Alliance Structure and Success in the Global Airline Industry: An Empirical Investigation

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Abstract

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ABSTRACT

In this paper, we investigate the use of horizontal distribution alliances (HDAs) in the international airline industry. Airlines enter these alliances to effectively meet the needs of passengers in new and expanding markets. We apply transaction cost analysis (TCA) to develop a conceptual framework explaining the use of HDAs. From analyzing primary and secondary data, our results indicate that TCA is a viable theory for predicting the formation and success of an HDA.
1. Introduction

Academicians and practitioners alike agree that a firm's choice of mode of entry into an international market is a significant decision with broad and long-lasting implications for the firm (Anderson and Coughlan, 1987; Gatignon and Anderson, 1988; Root, 1994). Complicating the situation is the fact that entering a new foreign market, or even expanding in one, poses a whole host of political, financial, and market risks with which firms must contend (Bleeke and Ernst, 1991; Root, 1994).

The focus of this research is to study the use of a specific mode of entry—the horizontal distribution alliance (HDA)—that could ease the process of entering a new market or expanding within the market. In an HDA, an entrant manufacturer forms a partnership that allows it to use the channel resources of another manufacturer in the target market. The manufacturer in the target market—or host—therefore acts as the distributor for the entrant (Root, 1994). HDAs have also been termed as “piggybacking” because the entrant manufacturer basically “rides” on the distribution system of the host (Terpstra and Simonin, 1993; Terpstra and Yu, 1990). Whereas this implies a vertical relationship, the horizontal descriptor of the strategy is used because the host is often an industry competitor of the entrant, a very different situation than in traditional vertical distribution agreements.

Horizontal distribution arrangements can be found in industries ranging from consumer goods and pharmaceuticals to automobiles and air travel. In the pharmaceutical industry, for instance, companies borrow each other’s sales forces to gain access to or increase their market presence in underdeveloped or foreign markets (Pangarkar and Klein 1998). For example, the
British pharmaceutical firm Glaxo used an HDA with Roche Pharmaceuticals to help launch Zantac in the United States (Rapoport, 1983). By the time the drug was coming off patent and going to the over-the-counter market, Glaxo’s Zantac had become the best selling drug in history with annual sales in the U.S. at almost $2 billion (Durman, 1997). These results were due in large part to the effective marketing of the drug by the Roche sales force.

While the results of the Glaxo and Roche alliance were excellent, horizontal distribution alliances as a market entry strategy can be risky for both parties (Ryan, 1976). For instance, the host partner (the manufacturer in the target market) may appropriate the technology of the entrant and become a stronger competitor in the marketplace (Bucklin and Sengupta, 1993). Alternatively, the entrant firm might learn enough about the target market to “go it alone” at a future date. Nevertheless, Terpstra and Simonin (1993) suggest that these distribution alliances are often used to enter or expand within markets. In a study of North American, Japanese, and Western European firms, they found that over 28 percent of about 240 complementary partnerships (e.g., licensing, manufacturing arrangements, and piggybacking alliances) were considered to be distribution arrangements.

While researchers often include various industries in their studies, we have chosen to confine our study to a single industry in order to control for industry specific characteristics. The study is therefore conducted in the international airline industry. The primary reason for choosing to study this industry was due to the airlines’ common practice of forming alliances in order to use the operating assets (e.g., airline crews, baggage handlers, airplanes, docking gates, etc.) of other airlines to gain access to markets while avoiding large capital outlays (Gallacher, 1994). When partners in an airline alliance specifically agree to use each other’s designator codes to distribute their air service in the market, the industry calls these agreements “code-
sharing” alliances (Power, 2003). Such relationships involve at least two airlines where one of 
the airlines either directly buys a certain number of seats or is allowed to sell, under its own 
name, seats on the partner’s airline, the airline that actually flies the airplane (Gellman Research 
Associates, 1994). The fact that an entrant airline must use another airline to service its 
passengers provides the right conditions for the horizontal nature of these alliances. Given the 
current financial hardships many airlines have been experiencing, the practice is still common in 
the industry (Harris and Power, 2003; Power, 2003). Table 1 provides more institutional 
background to the phenomenon.

--- Insert Table 1 about here ---

A detailed example may be helpful in understanding the phenomenon better. The code-
sharing agreement between United Airlines and Lufthansa was formed in 1994 (Carey, 1996). 
While United had the right to land its planes in Frankfurt, the cost of setting up operations in 
other parts of Germany and Europe was extremely prohibitive. Indeed, there were even 
governmental restrictions that did not allow either airline complete and unfettered access to each 
other’s home markets.¹ The code-sharing agreement that the airlines signed allows each to sell 
seats on the other's flights. United flies its own planes into Frankfurt and then its customers 
travel on Lufthansa planes to destinations beyond. This option gives United access to points

¹ The United States General Accounting Office acknowledged the existence of bilateral agreements between the US 
and foreign countries as imposing restrictions on airlines (United States General Accounting Office, 1995). These 
agreements often entail strict rules on terminal landing rights, air space restrictions, and the number of multiple air 
carriers from foreign countries (Gellman Research Associates, 1994). In addition, countries maintain cabotage 
provisions, which restrict transportation within a country by foreign operators. As of mid-1996, however, Germany 
and the US had accepted an “open-skies” air treaty, allowing greater access in both countries. Nevertheless, United 
and Lufthansa determined their alliance as having greater benefits than simply overcoming government restrictions 
(Dwyer, 1996; Jennings, 1996).
inside Germany beyond Frankfurt, and likewise gives Lufthansa access to destinations inside the United States. The key here is that United actually markets seats on the Lufthansa flights as its own, allowing passengers to bypass buying a ticket from Lufthansa. The passenger's ticket would indicate a United Airlines flight number for each leg of the journey, although in fact the passenger may travel on a Lufthansa plane after connecting in Frankfurt. If United did not have the code-sharing arrangement with Lufthansa then United would not be able to offer a flight to certain destinations within and beyond Germany. The passenger would then have to contact Lufthansa, a different airline, or a travel agent to purchase a connecting flight to her final destination.

United will bear a risk to the value of its brand equity in such an alliance, since Lufthansa is the airline delivering service to passengers flying on a United ticket. Lufthansa may also perceive a risk in sharing information with United about its flights and customers. The ongoing viability of the alliance depends on the continuing goodwill of its members in the face of persistent incentives to renege on alliance terms (Carpenter and Coughlan, 1999). Code-sharing partners clearly think about these risks, but the persistence of the agreements suggests there must also be countervailing benefits to both parties. Thus, given the benefits and costs to both the entrant and partner sides of the alliance, the purpose of this research is to contribute to an understanding of the strengths of these effects and their impacts on alliance formation and success (Varadarajan and Cunningham, 1995). Specifically, these objectives are to:

- Extend the transaction costs analysis (TCA) framework to the use of HDAs as a mode of market entry in a legally restrained industry;
- Gain empirical support for this strategy by testing hypotheses of both the use of HDAs as well as the consequences of their use.

2 At www.oag.com, one can find a flight from Frankfurt, Germany to Vienna, Austria operated by Lufthansa as LH3710. The same flight is also listed as OS7202 (Austrian Airlines) and UA3640 (United Airlines) under code-sharing agreements. The OAG identifies these as code-sharing flights by putting a “♠” next to the United and Austrian Airlines flights.
The paper continues with a review of the theoretical foundations and empirical evidence found in the literature, followed by a discussion of the hypotheses resulting from the literature. Next, the methodology is discussed, followed by the results from analyses of secondary and primary data. The paper concludes with a discussion of the results and future research directions.

2. Alliance Formation: The Choice of International Entry/Expansion

2.1. Theoretical Insights into Organizational Form

Transaction Cost Analysis (TCA) suggests that firms will choose to vertically integrate based on the failure of the market to adequately provide the best competitive structure (Gatignon and Anderson, 1988; Williamson, 1975, 1985). In addition to TCA, explanations for choosing a certain organizational form to enter a new market are provided by Resource Dependence (RD) theory as well as Institutional Isomorphism (II) theory. Pfeffer (1982) contends that it is the degree of dependence on the resources and the exchange relationships themselves that primarily dictate the organizational form of the firm. When these exchanges are critical for managing the flow of resources into and out of the firm, Pfeffer and Salancik suggest that firms will tend to vertically integrate in order to gain a greater degree of “control over exchanges vital to its operation” (1978, p. 114). On the other hand, institutional isomorphism theorists would likely suggest that the choice of organizational form in an industry is due to firms exhibiting a “bandwagon effect” or imitating what other firms are doing in the industry (DiMaggio and Powell, 1983; Pangarkar and Klein, 1998; Tolbert and Zucker, 1984).

While all three theories might prove to be viable in predicting vertical integration, the focus of this paper is to be able to predict both the formation and success of alliances as a mode
of market entry/expansion. As such, transaction costs analysis seems to have had a more consistent record in predicting modes of entry (Anderson and Coughlan, 1987; Erramilli and Rao, 1993). The theory also provides for studying the consequences of using specific mechanisms for structuring the organizational form (Jap and Ganesan, 2000; Williamson, 1999). While there have been studies testing the antecedents of organizational form, the other theories say little about the consequences of choosing a particular organizational form (Aldrich, 1976; Boyd, 1990; Pangarkar and Klein, 1998; Zinn, Proenca, and Rosko, 1997). In addition, much of the extant literature on market entry/expansion has applied TCA in various forms and have found the framework to be an effective contributor to the theoretical foundations of the research (Anderson and Coughlan, 1987; Erramilli and Rao 1993; Gatignon and Anderson, 1988). As such, we focus our attention in this paper on TCA, to test the degree to which transaction cost analysis can be extended to predict the choice to enter horizontal distribution alliances as well as managing them for their success.

2.1. The Transaction Cost Analysis Framework Applied to Alliances

As mentioned previously, much of the empirical research on international modes of entry have applied a TCA framework to predict the choice of either vertical integration or market (i.e., arms’ length) forms of channel systems, with some attempt to study the various levels in between (Anderson and Coughlan, 1987; Rindfleisch and Heide, 1997). The decision to vertically integrate is predicted to occur when the market fails to adequately govern the transactions between firms, so that the transactions are absorbed into the firm and “governed by administrative processes, instead” (Williamson, 1975, p. 8).
The level of transaction costs is the focal construct in Williamson’s theory of organization structure: the higher the transaction costs, the more likely the firm will choose to vertically integrate (Williamson, 1975). The components of transaction costs include *asset specificity, uncertainty, bounded rationality, and opportunism* (Rindfleisch and Heide, 1997; Williamson, 1975, 1985). These components work in concert to drive up transaction costs, which then lead the firm to favor vertical integration (VI) over market contracting in order to reduce its costs.

Empirical findings regarding the choice to vertically integrate or use an arms’-length arrangement have largely been consistent with the predictions of TCA (Anderson and Coughlan, 1987; Erramilli and Rao, 1993; Gatignon and Anderson, 1988). However, the findings pertaining to the choice of the intermediate levels between the two extremes have been more elusive (Agarwal and Ramaswami, 1992; Kim and Hwang 1992). This could be due to the intermediate nature of such agreements, of which TCA says little. The lack of conclusive results suggests the need for further research to determine the conditions under which firms are likely to choose an intermediate, mixed, or “hybrid” form of governance (Gulati, 1995; Williamson, 1985) versus going direct into a market.\(^3\) Even more critical, HDAs are not just examples of hybrid governance; they are alliances between potential competitors, where the Williamsonian risks of opportunistic behavior could be even greater than in other alliance forms.

Further, other marketplace factors may not favor vertical integration. In the airline industry, for example, legal restrictions constrain the entrant’s choice so that vertical integration

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\(^3\) Heide and John (1992) suggest they test the conditions that would favor “quasi-integration”; where control, not ownership, serves to minimize opportunistic behavior. However, their research does not predict why this form of governance would be chosen above other forms. Instead, they focus more on the “how”: they rely on relationship norms to support the process that allows a firm to relinquish control so that another firm is then able to gain that control and allow the channel to become quasi-integrated.
may be a limited option, even for large firms. The governments in most countries limit foreign ownership of domestic airline companies (the limit on foreign ownership of U.S. airlines is 25 percent of the airline company’s equity and U.S. citizens must maintain control of the airline (U.S. General Accounting Office, 1995)). Often connected with foreign ownership limits are restrictions on *cabotage*, the carrying of passengers *within* the target country. Under cabotage restrictions, an airline based in country A cannot carry passengers further than the point-of-entry in country B. This summarily limits airlines' ability to directly serve passengers who wish to fly to a destination inside the target country.

Limits on foreign ownership and cabotage may prevent airlines from using vertical integration as a mode of entry/expansion into a market (Gellman Research Associates, 1994). Horizontal distribution alliances become a “next-best” alternative to vertical integration in these circumstances. One of the most common provisions in an airline code-sharing HDA is the coordination of flight schedules to maximize the convenience of connecting to within-country flights (e.g. connecting in Frankfurt to a Lufthansa Frankfurt-Munich flight after traveling on a United flight from Chicago to Frankfurt). As described in Table 1, the default "arms'-length" alternative would be for United to simply fly to Frankfurt and let its passengers make the best connections they could within Germany, without any coordinating efforts with the local airlines.

An HDA thus represents a greater degree of commitment to and involvement in the market than more arms’-length modes of entry. Further, an HDA gives the entrant access to an already-established distribution channel (Martin, 1974). In the United-Lufthansa example, this means that United has immediate access to German travelers who may want to fly with a “single” carrier to and in the United States (i.e., the ticket designation lists only one carrier).
This also suggests that United can offer immediate access to a complete set of within-Germany flights to its U.S. passengers.

2.3. Hypothesis Development: HDA Formation

The transaction costs literature argues that large firms’ transaction costs can be minimized through vertical integration (Rindfleisch and Heide, 1997; Williamson, 1975, 1985). Yet, while TCA would imply vertical integration in order to save on transaction costs, other internal-to-the-firm factors may not favor going direct into the market (Root, 1994). These factors include a lack of assets due to small firm size or a lack of multinational experience (Agarwal and Ramaswami, 1992). Channel management researchers have advanced similar positions in proposing that small firms may lack the means necessary to vertically integrate (Heide and John, 1988; John and Weitz, 1988).

Other researchers have also noted that larger firms have a greater ability to manage transaction costs due to their greater organizational capabilities (Aulakh and Kotabe, 1997), greater multinational experience (Agarwal and Ramaswami, 1992), or greater access to financial or managerial assets (Heide and John, 1988; John and Weitz, 1988). The firms may be limited in their investment capacity or the issue may rest with the regulations of the foreign government. Our first hypothesis therefore modifies the standard TCA prediction relating firm size to propensity to vertically integrate by substituting an HDA for the vertical integration option:

**H1:** The likelihood of using a horizontal distribution alliance as a mode of expansion into a foreign market is positively related to the level of the firm’s assets.

Transaction cost analysis proposes that higher levels of uncertainty will lead to higher transaction costs, which in turn should increase the probability of going direct, and this has been supported in empirical research in the international modes of entry literature (Gatignon and Anderson, 1988; Kim and Hwang, 1992). In previous applications of the TCA framework,
uncertainty was usually portrayed as the degree of country risk confronting the entrant in the target market or country (Aulakh and Kotabe, 1997; Erramilli and Rao, 1993). Legal restrictions have also played a role in a firm's decision on the mode of market entry (Gatignon and Anderson, 1988). Intuitively, it would seem to be the case that if certain government regulations and restrictions are known, then this will alleviate disturbances due to the uncertainty of market conditions. In the case of the airline industry, a variety of agreements and treaties have been established to regulate activities on a worldwide as well as bilateral basis. By signing these agreements, countries agree to abide by rules and regulations concerning airspace restrictions, landing rights of airlines (e.g., cabotage, ports-of-entry, etc.), as well as traveler/passenger rights. Our expectation is that market uncertainty is tempered in the presence of these agreements between two countries. And with lower uncertainty, airlines will be more apt to use a horizontal distribution alliance. We apply this logic in the following hypothesis:

**H2:** The likelihood of choosing to form a horizontal distribution alliance is positively related to the degree that uncertainty is alleviated in the target market.

Because an HDA falls short of total vertical integration, it carries the risk of opportunistic behavior by the horizontal alliance partner. Opportunistic behavior (or *post-contractual opportunistic behavior*--PCOB) is characterized by "...a lack of candor or honesty in transactions..." that is magnified with the critical ingredient of the perpetrator demonstrating "self-interest seeking with guile" (Williamson, 1975, p. 9). For example, M&M Mars, the manufacturer of Dove Bar brand premium ice cream bars, distributed Dove Bars for a time through Edy’s ice cream distribution system. But because Edy’s products were in competition with Dove Bars, Edy’s (a manufacturer of premium ice cream in various forms) did not

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4 The Dove Bar/Edy’s example comes from a private conversation with an employee of the M&M Mars Co. in 1997.
aggressively distribute and sell the competing Dove Bar brand, making this horizontal
distribution alliance a failure. As such, this partner is no better than the arms’-length distributor
choice mentioned above. By contrast, Clorox brand bleach has been distributed successfully in
Mexico through an HDA with Colgate-Palmolive, which has a more complementary than
competitive product line to that of Clorox (Malkin, 1992). The degree of substitutability
between the products of the entrant and the alliance partner is positively related to the likelihood
of post-contractual opportunistic behavior by the partner, suggesting the following hypothesis:

**H3**: The greater the level of potential opportunistic behavior, the less likely an entrant
will choose to form a horizontal distribution alliance.

Therefore, we expect that the likelihood of using a horizontal distribution alliance will be
directly related to the degree to which the potential alliance partner’s sales do not excessively
compete with those of the entrant.

Horizontal distribution alliances can be an effective way for an entrant to leverage the
marketing and distribution expertise of the host partner (Goodnow and Kosenko, 1990; Kaikati,
1993; Milmo, 1986; Ryan, 1976). Airline code-sharing agreements are a clear example of this.
Similarly, in the automobile industry, Nissan distributes Volkswagens in Japan, while
Volkswagen sells Nissan’s four-wheel drive cars in Europe, thereby leveraging each other’s
established distribution and retail systems (Ohmae, 1989). The intimate market and customer
knowledge embedded in the HDA partner is valued because this helps reduce the entrant’s
bounded rationality, and hence the transaction costs, of operating in the foreign market. As
Williamson has put it: “cognitive specialization, [original emphasis] within and between firms, is
a means by which to economize on mind as a scarce resource” (1999, p. 1090). To the extent that
an entrant establishes a code-sharing agreement with a partner that has complementary abilities,
not only do both partners enjoy the benefits of specialization, but also the entrant’s effective
information set about the market is expanded. This reduces the entrant’s degree of bounded rationality, and therefore increases the likelihood of choosing an alliance. We therefore have the following hypothesis:

**H4**: The likelihood of choosing to use a horizontal distribution alliance is positively related to the reduction of an entrant’s bounded rationality in the target market.

Another factor frequently cited as important in influencing mode of entry is the pre-existing experience the entrant has in the market in which it wishes to roll out a new product, such as with other product lines it may already sell in the market. From a TCA perspective, a firm currently established in a market will have a high level of asset specificity. This is due to the investments necessary to service the customers in the market (see Table 1). If the entrant were considering expansion in the market, a high level of asset specificity would prompt the entrant to protect its assets through a greater level of vertical integration as opposed to choosing to enter an alliance.

A more standard cost-based viewpoint supports the TCA view. The cost-based explanation would suggest that prior experience selling in a market will lead the entrant to continue to use the method of operation already in place for the new product, due to the high fixed costs of establishing new distribution channels (Anderson and Coughlan, 1987). This line of argument would therefore suggest that the degree of prior expertise and market presence the entrant has in the market to be entered would be negatively related to the implementation of horizontal distribution alliances. We state our hypothesis in TCA terms below:

**H5**: The likelihood of using a horizontal distribution alliance is negatively related to the level of asset specificity already invested in the target market.
With these hypotheses predicting the likelihood of forming a horizontal distribution alliance, we turn in the next section to the development of transaction cost analysis-based hypotheses concerning the factors that promote a successful alliance.

3. Horizontal Distribution Alliance Success

3.1. Success Defined

Alliance researchers differ on the most appropriate definition of alliance success. For example, Bleeke and Ernst (1991) suggest that alliances succeed when both partners achieve their strategic objectives and both recoup their financial investments. Bucklin and Sengupta (1993) claim that alliance success is measured by each of the partners’ perceived effectiveness of the alliance. Olk and Young (1997) measured perceived “satisfaction with performance” as a condition for companies to continue their membership in R&D consortia. In a study on alliance performance in the international chemical and allied products industry, Saxton (1997) found that subjective assessments of alliance performance were consistent with those of more objective measures such as profit margin and sales. Based on the above, we argue that alliance success can be measured by self-reported, subjective responses since success is what the respondents perceive it to be. Consequently, our measures of success will not only depend on the alliance partners’ perceived level of satisfaction with the alliance agreement and what it has been able to accomplish, but also by the expressed satisfaction with the partner and the role it plays in the alliance.

3.2. The Effects of Commitment and Opportunistic Behavior on Alliance Success

Commitment to the channel relationship is widely agreed to be a key component leading to the relationship's success (Anderson and Weitz, 1992). Commitment is viewed as a complex
construct (Gundlach, Achrol, and Mentzer, 1994 and Kumar, Hibbard, and Stern, 1996 each have a tripartite interpretation of commitment) and it is seen as a mediating variable between the antecedents (shared values, relationship benefits) and consequences (cooperation and propensity to leave) of a channel relationship (Morgan and Hunt, 1994). Anderson and Weitz (1992) investigate the use of pledges as a form of channel commitment. They find support for a view of pledges as “specifications binding a channel member to a relationship” that can either be “idiosyncratic investments” or “contractual terms” used to gain commitment between a manufacturer and a distributor.

Carpenter and Coughlan (1999) provide analytical evidence for the viability of alliances whose partners have balanced bargaining power, and show that the long-term detrimental effects of opportunistic behavior in unbalanced alliances can be mitigated through the appropriate use of commitments or advance payments by the more powerful alliance member to the less powerful one. Likewise, Heide and John (1988) find empirical evidence that offsetting investments in proportionate amounts tend to decrease the level of opportunistic behavior. In an HDA in particular, even though firms may have selectively chosen a partner, there may still remain concerns about the partner. The effect of some of these concerns is lessened if the partner makes balancing and tangible commitments to the alliance. This should result in a more satisfactory relationship and, therefore, a more successful alliance:

**H6:** As the level of commitment increases, alliance success will also increase.

Commitments or pledges are important in distribution alliances because of the threat that a firm will be taken advantage of after investing assets in the alliance, due to opportunistic behavior on the part of the alliance partner (Carpenter and Coughlan, 1999). Opportunistic behavior on the part of the alliance members is certainly capable of ruining an alliance. We
predict that by increasing transaction costs between partners, *post contractual opportunistic behavior* can have a detrimental effect on satisfaction, and therefore, the success of an alliance. We hypothesize that:

**H7:** As the degree of post-contractual opportunistic behavior (PCOB) increases, alliance success will decrease.

As pointed out earlier, our measure of alliance success is based on the level of satisfaction with both the partner and the alliance. Therefore, the role a partner plays in the alliance is critical for the alliance to work (Dyer, Kale, and Singh, 2001; Kale, Singh, and Perlmutter, 2000). Indeed, Bucklin and Sengupta (1993) found that alliance success was positively related to the degree of match—prior history and organizational compatibility—between two allied firms. The firms that do not methodically research a prospective partner’s fit are more likely to face a failed alliance (*Aviation Strategy*, 1998). Conversely, a high level of search can be expected to translate into satisfaction with the partner, since candidates likely to engage in opportunistic behavior, or otherwise be unsuitable, can be weeded out before the alliance is struck (Kale, *et al.*, 2000). This suggests the following hypothesis:

**H8:** Alliance success will increase as the level of search for the right partner increases.

In the next section, we discuss our empirical analysis of the hypotheses pertaining to horizontal distribution alliance formation and success in the airline industry.

### 4. Empirical Analysis

Two different analyses are performed in order to test the two research questions in this paper, both in the context of the international airline industry. The first analysis is conducted with archival data and is used to test hypotheses on the formation of horizontal distribution
alliances. The second uses a survey instrument to question managers directly concerning these alliances and provides some descriptive and preliminary results about alliance success.

4.1. Archival Data Analysis

Archival data were gathered in order to test the hypotheses regarding the choice to form a horizontal distribution alliance. We used various airline industry references to set up the sample database including: *Air Service Rights in U. S. International Air Transport Agreements* (1994); *Civil Aviation Statistics of the World* (1994); *Jane’s World Airlines* (1995); *World Aviation Directory* (1996); and the *Official Airline Guides* (OAG) for February 1996. The sample consisted of the seven major U. S. airlines and their economic and operating characteristics. Specifically, we gathered data regarding the countries into which the airlines claimed to fly as well as information regarding the airlines operating in the target markets. The U. S. airlines either did or did not have code-sharing arrangements with airlines based in these countries. The total number of observations was 161. Each observation consisted of an airline operating in a country and the mode of operation could be either codeshare or non-codeshare. The US airlines that were represented in the sample had an average of 65,145 passengers with a minimum of 20,848 and a maximum of 88,922. The proxy variables along with their operationalizations, definitions, and expected signs are discussed below and are summarized in Table 2.

--- Insert Table 2 about here ---

The dependent variable is CODESHARE and equals “1” if a code-sharing agreement is used in the respective country into which an airline flies and equals “0” if there is no code-
sharing agreement in the target country. The independent variables include:

Entrant’s Passenger Assets (ASSETS; Re: H1) This variable is operationalized by summing two important ratios in the airline industry. The first is the percentage of passengers carried (000’s) by the entrant airline in the domestic market. The second is the percentage of frequent flyer members (000’s) versus the total frequent flyer members summed for all major US carriers. The literature suggests a direct relationship between firm size and the level of assets with the propensity to vertically integrate. However, as noted earlier, in the case of the airline industry, countries often have major restrictions on foreign ownership. Therefore, in the cases where vertical integration may be limited, the next best organizational structure would be to enter into a code-sharing agreement. Hence, we expect a positive relationship.

Uncertainty Reduction (LOWUNCRT; Re: H2) In the presence of a bilateral agreement governing air travel between two countries, the level of uncertainty about the country, and the perceived country risk, is reduced. We therefore expect the presence of a bilateral agreement to have a positive effect on the choice to codeshare.5

Opportunism (OPPORT; Re: H3) If the existing partner or a “potential partner”6 already has an agreement with a firm from the entrant’s home country, then the entrant may perceive that the partner is more likely to behave opportunistically. In the analysis, OPPORT will equal “1” if the partner or potential partner has an agreement with a competitor of the entrant, and "0" otherwise. The expected coefficient sign is negative, because the partner’s ties with other, potentially competitive, airlines makes a code-sharing agreement a less viable entry strategy.

Reduction of Bounded Rationality or Partner Expertise (EXPERT; Re: H4) We use the

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5 A bilateral agreement is a country-to-country agreement governing airspace and terminal usage between countries.
6 The “potential partner” is the most likely airline with which the entrant would want to partner. Our assumption, in this case, is that the most likely airline would be the airline carrying the most passengers in the target market.
ratio of \{the number of passengers carried by the partner\} to \{the total number of passengers flying in the target country\} as the measure of expertise of the potential partner. Our assumption is that the ratio represents the level of market knowledge of the partner or potential partner. The sign is expected to be positive since a greater level of expertise of the potential partner increases the likelihood of a code-sharing agreement with that partner.

*Asset Specificity or Entrant's Market Presence (SPECIFIC; Re: H5)* Our measure of the entrant's presence in the market is the ratio of \{the number of airports the entrant already flies into in the target market\} to \{the total number of major airports in that market\}. Following the tenets of TCA—which would predict that the entrant would need to protect its assets already present in the market—the higher the ratio, the less likely the entrant is to form an alliance. The expected coefficient sign is therefore negative.

*Control Variables (Partner’s Net Profit--PROFIT and Partner’s Passenger Load--LOAD).* These variables are included to control for the purely economic reasons for entering an alliance. PROFIT is the level of operating profit for the reporting fiscal year (passenger operating revenues minus passenger operating costs) and is expected to have a positive effect given that most firms would not want to do business with companies that are having difficulty with their finances. Unlike the partner’s net profit, the coefficient of LOAD is expected to be negative since a partner with a high level of utilized capacity will not have enough available capacity to service the entrant’s passengers. This variable is a reported percentage that calculates the average number of seats sold to passengers versus the average number of seats available for an airline.

Using the first five predictor variables, we estimated a binary logistic regression with the choice to codeshare as the dependent variable. The results of the analysis are reported in Table
All factors are significant at $\alpha = .05$ or better, and four of the five predictors are in the expected direction. The overall model is significant with a chi-square of 58.47 ($p < .0001$). *Entrant’s Passenger Assets* (H1) and *Uncertainty Reduction* (H2) are positively related to the use of code-sharing in the target market, consistent with our theoretical predictions. In other words, larger entrant firms facing less uncertainty due to the existence of a bilateral agreement are more likely to use a code-sharing agreement in the target market.

--- Insert Table 3 about here ---

The factors *Opportunism* (H3), *Partner Expertise* (H4) and *Asset Specificity* (H5) show a negative relationship with the choice to codeshare. As was predicted, the variable OPPORT was negative: a partner who already has ties to a competitor will not be a viable alternative for the entrant, therefore making the choice to codeshare a less attractive option. This was expected given the greater likelihood for the partner to potentially exhibit a higher degree of opportunistic behavior. The result from the EXPERT (H4) variable suggests that an entrant will be more likely to codeshare with a partner who has relatively less expertise than one with more expertise. This result is significant, but not in the expected direction.

For H5, SPECIFIC, the inverse relationship with the dependent variable is consistent with our prediction. The result indicates that airlines tend to persist in their non-alliance behavior, the more extensive their experience is flying into ports of entry in a country. A code-sharing partner in the target country has less to offer to the entrant, the more ports of entry the entrant already serves, and the cost of changing channel forms is evidently too great.
Overall, we found that TCA has predictive capability for the choice of entering a horizontal distribution alliance. In order to rule out a purely economic incentive for entering an alliance, we analyzed the same model by adding two control variables, Partner’s Net Profit and Partner’s Passenger Load. The first attempt to simply include the two variables in the estimation failed due to non-convergence of the model from quasi-complete separation in the data. This was primarily driven by a loss of observations from unavailability of data on net profits for the airlines.7 When the loss of observations occurred, there was insufficient variation between the variables of Uncertainty Reduction and Partner’s Net Profit to estimate the model.

To circumvent the loss of variation, we then estimated two additional models. The first included only one of the control variables, LOAD (results are listed under Model II in Table 3). Inclusion of the variable did very little to alter the original results from Model I. The original estimators retained their magnitudes as well as their significance levels, while the economic variable itself was not significant. Model III was then estimated by removing the variable, LOWUNCRT, and including the second control variable, PROFIT. In this model, there is a greater loss of observations (from 161 observations in Model I to 94 in Model III) and a subsequent loss of model significance (from a chi-square of 58.47 to 45.20). The two control variables that are now in the model are significant at p<.05 while the variables ASSETS and SPECIFIC decrease in significance level but nevertheless remain significant (p<.10 and p<.05, respectively). OPPORT is the only variable from the original model that slightly increases in its significance level. From the results, we maintain that TCA remains a viable theoretical framework for the choice to enter a horizontal distribution alliance.

7 The lack of available data on operating net profits is not surprising. In many countries, the airlines may be state-owned and operating results are simply not publicly reported or are considered to be “zero” since any profits that are positive are redistributed back into the airline.
4.2. Primary Data Analysis

We developed two sets of questionnaires using multiple indicators for the factors central to the research study (Bagozzi, Yi, and Phillips, 1991). One version was designed for the entrant and the second version for the partner. The measures in each of the versions used various techniques, including closed, structured, and open-ended questions to tap the factors we intended to test in order to maintain informant interest in the task (Fowler, 1995; Mangione, 1995). Both versions had a front page asking for the respondent’s contact information, the airline’s demographics, and information about the code-sharing agreement. After developing the questionnaire, we made contact with an alliance manager from a U.S. airline, who agreed to be interviewed and to pre-test the questionnaire. From the interview and pre-testing of the survey, we made changes to the survey prior to sending it out to other respondents. Copies of the final versions of the questionnaires that were used in the study are available from the first author. Measures of the factors used in the analysis are listed in the Appendix.

The industry references used to compile the list of potential respondents included a report on code-sharing by the U.S. General Accounting Office (GAO) and industry trade publications. The trade publications, Jane’s World Airlines (1995) and the World Aviation Directory (1996), were the primary sources for the names of contacts. A total of 107 surveys were mailed to the major U.S. airlines and their international code-sharing partners (for both terminated and current agreements that we had learned about). We treat the U.S.-based airline as the entrant and its international partner as the host partner in this survey. Packets mailed to each of the respondents included a cover letter on the researchers’ business school stationery, a survey (with instructions

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8 The sample size was not even, given that we knew of one instance where a foreign partner airline was no longer in service. Yet, we still wished to obtain information from the US airline.
for contacting and/or returning the surveys to the researchers, including phone and fax numbers, addresses, and e-mail addresses), a copy of the research agenda, a postage-paid, pre-addressed envelope (for U.S. respondents only), and a small pad of Post-it Notes™ or a pen with the business school emblem as a token of appreciation. Foreign respondents were encouraged to fax their survey or return it via airmail. A copy of a report on the survey results was promised to the informants for their participation.

Of the 107 surveys, six were eventually eliminated (mainly due to the alliance not having existed as a commercial passenger code-sharing agreement), leaving an effective sample size of 101. We received 41 responses in the first round and after one reminder mailing, another 26 responses were received, for a total of 67. Of the 67 responses, 50 surveys were truly usable for statistical purposes (some of the surveys were returned blank). This left us with a final response rate of 50%, which is slightly higher than average for research conducted with mail surveys (Fowler 1995). Additional information regarding the respondents is detailed in Table 4.

--- Insert Table 4 about here ---

The average length of the code-sharing agreements in our sample was three years and the average number of international code-sharing alliances in which respondents were involved was seven (Airline Business 1996). The concept of a code-sharing HDA was therefore not alien to these firms. Respondents to our survey include entrants as well as host partners. Both sides of the alliance were posed similar questions, albeit with slight modifications that recognized the

--- In certain instances, such as with the statistics just mentioned, we used industry references to supplement our primary data. This was only done in cases where objective data could easily be gathered. Of course, attitudinal responses discussed later in this section were all gathered with the aforementioned survey instrument. ---
functions each contributed to the alliance (see the Appendix for examples). The results from the analyses combine answers from both hosts and entrants. From our survey responses, we estimated the following multivariate regression model of the predictors of success:

\[
\text{Success} = f(\text{Net Commitment Level, PCOB, Partner Search}),
\]

The variable definitions are discussed in the following section.

SUCCESS is the dependent variable and is a composite score of satisfaction with the partner and with the alliance agreement, where the attitudinal responses in Likert-type measures are averaged together. There was a generally favorable level of satisfaction with both the agreement and partners. The overall mean of the sum for both satisfaction levels was 4.028 on a scale of 1 to 5, where “1” denotes “Not at all Satisfied” and “5” denotes “Extremely Satisfied.” Approximately 68% of respondents replied they were “Very Satisfied” or “Extremely Satisfied” with their partners, while 73% were “Very” or “Extremely Satisfied” with the agreement itself. We believe the high level of satisfaction among respondents was due to the fact that many of the low-satisfaction level alliances had already been terminated.

Net Commitment Level (COMMIT; H6) \(^{10}\) measures the number of services committed to by the partner minus the number of issues of concern with the partner. The coefficient sign is expected to be positive since a high service level committed to by the respondent's alliance partner would allay the concerns about the partner, leading to greater satisfaction with the partner and the alliance.

In particular, we asked respondents to list the services committed to by their partner in the alliance. The questionnaire also addressed specific service commitments, and respondents

\(^{10}\) Our use of the net commitment level is intended to measure the resulting level of relationship commitment after accounting for any problems or issues with the partner that is felt by the respondents. Similar operationalizations have been used by organization researchers to capture net effects (c. f. Aldrich 1976).
were instructed to note all the services that applied to their case. Services were categorized\(^{11}\) as either (a) *marketing services* (frequent flyer programs, reservation systems access, agent sales, handling and distributing pre-printed flight schedules, etc.); (b) *training services* (training of flight attendants, baggage handlers, ground operators, or any other airline employee); (c) *production services* (lounge access, baggage handling, greeting services, streamlined transfers, etc.); (d) *financial services* (investment, pro-rate agreements, block-seat arrangements, etc.); or (e) *scheduling services* (routing structure, flight schedules, fleet assignments). The average number of services provided by the alliance partner was 3.76, with a minimum of none and a maximum of eleven. Table 5 summarizes each of the service categories of commitments.

--- Insert Table 5 about here ---

We similarly surveyed respondents about the issues of concern about their partners. Even with the generally low level of expected opportunistic behavior, airlines continued to have concerns with regard to their partners. In an open-answer format, we asked respondents to let us know the issues that concerned them even after selecting a partner. Approximately 77% indicated they had at least one concern with their partner. We grouped the issues into categories following a similar process to that of categorizing the commitments made by partners. The categories for issues included the following five categories: (a) *product/service issues* (partner reliability, service quality, reputation/position of the partner in the industry); (b) *market and network access and size* (routes, capacity, and network concerns, as well as the partner’s degree

\(^{11}\) The responses were coded separately by the researchers and all initial inconsistencies between the two coders were resolved. Coder initial disagreement rates for both categorization tasks were less than 10%.
of complementary offering; (c) financial return (financial return on the commitments made to the alliance); (d) commitment to the agreement (e.g., concerns that the partner might not have a long-term, strategic focus for the alliance); and (e) cultural fit between organizations (concerns about differences in management culture between the partners). The average number of concerns about the alliance partner was 2.29, with a minimum of none and a maximum of seven. Table 6 summarizes the responses.

--- Insert Table 6 about here ---

The regressor, net commitment level, was then calculated as the difference between the number of committed services received from the partner and the number of concerns about the partner. This variable has a mean of 0.90, with a minimum of −6 and a maximum of 9. A negative value on this measure indicates that the respondent had more issues about the partner than the number of commitments that were made to offset these issues. A positive number indicates the partner pledged a greater number of commitments to the respondent than there were issues regarding the partner. We are assuming that the greater the number of commitments made to override the issues, the more likely the respondent will feel enough investments have been made to counter the effects of the issues it may have with the partner.

Post-Contractual Opportunistic Behavior (PCOB; H7) is a composite score of Likert-type measures. We asked respondents about the likelihood and the ease with which a partner would either acquire, learn, or copy the knowledge and expertise of the respondent’s firm. Two rating scales were used, each containing two items. The first scale ranged from 1 = “Not at all Likely” to 5 = “Extremely Likely.” The second ranged from 1 = “Not at all Easy” to 5 = “Extremely Easy.” The responses were fairly low with the entrants’ average at 2.60 and the
hosts’ average at 1.89 (entrant correlation=.75; host correlation=.63). We expect the variable’s coefficient sign to be negative.

*Partner Search* (SEARCH; H8) is a single measure ranging from 1 to 5, with 1 indicating "None to a Very Low Extent" and 5 indicating "To a Very High Extent." Airlines appear to expend considerable effort in locating the “right” partner, with an average effort level of 3.694. It is interesting to note that 90% of respondents felt they did find the right partner. The sign of the coefficient is expected to be positive.

Two additional models predicting success were estimated. The first model includes all the variables listed above along with two of the variables from the archival data: *Opportunism* (OPPORT) and *Asset Specificity* (SPECIFIC). The two variables were included to provide objective data of some of the TCA concepts. Of course, we predict that OPPORT will have a negative effect on the level of success of the alliance. On the other hand, SPECIFIC is expected to have a positive effect on alliance success. This is counterintuitive given that the variable was inversely related to the choice to form an alliance. Recall that the variable measures the level of presence that the airline already has in the target market. For instance, the airline may already have gates at two of the ten major airports in a specific country. In the choice to codeshare, the greater the number of airports that the entrant already flew into in a particular market, the less likely it was to enter into an alliance to gain access to more of the market. However, in the case where the airline has a relatively high level of market presence and has chosen to enter an alliance anyway, we predict that the alliance will have a greater level of success. This is due to the ability of the airline to monitor the assets it is putting at risk in entering the alliance (see Table 1).
Note that in this part of the analysis, *Specific Assets* is calculated for both the entrant and for the host partner. In many instances, code-sharing agreements are reciprocal in nature. That is, the partners agree to grant access to both markets involved in the alliance. So, in the case of our earlier example, not only does United gain access to the German market wherever Lufthansa flies, but Lufthansa also gains access to United’s domestic routes. The implication of the variable is that both airlines in the alliance are able to oversee the assets that may be at risk in the target market.

--- Insert Table 7 about here ---

Of the 50 usable surveys, fourteen were eliminated due to missing data for one or more of the data points required for the regression model, leaving 36 observations for the analysis. Table 7 includes descriptive statistics for each of the factors and Table 8 reports the regression results. The overall model was significant (F = 4.40; p = 0.0104). The coefficient of COMMIT was positive and significant at p = 0.0826 (t = 1.79). The coefficient for PCOB was non-significant (t = 0.76; p = 0.4540). The coefficient of SEARCH was positive and significant (t = 2.62; p = 0.0132). The coefficients of both COMMIT and SEARCH were in the directions predicted.

--- Insert Table 8 about here ---

Model B in Table 8 provides the results of including the two variables from the alliance formation analysis. As expected, the coefficient of OPPORT is negative and significant (t = -2.26, p = 0.0309) and that of SPECIFIC is positive and significant (t = 2.56, p = 0.0156). However, the variable COMMIT completely loses its significance while PCOB remains an
insignificant predictor. In Model C, we re-estimate Model B after removing the original PCOB measure. There is an overall positive effect on the model. The F-value increases from 4.40 (p = 0.0104) in Model A to 7.02 (p = 0.0004) in Model C. **Partner Search** retains its significance level, but more importantly we find that **Opportunism** (OPPORT) is negative and significant (t = -0.627, p = -2.26), while COMMIT is positive, as expected, and is significant (t = 2.21, p = 0.0342). As a consequence, Model C turns out to be the superior model in predicting success of an alliance. The next section summarizes and discusses the results from both the archival and the primary data analysis of the formation and success of code-sharing HDAs.

5. **Discussion of Empirical Results**

The findings from both the primary and the secondary analysis suggest that transaction cost analysis does provide a theoretical foundation for both the formation and success of horizontal distribution alliances. We found that HDAs can be used to help mitigate transaction costs when entering a new market. In addition, the results suggest that including commitments to overcome concerns with the partner as well as an extensive partner search can lead to greater levels of alliance success.

In particular, the archival results show that the probability of alliance formation is positively related to the size of a firm and to a lower level of market uncertainty. On the other hand, alliance formation is negatively related to 1) the unavailability of a partner who does not have ties that compete directly with an entrant (OPPORT); and 2) the level of presence already maintained by the entrant (asset specificity). These are all consistent with the theoretical predictions from transaction cost analysis. However, the model estimation suggests that the greater the level of bounded rationality held by a potential partner airline, the less likely an
entrant is to use an alliance. One plausible explanation is that an entrant airline must be wary of the potential partner’s market coverage (our measure of lack of bounded rationality), especially in the case where that coverage may be too extensive. While an airline in the host country with greater market coverage can be expected to have significant market knowledge, countervailing concerns the entrant might have about forming an alliance with the dominant firm in the host country could negate the value of this benefit. Put another way, it could very well be the case that entrant airlines see the vast coverage of a potential partner as more of an opportunistic threat than an opportunity.

The survey data results generally support our predictions of factors leading to alliance success. The level of partner search is critical for achieving success in the alliance, particularly since it is not obvious that competitors make the best partners, as witnessed by recent turmoil among airline partners (Tully, 1996). It is not surprising that a high level of search for the right partner is needed to help make the alliance a success. After all, much has been written with regard to finding the right partner (Bucklin and Sengupta, 1993; Harrigan, 1988; Saxton, 1997). Ohmae (1989) even likens the use of an alliance as akin to the phenomenon of marriage. Finding the right partner in an alliance, as in a marriage, takes a great deal of work, and the cost of taking this important task too lightly can be very high (Aviation Strategy, 1998).

The commitment level perceived by the alliance partners is also predictive of alliance success. Indeed, the number of commitments exacted from partners suggests that airlines entering code-sharing agreements are wary of their competitors as partners, even when a high level of partner search is conducted. So, while some experts may extol the strategy of collaborating with competitors and of making competitors one’s partners (Hamel, Doz, and Prahalad, 1989; Jennings, 1996), managers should be aware of the pitfalls of such an alliance.
A somewhat surprising result from the primary data analysis is the non-significant relationship between opportunistic behavior and alliance success in the original estimation (Model A in Table 8). Past research has shown that opportunistic behavior can have a dire effect on partnerships in channels of distribution (see Rindfleisch and Heide (1997) for a summary of research in this area). In the realm of horizontal distribution alliances in the airline industry, the degree of opportunistic behavior appears to be somewhat curtailed and little evidence for its effects can be found. Alternatively, the heavily regulated nature of the airline industry may naturally reduce the potential to take advantage of one's code-sharing alliance partner. If foreign ownership and cabotage were restricted, then even if a partner wanted to take advantage of the other side, it would be difficult to convert this advantage into profit.

Another alternative explanation is that not all the “bad” alliances were reported on, since the sample included few terminated alliances. While this could be the case, alliances are often entered into with very specific short-term goals so termination need not mean a failure for the firms (Hamel, 1991; Olk and Young, 1997). Thus, it is not clear that inclusion of more terminated alliances would increase the mean or variance of opportunistic behavior in the sample.

As a consequence, it is helpful to be able to include a more objective measure of opportunistic behavior. We do so in Models B and C (Table 8) in predicting success. We find in this analysis that opportunistic behavior did have a negative effect on alliance success. In addition, we find that the greater the level of specific assets invested in the market by the partners, the more likely the alliance will be a success. We conclude that this is due to the ability of the airlines to somewhat monitor and oversee the assets that are being invested as part of the alliance.
The overall results indicate a reasonable level of support for our TCA-based predictions. This is of particular interest because of the industry-specific constraint of limiting vertical integration in overseas airline operations. A horizontal distribution alliance may be the closest institutional analogue to vertical integration in this industry, but is clearly not the same option. It is thus revealing that factors usually associated with vertical integration have some applicability to the formation of a horizontal alliance.

6. Conclusions and Future Research Directions

The use of horizontal distribution alliances (HDAs) has become fairly common, particularly in certain industries where international entry or expansion can be very daunting due to high market entry costs or governmental regulations. This research controls for cross-industry variations by focusing on the airline industry and its increasing use of code-sharing alliances between firms. We use transaction cost predictors to model the formation and success of HDAs in foreign market activity in this industry.

We found that entrants view HDAs as an important mode of entry/expansion, and a viable alternative to vertical integration, when there are significant governmental constraints on vertical integration in the target country. HDAs are more likely to be formed when the entrant is large, when uncertainty about the target market is low, and when the available code-sharing partner is not prone to opportunistic behavior. These results are consistent with the predictions of transaction cost analysis. HDAs are also favored when the target country partner's expertise is not too great and when the entrant has relatively little previous market presence.

This research also investigates how horizontal distribution alliances are structured and managed to achieve success. Using primary data collected through an international industry
survey, entrants report higher levels of success as the net level of commitments by alliance partners increases and as the degree of search for the partner increases. An objective measure of post-contractual opportunistic behavior is better able to predict alliance success: the less intense are prior partner ties with the competition, the more likely is a successful alliance.

Future directions of the research could include a deeper investigation into the consequences of the alliance for both entrant and host. One issue of particular interest is the effect of such an alliance on the firm's image when another manufacturer is representing the entrant and is fulfilling the needs of the market. With the current emphasis on relationship marketing issues, it becomes important to ask how is it possible for the entrant to have a meaningful relationship with the consumers in the target market if someone else is servicing them.

Another area of interest is an investigation of how alliances can create positive value in the market, beyond just the minimization of costs (Zajac and Olsen, 1993). One way of researching this question is to look at the relationships among firms involved in managing an efficient consumer response (ECR) channel system as part of an integrated supply chain management (SCM) process. This requires an understanding of the management of both the transactions required in the channel and the relationships between channel partners (see, for example, Heide 1994).

Finally, another way to understand the use and success of horizontal distribution alliances is to see how they evolve over time. This could be done in various ways including observing a few particular firms from the beginning of negotiations through the ongoing implementation of their strategy. Alternatively, one could capture various firms at different stages of the evolution
of different alliances to better understand the evolutionary phases of an alliance (Jap and Ganesan, 2000; Zajac and D’Aunno, 1994; Zuckerman and D’Aunno, 1990).

Regardless of the method used, the findings here suggest the importance of transaction cost analysis factors in understanding of the use of and satisfaction with distribution alliances between firms at the same level of channel activity.
**TABLE 1**

**INSTITUTIONAL CHARACTERISTICS OF ORGANIZATIONAL FORMS IN THE AIRLINE INDUSTRY**

<table>
<thead>
<tr>
<th>Level of distribution</th>
<th>ARMS’-LENGTH (MARKET)</th>
<th>ALLIANCE</th>
<th>VERTICAL INTEGRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>US-based airline flies into authorized ports of entry in foreign market; no agreement with local carriers to enhance service.</td>
<td>Code sharing enables passenger “seamless travel” potentially committing to integrated scheduling, joint frequent traveler programs, preferential baggage handling, airline lounges, etc.</td>
<td>Limited in country of interest (restricted access to ports of entry) or legal constraints limit foreign ownership.</td>
<td></td>
</tr>
<tr>
<td><strong>Routing example:</strong></td>
<td><strong>Passenger’s final destination is Munich, Germany</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger flies from Chicago’s O’Hare airport to Frankfurt, Germany on a United Airlines flight. In order to continue to final destination, passenger must purchase another ticket from a different carrier to reach Munich.</td>
<td>Passenger flies from Chicago to Frankfurt on United. Transfers “seamlessly” to a Lufthansa airplane that is listed as a United flight to Munich.</td>
<td>This option may not be feasible either due to government restrictions (see above) or internal firm constraints. If VI has occurred, then the same airline is expected to carry the customer to the final destination.</td>
<td></td>
</tr>
</tbody>
</table>
| **Implications for service** | • Check-in process is separate for each airline.  
• Passengers must transfer own baggage  
• No transfer of frequent flyer mileage between airlines  
• No access to other airlines’ lounges  
• Gate management is done separately | • Check-in occurs once  
• Partner transfers baggage  
• Mileage credit is transferable and redeemable  
• Reciprocal lounge sharing  
• Partner (host) airline manages the interaction with customers at the gate | • Check-in occurs once  
• Entrant handles baggage  
• No need to transfer frequent flyer mileage between airlines  
• No access to other airlines’ lounges  
• Gate managed by own firm |
| **Level of Assets at Risk for Entrant** | None to low | High: Reputation, brand, network, passenger relationships depend upon the partner | Highest: Capital equipment, reputation, brand, network, passenger relationships, personnel |
## TABLE 2

**LIKELIHOOD OF HORIZONTAL DISTRIBUTION ALLIANCE FORMATION: UNDERLYING FACTORS**

<table>
<thead>
<tr>
<th>HYPOTHESIS</th>
<th>FACTOR</th>
<th>DEFINITION</th>
<th>EXPECTED SIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Entrant's Passenger Assets</td>
<td>Sum of two ratios. The first is the ratio of passengers carried (000’s) by entrant airline in the domestic market. The second is the ratio of the number of frequent flyer members (000’s) versus the total frequent flyer members for all major US carriers.</td>
<td>Positive</td>
</tr>
<tr>
<td>H2</td>
<td>Market Uncertainty Reduction</td>
<td>=1 if bilateral agreement in place between entrant airline’s home country and host country; =0 otherwise</td>
<td>Positive</td>
</tr>
<tr>
<td>H3</td>
<td>Opportunism</td>
<td>=0 if codeshare partner or most likely partner does not have an existing codeshare alliance with another US airline; =1 otherwise</td>
<td>Negative</td>
</tr>
<tr>
<td>H4</td>
<td>Bounded Rationality</td>
<td>The percentage of passengers carried by codeshare partner or most likely partner in the target market.</td>
<td>Positive</td>
</tr>
<tr>
<td>H5</td>
<td>Entrant's Specific Assets</td>
<td>Ratio of {number of airports entrant airline flies to in the target market} to {total number of major airports in the target market}</td>
<td>Negative</td>
</tr>
<tr>
<td>Control</td>
<td>Partner's Net Profit</td>
<td>Profits measured in US dollars</td>
<td>Positive</td>
</tr>
<tr>
<td>Control</td>
<td>Partner's Passenger Load</td>
<td>Partner's passenger capacity load; the measure ranges from 0 to 1</td>
<td>Negative</td>
</tr>
<tr>
<td>HYPOTHESIS/FACTOR</td>
<td>MODEL I Coefficient (t-statistic)</td>
<td>MODEL II Coefficient (t-statistic)</td>
<td>MODEL III Coefficient (t-statistic)</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------------</td>
<td>----------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Intercept</td>
<td>-0.405 (-0.35)</td>
<td>-0.533 (-0.15)</td>
<td>16.117 (2.46**)</td>
</tr>
<tr>
<td>H1 (ASSETS) Ent. Pass. Assets</td>
<td>6.498 (2.41**)</td>
<td>6.416 (2.18**)</td>
<td>7.660 (1.82*)</td>
</tr>
<tr>
<td>H2 (LOWUNCRT) Market Uncertainty Reduction</td>
<td>1.591 (2.00**)</td>
<td>2.776 (2.321**)</td>
<td></td>
</tr>
<tr>
<td>H3 (OPPORT) Prior Partner Ties</td>
<td>-1.309 (-2.56**)</td>
<td>-1.397 (-2.50**)</td>
<td>-2.384 (-2.58**)</td>
</tr>
<tr>
<td>H4 (EXPERT) Bounded Rationality</td>
<td>-3.369 (-3.85***</td>
<td>-2.812 (-3.91***</td>
<td>-5.899 (-3.454***)</td>
</tr>
<tr>
<td>H5 (SPECIFIC) Ent. Specific Assets</td>
<td>-2.910 (-4.37***)</td>
<td>-3.354 (-4.20***)</td>
<td>-5.215 (-2.28**)</td>
</tr>
<tr>
<td>(PROFIT) Partner's Net Profit</td>
<td>0.003 (1.99**)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(LOAD) Partner's Passenger Load</td>
<td>-0.019 (-0.42)</td>
<td>-0.201 (-2.276**)</td>
<td></td>
</tr>
<tr>
<td>OBS</td>
<td>161</td>
<td>137</td>
<td>94</td>
</tr>
<tr>
<td>Codeshares</td>
<td>29%</td>
<td>28%</td>
<td>27%</td>
</tr>
<tr>
<td>-2 LL</td>
<td>134.17***</td>
<td>114.13***</td>
<td>63.69***</td>
</tr>
<tr>
<td>chi-square</td>
<td>58.47***</td>
<td>47.65***</td>
<td>45.20***</td>
</tr>
</tbody>
</table>

***p<.01
**  p<.05
*  p<.10
### TABLE 4
SUMMARY OF RESPONDENTS

<table>
<thead>
<tr>
<th>RESPONDENT TYPE</th>
<th>TYPE OF CARRIER</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing (Entrant)</td>
<td>32</td>
<td>64.0</td>
<td></td>
</tr>
<tr>
<td>Operating (Host)</td>
<td>18</td>
<td>36.0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SIZE</th>
<th>PASSENGERS (000’s)</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5,000</td>
<td>16</td>
<td>32.0</td>
<td></td>
</tr>
<tr>
<td>5,001 – 15,000</td>
<td>10</td>
<td>20.0</td>
<td></td>
</tr>
<tr>
<td>15,000 – 55,000</td>
<td>9</td>
<td>18.0</td>
<td></td>
</tr>
<tr>
<td>&gt; 55,000</td>
<td>15</td>
<td>30.0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARKETS INVOLVED IN THE AGREEMENTS</th>
<th>MARKET</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe (incl. Nordic countries)</td>
<td>18</td>
<td>36.0</td>
<td></td>
</tr>
<tr>
<td>Africa and Arab-Gulf Region</td>
<td>8</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td>South America</td>
<td>2</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>North America (inc. Caribbean)</td>
<td>12</td>
<td>24.0</td>
<td></td>
</tr>
<tr>
<td>Pacific Rim (Asia &amp; S. Pacific)</td>
<td>12</td>
<td>24.0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Average Length of the Agreements:** Three (3) years

*Average Number of International Code-sharing Alliances in which Respondents are Involved:* Seven (7)

*Source: Airline Business, June 1996.*
### TABLE 5
SERVICES COMMITTED TO BY PARTNER

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing Services</td>
<td>42/50</td>
<td>84.0</td>
</tr>
<tr>
<td>Training Services</td>
<td>32/50</td>
<td>64.0</td>
</tr>
<tr>
<td>Production Services</td>
<td>26/50</td>
<td>52.0</td>
</tr>
<tr>
<td>Financial Services</td>
<td>22/50</td>
<td>44.0</td>
</tr>
<tr>
<td>Scheduling Services</td>
<td>6/50</td>
<td>12.0</td>
</tr>
</tbody>
</table>

*Note:* Respondents were able to list or check more than one category.
### TABLE 6

**FREQUENCY OF ISSUES OF CONCERN RESPONDENTS HAD WITH THEIR PARTNERS**

<table>
<thead>
<tr>
<th>ISSUE CATEGORY</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product/Service</td>
<td>25/47</td>
<td>53.0</td>
</tr>
<tr>
<td>Market/Network</td>
<td>19/47</td>
<td>40.0</td>
</tr>
<tr>
<td>Financial Return</td>
<td>13/47</td>
<td>28.0</td>
</tr>
<tr>
<td>Commitment</td>
<td>10/47</td>
<td>21.0</td>
</tr>
<tr>
<td>Cultural Fit</td>
<td>6/47</td>
<td>13.0</td>
</tr>
</tbody>
</table>

*Note:* Respondents were able to list multiple issues.
<table>
<thead>
<tr>
<th>FACTOR</th>
<th>MEAN*</th>
<th>VARIANCE</th>
<th>STANDARD DEVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commitment Level (COMMIT)</td>
<td>0.917</td>
<td>7.850</td>
<td>2.802</td>
</tr>
<tr>
<td>Opportunistic Behavior (PCOB)</td>
<td>2.297</td>
<td>0.937</td>
<td>0.968</td>
</tr>
<tr>
<td>Partner Search (SEARCH)</td>
<td>3.694</td>
<td>1.018</td>
<td>1.009</td>
</tr>
<tr>
<td>Opportunism (OPPORT)</td>
<td>33%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Presence (MKTPRES)</td>
<td>0.238</td>
<td>0.035</td>
<td>0.187</td>
</tr>
<tr>
<td>Alliance Success (SUCCESS)</td>
<td>4.028</td>
<td>0.914</td>
<td>0.956</td>
</tr>
</tbody>
</table>

*The percentage of instances where a partner or potential partner is allied with a competing carrier from the US is reported.
TABLE 8
PREDICTORS OF HDA SUCCESS: RESULTS OF REGRESSION ANALYSIS

<table>
<thead>
<tr>
<th>HYPOTHESIS/FACTOR</th>
<th>Model A Coefficient (t-statistic)</th>
<th>Model B Coefficient (t-statistic)</th>
<th>Model C Coefficient (t-statistic)</th>
<th>EXPECTED SIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>2.330 (4.00***))</td>
<td>1.923 (3.63***))</td>
<td>2.138 (4.22***))</td>
<td>NA</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.092 (1.79*)</td>
<td>0.075 (1.67)</td>
<td>0.098 (2.21**)</td>
<td>Positive</td>
</tr>
<tr>
<td>COMMIT</td>
<td>0.112 (1.79*)</td>
<td>0.137</td>
<td></td>
<td>Negative</td>
</tr>
<tr>
<td>H7</td>
<td>0.76 (0.97)</td>
<td>0.434</td>
<td>0.434</td>
<td>Positive</td>
</tr>
<tr>
<td>PCOB</td>
<td>0.369 (2.62***))</td>
<td>0.434</td>
<td></td>
<td>Positive</td>
</tr>
<tr>
<td>H8</td>
<td>-0.627 (-2.26**)</td>
<td>-0.491</td>
<td></td>
<td>Negative</td>
</tr>
<tr>
<td>SPECIFIC</td>
<td>1.298 (2.56**)</td>
<td>1.342</td>
<td></td>
<td>Positive</td>
</tr>
<tr>
<td>OBS</td>
<td>36</td>
<td>35</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>F-value</td>
<td>4.40**</td>
<td>6.33***</td>
<td>7.02***</td>
<td></td>
</tr>
<tr>
<td>Adj. R^2</td>
<td>0.22</td>
<td>0.43</td>
<td>0.40</td>
<td></td>
</tr>
</tbody>
</table>

***p<.01; **p<.05; *p<.10
APPENDIX

QUESTIONS USED IN PRIMARY DATA ANALYSIS
(Note: In the airline industry, the Marketing Carrier is generally considered to be the Entrant Partner while the Operating Carrier is the Host Partner)

Success Measures (SUCCESS)
(Scaled with anchors from 1=Not at all Satisfied to 5=Extremely Satisfied)

If the agreement is still in place, please indicate your company’s satisfaction level with the marketing carrier {substituted operating carrier for the Entrant}.

If the agreement is still in place, please indicate your company’s satisfaction level with the code-sharing agreement in general.

Post Contractual Opportunistic Behavior Measures (PCOB)

Operating Carrier Measures
(Scaled with anchors from 1=Not at all Likely to 5=Extremely Likely)

The marketing carrier will acquire your company’s market expertise
The marketing carrier will copy your company’s market expertise

Marketing Carrier Measures
(Scaled with anchors from 1=Not at all Easy to 5=Extremely Easy)

How easy did your company think it would be for the operating carrier to learn about your company’s service technology or marketing strategy?
How easy did your company think it would be for the operating carrier to copy your company’s service technology or marketing strategy?

Partner Search Measures (SEARCH)
(Scaled with anchors from 1=None to a Very Low Extent to 5=To a Very High Extent)

Operating Carrier
To what extent did your company seek marketing carriers that offered flights that would complement your company’s line of offerings?

Marketing Carrier
To what extent did your company seek an operating carrier that offered services that complemented your company’s service?

Net Commitment Level (COMMIT) was measured by subtracting issues that the carriers identified in an open answer format from a list of commitments that were reported to be provided by the partner.
REFERENCES


*Official Airline Guides (OAG)*. February and August, 1996; Reed Travel Group: Oakbrook, IL.


