To Love and Win: Examining the Survivability of Non-Equity Global Alliances

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The prevailing hypothesis of this work is that the more linked two members of an alliance are, the stronger the alliance and therefore, the more likely the alliance will remain in place. By applying hazard modeling to longitudinal data, results suggest an inverted "U" relationship in that a higher level of "ties" between the partners leads to longer-lived alliances; however, too many ties actually deter the longevity of the alliance. In addition, the effects of operational efficiencies and culture are tested on survivability of these cross-border alliances; findings suggest that culture and operations do matter, but in select ways.

INTRODUCTION

Considerable attention has been devoted to developing and managing strategic partnerships and alliances by both academics and practitioners (Doz and Hamel 1998). These inter-firm arrangements are particularly lauded for revenues increased, efficiencies gained and knowledge learned from partners (Emden, Yaprak, and Cavusgil 2005; Qiu 2010). For example, Glaxo and Roche Pharmaceuticals entered their alliance in 1983 to promote Glaxo's launch of Zantac® in the US (Rapoport, 1983). After an initial three years, the agreement was extended for another three years and then extended indefinitely. By 1994, Zantac® US sales were over US$2 Billion, representing about 50% of Glaxo's 1994 total US sales (Durman, 1997). While this example is one that depicts a success story, not all alliances survive. Therefore, the primary research question for this article is: Under what conditions will an alliance, once entered, continue to reap benefits for the partners and endure over time?

From an examination of the extant literature in the strategy/channel domain, a prevailing hypothesis found was that the greater the level of *exchange structure* (e.g., the greater the number of transactions or ties) between two members of an alliance, the more likely the alliance will persist (Xia 2010). However, with few exceptions, this phenomenon has primarily been tested on a cross-sectional basis. The intent of this research is to test the same relationship on a *longitudinal* basis. Multiple years' worth of data are tested to determine whether or not an alliance endures for the long term. The dataset includes approximately 450-500 agreements from the top 200 airlines for each of the six years documented. In addition, we examine the effects of operating performance and cultural influences of alliance partners, as quite often, alliances are entered to access overseas markets (Mehta, Polsa, Mazur, Xiucheng, and Dubinsky, 2006).

In learning more about the survivability of alliances, this research will contribute to key areas of the international marketing strategy literature. First, few studies have undertaken longitudinal analyses to fully understand the effects of relationship factors over time. This study proposes to fill some of that gap. Secondly, studying the operating and cultural influences of the partners may help alliance members understand how to structure an agreement to better manage their cross-cultural partnership.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The channels management and alliances literatures are rich with empirical research on forming alliances; however, very few examine the consequences of certain structures. In particular, many studies have focused on *partner dependence* to understand the performance of the relationship (Gulati and Sytch 2007). Most findings suggest that some level of dependency is necessary for exchange to result between two or more parties (Anderson and Narus 1990; Levine and White 1961). However, the level of dependence of one partner on another can rise to such a level that it may cause the relationship to falter (Emerson 1962; Gulati and Sytch 2007; Kumar, Scheer, and Steenkamp 1995). For example, Kumar, et al. (1995) found that increases in the level of *total interdependence* (i.e., the entirety of dependence between two firms) tend to result in more trusting and committed relationships. In addition, they were able to show that increases in *interdependence asymmetry* (i.e., the inequality between the levels of dependence of each partner on the other) results in more conflict-laden relationships, potentially leading to complete failure. While these findings are enlightening, their study did not examine the dynamics of the relationship by measuring the survivability of the agreement over time.

Therefore, the primary objective of this research is to empirically test the effect of *exchange structure* as evidenced by interorganizational dependence to determine the impact on survivability of an alliance. The extant literature on alliances and other partnerships has largely suggested that the greater the level of dependence between partners, the more likely the partnership will endure (Cannon and Perrault 1999; Xia 2010). As such, the dependent variable in this research will be "alliance survival" and the primary predictor variable will be exchange structure (measured by the level of alliance integration) between the partners.

A more recent study that does examine the survival of alliances is that of Xia (2010). In his study on alliance survivability, Xia uses resource dependence theory to predict whether or not alliances will endure. The primary measures used include *mutual trade dependency* as well as repeated ties to examine whether these can predict survivability. While his findings support the main ideas of resource dependence, they do so with a data set that includes only equity-based alliances. In this study, the level of equity between partners is controlled in order to study the effects of dependency beyond those of direct monetary investment. From this discussion, the first hypothesis is as follows:

> *H1: The greater the level of exchange between partners, the longer the alliance will survive.*

The second objective is to examine the moderating effects of *culture* and *operating performance* on the survivability of an alliance. Understanding the level of operating performance of the partners is a critical component in managing the alliance for the long run. As the literature suggests, the greater the operating performance of the alliance members, the greater the likelihood that the alliance will survive:

> *H2: The higher the level of partner operating performance, the more likely the moderating effect on exchange structure's impact on the survivability of the alliance.*

Given that many of these agreements are entered into in order to gain access to overseas markets, it is imperative to understand the impact of culture on cross-border agreements (Mehta, Polsa, Mazur, Xiucheng, and Dubinsky, 2006). Following the findings in the extant literature (Lee, Bang, Ha, Lee, and

Kim 2011), H3 is developed. This hypothesis predicts that alliances will endure longer when partners are from similar versus dissimilar cultures (Mittal, 2010).

> *H3: The cultural similarity between partners will positively moderate the effect of exchange structure on the survivability of the alliance.*

Importantly, both of these predictive factors will be tested in relationships while controlling for equity investment between the partners.

METHODOLOGY

While some researchers may include various industries in their studies (Xia 2010), this research focused efforts on a single industry in order to control for industry specific characteristics. The study was therefore conducted in the global airline industry. The primary reason for choosing to study this industry is 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 international markets while avoiding large capital outlays (Gallacher 1994; Field 2005). 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; that is, the airline that actually flies the airplane (Gellman Research Associates 1994). Given the current financial hardships many airlines have been experiencing, the practice is still common in the industry (Kalligiannis, Iatrou, and Mason 2006; Dunn 2010).

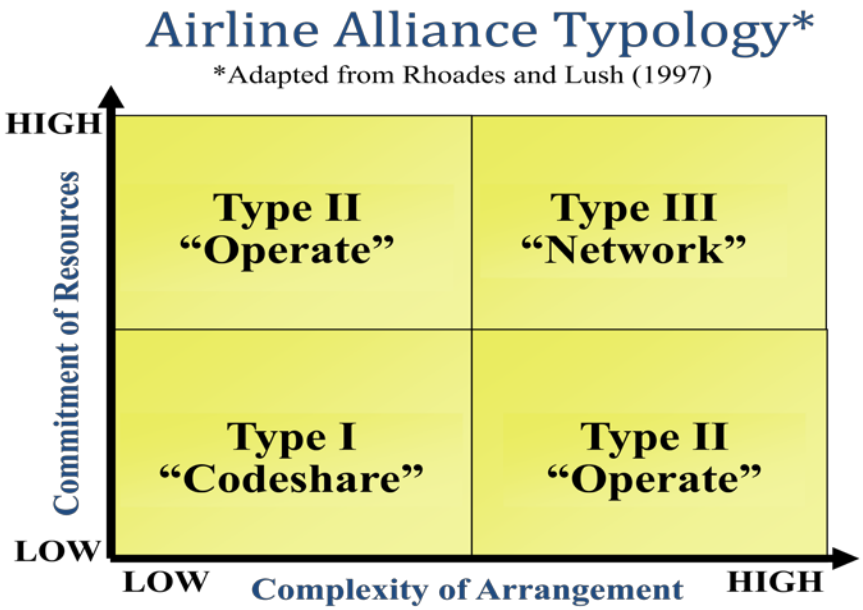
The archival data were purchased from *Reed Air Transport Intelligence* (now Flightglobal.com). The data include descriptions of airline alliances and code-sharing agreements, routes, equity positions, and financial results. In addition, the data are longitudinal in nature and cover the years from 2000 – 2005. The data focus on the top 200 airlines as ranked by traffic reports. There are approximately 450-500 agreements from the top 200 airlines for each of the years documented. All agreements for those airlines are part of the data except for agreements solely made for interline, frequent-flyer and non-flying arrangements. Since the archival data were not gathered for the specific purpose of this research, the data were coded for instances of alliances as well as to include any missing information via other public sources (see Appendix A for the coding glossary).

Given the primary purpose of this research was to understand the longitudinal effects on alliance longevity, the analytical tool used is *survival analysis* by applying proportional hazard modeling. Therefore, the dependent variable of interest is whether or not the alliance fails within the period of study. The focal independent variable is the level of *exchange structure* as measured by the level of agreement. Below are the three levels specified for exchange structure as based on categorizations found in the literature (Rhodes and Lush 1997) and graphically shown in Figure 1 below:

Where:

1. "Codeshare", Type I alliances are at the 'low" level;
2. "Operate", Type II agreements are coded as "medium" level; and,
3. If airline partners are in the same airline network (e.g, oneworld, Star, etc.) then they are categorized at the "Network" or high level of exchange (Type III).

FIGURE 1



Performance is measured by deriving an efficiency measure (RPK in Appendix A). RPK is the average Revenue per Passenger Kilometer for the two alliance members. In addition, another variable—airline size (sum of number of passengers)—was applied as it served as a proxy for another measure of operational performance given the highly capitalized nature of the industry and that scale economies tend to be a huge factor in performance. *Geo-Culture* was determined by the region where the airlines predominantly operate/are headquartered and is coded according to three levels of cultural exchange:

1. Alliance between a Western (e.g., Americas) airline and an Eastern (e.g. Asia Pacific) airline;
2. Alliance between two Western airlines;
3. Alliance between two Eastern airlines.

The analysis controlled for *equity* position as this allowed the research to focus on the key questions in the study. The full model to be tested is shown in Figure 2, below:

Results

Given that proportional hazard modeling was applied to the data, the results shown are for the "propensity to fail." Therefore, a positive sign on the beta coefficients suggests greater likelihood of failure, whereas a negative sign means a lesser likelihood of failure. The overall modes demonstrate significant chi-squared results; all are at the $p<.001$ significance level suggesting very good fit of the data. The effects of the Alliance Exchange Structure are shown in the base model (Model 1 in Table 1). Support is shown for H1. Namely, that in comparison to a low level of exchange (Type I), a medium level (Type II) has a significantly lower propensity of failure (-0.70; $p<.001$) and therefore more likely to survive. A high level of exchange (Type III) also had a lower propensity of failure than a low level of exchange (-0.576; $p<.001$) and therefore more likely to survive over the defined timeframe.

FIGURE 2
PREDICTING ALLIANCE SURVIVAL

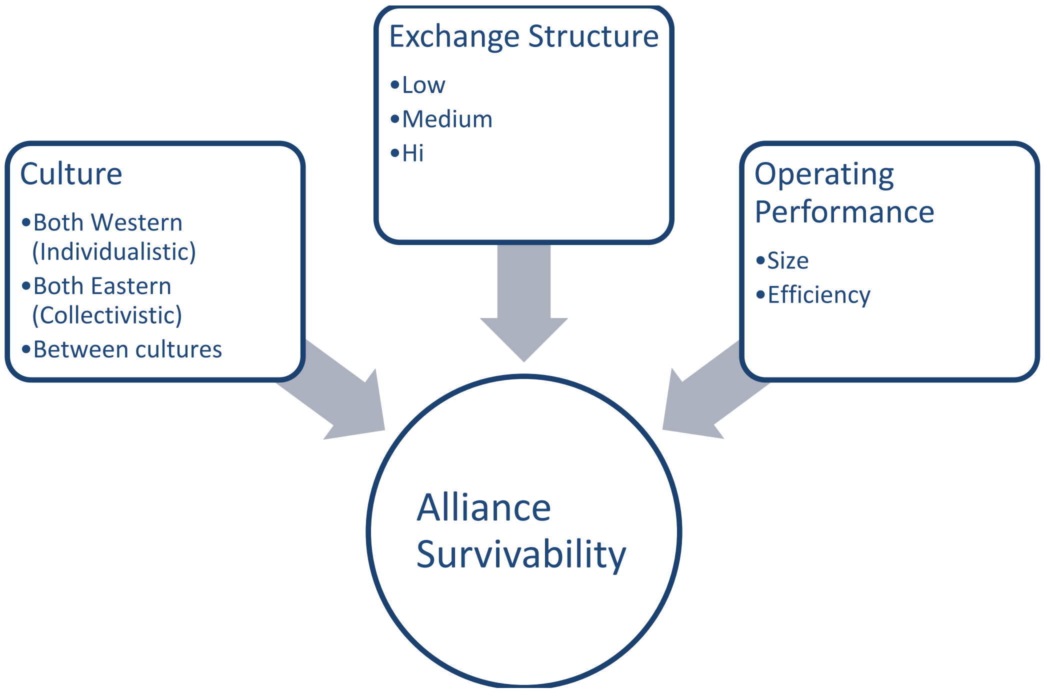


TABLE 1
MODEL RESULTS

Variables	Model 1: Base Model	Model 2: Operating Performance & Control for Equity	Model 3: Full Model with Cultural Variables	Hazard Ratios (Significant Variables)
Alliance Exchange Structure				
Low (Codeshare; Type I)	Reference	Reference	Reference	
Medium (Operate; Type II)	-0.70 ***	-0.78 ***	-0.71 ***	.494/.506
High (Same Network; Type III)	-0.576 ***	-0.37 **	-0.39 **	.637/.363
Operating Performance				
Size (Sum of Passengers)		0.012*	0.009 †	1.00/--
Efficiency (Average RPK)		-0.144 **	-0.13 **	.889/.11
Geo-culture				
Between Western-Eastern			Reference	
Within Western			0.08	N/A
Within Eastern			-0.30 **	.863/.137
Control				
Equity (Ownership)		-0.47	-0.48	N/A
Model Chi-Square	61.9 ***	67.4 ***	78.1***	

†p<0.1; *p<.05; **p<.01; ***p<.001

In Model 2, the Operating Performance variables are introduced to the model and equity is controlled for as an explanatory variable. Partial support is shown for H2 in that greater efficiency does mean lower chance of failure (-0.144; p<01). However, the size of the alliance results in the opposite direction: rather than the bigger size of the alliance helping with survival, the bigger size actually suggests a greater propensity for the alliance to fail (0.012; $p<.05$). Finally, introducing equity ownership as a control factor does not have any significant effect on the failure of the alliance.

The effect of geography/culture is introduced in Model 3 of Table 1. Alliances between two Western airlines have about the same likelihood of failure (0.08; non-significant) as those between a Western airline and an Eastern airline. However, alliances between two Eastern airlines have a lower chance of failure than airlines in a Western-Eastern alliance (-.30; $p<.01$). All other variables in the model remain consistent and stable except for Size; the coefficient becomes less significant by dropping to .009; $p<.10$). Nevertheless, the overall model remains significant at the $p<.001$ level.

CONCLUSIONS AND IMPLICATIONS OF THE RESULTS

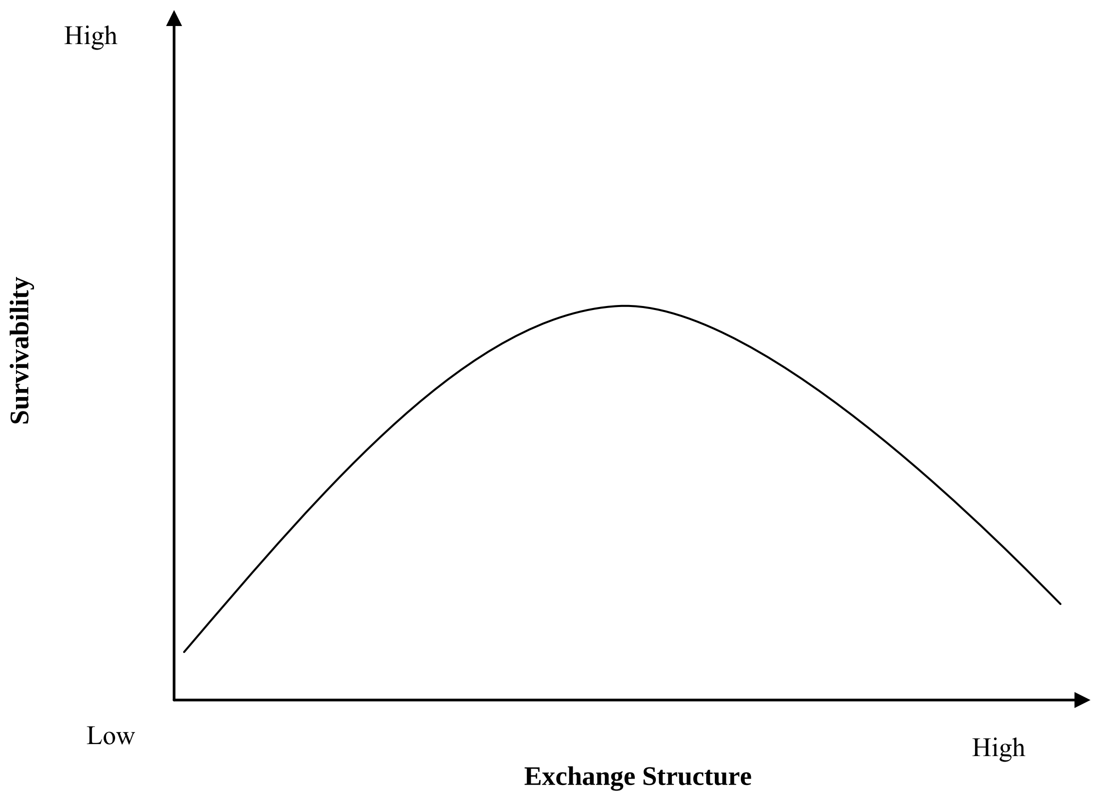
To understand the effects of the results, the authors derive Hazard Ratios from the analysis for only the significant variables. These are provided in the last column of Table 1. Again, given that hazard modeling predicts failure, the Hazard Ratios are for the probability of failure when equity is controlled for. Interpreting the results to determine survival requires the difference of the hazard ratio from 100% likelihood of failure. These are provided in addition to the hazard (i.e., failure/survival).

For example, the first significant variable, Medium (Type II) Exchange Structure has a hazard of .494 and the survival is .506, suggesting a Type II alliance has a 50% greater chance of survival than does a Low (Type I) Alliance Exchange Structure. Likewise, alliances with a High (Type III) Exchange Structure have a hazard of .637 and a survival rate of .363, suggesting Type III alliances have a 36% greater chance of survival than do Type I alliances. Since the ratios are normalized, the interpretation can then be that Type II alliances are likely to survive longer than Type III alliances. Therefore, higher levels of relationship commitment and complexity may not guarantee an enduring alliance. The results suggest that a moderate level of resource commitment as well as a moderate level of agreement complexity may be enough to secure a longer-lived alliance. A representation of the inverted "U" shape is provided in Figure 3.

As far as operational performance is concerned, larger alliances (as measured by sum of passengers between the two alliances) have almost a sure chance of failure than do alliances with a smaller number of passengers. This is quite concerning for airlines as their financial structure is such that economies of scale are highly sought after; yet, it seems that the larger scale of the alliance may be too overwhelming for the airlines to manage. Rather than overall size, airlines should seek to reap the benefits from efficiencies gained via combined revenue with the partners. The results suggest that alliances exhibiting greater efficiencies (as measured by average revenue per passenger kilometer) have an 11% greater chance of survival.

Finally, the effects of geo-cultural influences suggest that alliances between two Eastern/ Collectivistic airlines have a 14% greater chance of survival when compared to alliances between Western/Individualistic and Eastern/Collectivistic airlines. Alliances between similar, Western/ Individualistic cultures fare no better than those between dissimilar cultures.

FIGURE 3:
INTERPRETATION OF ALLIANCE SURVIVAL RESULTS



CONTRIBUTIONS AND LIMITATIONS OF THE RESEARCH AND FUTURE EXTENSIONS

The results from the research contribute in two primary ways: First, the research provides a richer understanding of the factors that lead to alliance survival by examining the dynamic effects of relationships on a longitudinal basis. This is a key contribution in that many studies have been able to generate results with cross-sectional data but few have done so with longitudinal data. Of those that have completed survivability studies, almost none have done so by examining relationships that control for the level of equity between partners. Given that so many alliances are formed without ownership positions, it is imperative to understand which theoretical factors maintain their level of predictability. Second, without equity positions to grant legitimate authority in an alliance, it is important to understand how operating performance and cultural similarities and differences affect the survivability of alliances. This greater understanding aids alliance members in managing their partnerships for the long term.

Limitations include two primary concerns: single-industry study and lack of full understanding of termination reasons. The single-industry focus of the study does allow the research to control for many extraneous factors that may affect the survivability of the alliances; however, it also does not allow for greater generalizability of the results beyond the airline industry. Future research should attempt to gather data from other industries to allow for the cross-comparison. For example, research in the pharmaceutical industry along the same dimensions could prove very fruitful to determine if the findings do extend to a very different industry.

The limitation of not knowing the termination reason for those alliances that did fail does not allow the researchers to fully explain these failures. In other words, the assumption is made that the alliance simply fails. However, it could very well be the case that the "failure" was deliberate in that the alliance partners may have decided to merge or be acquired by another airline. In the data, the alliance no longer exists and therefore "fails." But the reasons are much richer than this. Acquiring more data to fully understand "failure" and to revisit the effects of the variables would provide a richer conversation about the factors that may or may not contribute to alliance failure.

REFERENCES

Anderson, J C. and Narus, J. A. (1990), "A Model of Distributor Firm and Manufacturer Firm Working Partnerships," *Journal of Marketing,* 54 (January), 42-58.

Cannon, J. P. and Perreault, Jr. W. D. (1999), "Buyer-Seller Relationships in Business Markets," *Journal of Marketing Research*, 26 (November), 439-460.

Doz, Y. L. and Hamel, G. (1998), *Alliance Advantage: The Art of Creating Value through Partnering*, Boston, MA: Harvard Business School Press.

Dunn, G. (2010), "Sky-Team Members Could top 20 by 2012: Chairman," *Air Transport Intelligence News*, http://www.flightglobal.com/articles/2010/11/05/349380/skyteam-members-could-top-20-by-2012-chairman.html, 05/11/2010.

Durman, P. (1997), 'End of Zantac era is a bitter pill for Glaxo,' *The Times,* 10 July 1997 [On-line: LEXIS®-NEXIS® Academic Universe – Document].

Emden, Z., Yaprak, A. and Cavusgil, S. T. (2005), "Learning from Experience in International Alliances: Antecedents and Firm Performance Implications, *Journal of Business Research,* 58, 883-892.

Emerson, R. M. (1962), "Power-Dependence Relations," *American Sociological Review,* 27 (February) 31-43.

Field, D. (2005), "Airline Alliance Analysis: Collective Gains," *Airline Business*, http://www.airlinebusiness.com/Articles/ArticleID=201030, 08/22/2005.

Gallacher, J. (1994). Tagging Along. *Airline Business*, 10 (7), 25-37, 40-42.

Gellman Research Associates, Incorporated (1994). *A Study of International Airline Code Sharing*. Prepared for: Office of Aviation and International Economics, Office of the Secretary of Transportation, U. S. Department of Transportation.

Gulati, R. and Stych, M. (2007), "Dependence Asymmetry and Joint Dependence in Interorganizational Relationships: Effects of Embeddedness on a Manufacturer's Performance in Procurement Relationships," *Administrative Science Quarterly*, 52: 32-69.

Kalligiannis, K., Iatrou, K. and Mason, K. (2006), "How Do Airlines Perceive That Strategic Alliances Affect Their Individual Branding?" *Journal of Air Transportation, 11* (2), 3-21.

Kumar, N., Scheer, L.K. and Steenkamp, J.B.E.M. (1995), "The Effects of Perceived Interdependence on Dealer Attitudes," *Journal of Marketing Research,* 22 (August), 348-356.

Lee, C.A., Bang, H.Y., Ha, J.W., Lee, J.Y., Kim, Y.H.Y. (2011), “An analysis of cultural impact of international business performance via foreign market entry mode: Case of South Korea MNCs”,‖ *Journal of Management and Marketing Research*, Vol. 7.

Levine, S. and White, P. E. (1961), “Exchange as a Conceptual Framework for the Study of Interorganizational Relationships,” *Administrative Science Quarterly,* Vol. 5, 583-601.

Mehta, R., Polsa, P., Mazur, J., Xiucheng, F. and Dubinsky, A. J. (2006), “Strategic Alliances in International Distribution Channels,” *Journal of Business Research,* 59, 1094-1104.

Mittal, R. (2010), “Cultural congruence in cross-border alliances: A multi-level perspective,” *International Journal of Business Research*, Vol. 10 No. 3, pp. 54-69.

Power, S. (2003, April 10). American Air-British Airways Code Sharing Moves Forward. *Wall Street Journal*, p. D5.

Qiu, L. D. (2010), **“**Cross-border Mergers and Strategic Alliances,” *European Economic Review* 54, (6), 818-831.

Rapoport, C. (1983), ‘Glaxo wins vital U. S. go-ahead for sale of its anti-ulcer drug,’ *Financial Times (London),* 7 May 1983 [On-line: LEXIS®-NEXIS® Academic Universe – Document].

Rhodes, D. & Lush, H. (1997), “A Typology of Strategic Alliances in the Airline Industry: Propositions for Stability and Duration. *Journal of Air Transport Management, 3*(3), 109–114.

Xia, J. (2010), “Mutual Dependence, Partner Substitutability, and Repeated Partnership: The Survival of Cross-Border Alliances,” *Strategic Management Journal*, 32: 229-253.

APPENDIX A:

VARIABLE CODING GLOSSARY

IATA1: IATA airline code (2-digits)
AIRLINE1: Name of 1st airline
FLAG1: 1=Airline is a flag carrier (is >50% owned by domestic government); 0=otherwise
P1NET: Global alliance of 1st airline:

- 0=not networked
- 1=oneworld
- 2=Qualifier Group
- 3=Skyteam
- 4=Star Alliance
- 5=Wings

LOAD1: Average used capacity of 1st airline (% determined by dividing RPK by ASK, available seating kilometers in millions)
PSNGRS1: Number of passengers carried for 1st airline (in millions)
CNTRY1: Home country of the 1st airline
REG1: Global region of the 1st airline
RPK1: Revenue passenger kilometer (Passenger Traffic in millions)

The same set of variables is then coded for the partner airline. In addition, further information regarding the alliance was coded as follows:

ALLCODE:Unique code identifies the alliance
YRSTRT: Year alliance begins
CODESHR: 1=Codeshare (free-sell or free-sale) agreement and/or FFP agreement; can be reciprocal or comprehensive but not necessary;
0=Not
OPERATE: 1=Block-space (soft, hard or manual); pool agreement (insurance, parts or other); strategic alliance; joint marketing or commercial agreement; seat-swap;
0=Not
EQUITY: 1=Equity position is stated; joint venture; franchisee
0=Not