant service in 2012 are Malaysia Airline (world) and KLM (Europe), which all belong to the alliance of OneWorld. However, airline members in the alliance couldn't exchange or outsource this kind of service owing to the heterogeneity of service, cultural difference, and various visions and images of companies. However, we suggest the pioneer or similar company in this service can support others or other companies can outsource their services in the alliance. For example, Malaysia airline and KLM can be the mentors in Asia and Europe to help other members in the alliance train flight attendants. Surely, outsourcing can also be another option. In this case, the difference will be eliminated and the customer perceived value will be increased for both sides. The brand image will also be improved to earn more profits.

Strategy 3 - One Firm Provide Services And Two Firms Outsource (1,0,0)

Outsourcing sky catering service is the most popular way in airline industry. Today, the main concern to choose sky catering service provider is cost. In practice, the selected providers are not the partners in the alliance. The operation model is similar to typical supply chain management. The customers are not noticed to the suppliers. In the viewpoint of service alliance, we suggest the strategy can extend to quality orientation. For example, the player has pioneer service can be the leader that helps all members change the strategy from co-outsourcing (1,0,0) to co-funding (0,0,0) of a sky catering service company. Hence, the service quality will be consistent and attain the economies of scale. The information asymmetry will be also eliminated to avoid the chaos of recognition and increase the value.

Strategy 4 - A Specific Firm In The Alliance To Provide Services (0,0,0)

Cargo service has the lower entering threshold than other services. It emphasizes on the cost and benefit based on the economies of scale. Currently, Skyteam Cargo is the most popular example in practice since it wins several awards in 2005. Skyteam Cargo is the biggest cargo team and many members continuous join in to strengthen the synergy of alliance. The advantage of allied cargo service is not only the scale but also the shared terminal. The quality of cargo service is also seamless that may decrease the building cost of terminals. More good players can be attracted to join the alliance. In other words, this strategy is the best case in the concept of service alliance.

CONCLUDING REMARKS

This research utilizes the concept of non-cooperative game theory to analyze the possible actions and solutions for service alliance. Service alliance uses service as the unit that companies can exchange, furnish, and share services in the alliance. Service alliance emphasizes on the representation and exchange for value of single service from an individual company. Based on the assumptions, we conclude four strategies. The four strategies are similar to the process from competition to cooperation. The best case is that the members in the alliance co-fund a new service team to serve all members. However, this concept has economies of scale but may not be applied to any service. For example, core service is not applicable such as unit service in airline industry. This concept also shows the most valuable service should retain and other may outsource. Moreover, this research suggests firms should select the service carefully to ally based on the characteristic of service. For instance, it is similar to the concept of contingency in management that only consider "most appropriate" but not "best case". In addition, although many researchers proposed the classification of services (Coulterand, 2004; Cunningham, Young, Ulaga, and Lee, 2004; Mayer, Bowen, and Moulton, 2003), a method to apply service alliance still needs to be further investigation. The contribution of this research is in accordance with the argument from Michael Porter, competitive strategy aims to create an irreplaceable position and consider trade-off to avoid competitive convergence.

Moreover, the way for airline alliance also shifts from code sharing to service exchange. More players join the alliance results in consistent competition. Airline companies should consider how to enlarge the synergy in the alliance and focus on customer perceived value by supporting services each other. This research also suggests firms should focus more on service quality than cost in service alliance. We used airline industry as the example to simply illustrate the concept of service alliance based on game theory. Particularly, the proposed concept can be applied to all service industry and create a new operation model for alliance. Finally, since service alliance is the novel concept, there is no exact example that can explain well currently. This is also the research limitation that needs further investigation with more examples.

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