International Loose-Coupling Linkages in the Airline Industry

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Many airlines have recently been forming equity interlocks with airlines in different countries. In other cases, these linkages are non-equity in nature and emphasise joint-marketing programs. This study indicates that this technique is used primarily by already-large airlines, possibly to increase market dominance in anticipation of international airline deregulation.

The concept of loose coupling was initially popularised in Karl Weick's classic 1976 article, and has since become a key concept in organisation theory. As business organisations reach extremely large sizes and encounter (alleged) diseconomies of scale, the concept of loose coupling is regarded as a possible escape from the drawbacks of the large, mechanistic structure and associated problems of excessive rigidity.

The airline industry is one where recent structural changes provide an illustration of loose couplings in action. A large airline enjoys certain benefits in terms of market dominance, yet has difficulty coping with constantly-changing competitive forces in this era of airline deregulation. These forces have led airlines to experiment with innovative mechanisms of industry linkages.

For example, airline expansion through the use of associated commuter airlines is an innovative application of franchising. One of the pioneering examples of this was the relationship between USAir (formerly Allegheny Airlines) and various small commuter airlines. Commuter airlines would use Allegheny/USAir logos and flight number designators, and would benefit from increased traffic, as passengers connect to and from USAir flights. USAir benefited in that it could serve many small towns (or, at least, USAir appeared to serve many small towns) without tying up capital and management attention on a far flung commuter flight network. Many other airlines followed suit. Occasionally there have been equity or debt investments by the major airline in its associated airlines, though this appears not to be the normal practice. (See Malloy and Sarathy, 1986, for a review of the topic).

In the last few years, a variation on this theme has arisen - the formation of links among airlines of roughly equal size in different countries. In some cases the linkage takes the form of a mere joint marketing agreement; more frequently, the linkage involves minority stockholdings - sometimes reciprocal, sometimes not. It is these forms of interorganisational linkage that are the primary focus of this study. (Joint ownership of computer information systems for travel agents is another interesting joint endeavour, but is beyond the scope of this examination).

The reasons for these transnational linkages are not entirely clear. The most likely explanation would be that traffic can be increased if each airline in such a linkage acts as a feeder to the other, and equity holdings are a way of institutionalising a joint marketing agreement. But at least one recent combination (Ansett Australian and America West) involves two domestic airlines, in different countries, whose routes aren't even adjacent (Martindale, 1989).

US airlines may see minority stockholdings by a friendly outsider to be protection against a hostile takeover. Or, airlines may believe their market dominance can be increased by such linkages; the fact that KLM (Netherlands) and Scandinavian Airlines are major players in these linkages suggests that they want to increase their sizes in order to compete more effectively against the flag carriers of larger countries in Europe. (A 'flag carrier' is a country's major international airline, and usually has some formal relationship to that country's government. The US is one of the few countries without any flag carrier.) For example, KLM's status as flag carrier of the Netherlands may not count for much is the Common Market continues to deregulate its airline industry, at which point KLM would be in an unfavourable position to compete against Air France, Lufthansa, and British Airways. Small airlines throughout the Common Market face similar threats.

There is some evidence that this form of interorganisational linkage is spreading to other industries. In the automobile industry, Ford, General Motors and Chrysler are expanding internationally by engaging in joint ventures and minority stockholdings. For example, each of the 'Big Three' US automakers has a minority stockholding in a Japanese auto manufacturer, as well as equity and non-equity links with other auto producers ('Car-industry joint ventures', 1990).

Loose Coupling : Toward Conceptual Clarity

While the term 'loose coupling' frequently appears in the literature of organisation theory, its exact meaning as a theoretical concept is not always clear. Is loose coupling merely a synonym for decentralisation ? Does any form of interorganisational relationship constitute loose coupling ?

The seminal article on 'lose coupling' is generally regarded as being that by Karl Weick in a 1976 issue of Administrative Science Quarterly. Weick in turn points to his 1974 article in Behavioural Science and a 1973 article by Glassman (Orton & Weick, 1990; Weick, 1989).

According to Weick (1976), loose coupling occurs when units are attached to one another but maintain separate identities; furthermore, these units can be added or subtracted without disturbing the units themselves. Weick's usage of the term is relatively narrow; it would appear that a single, decentralised organisation does not constitute loose coupling, but a network of autonomous or nearly-autonomous units might.

In a recent review of loose coupling's historical roots, Orton and Weick (1990) emphasise the concept's 'bipolar' and 'dialectic' nature. Orton and Weick draw a parallel with the concept of bounded rationality, which involves a tension between the opposite concepts of rationality and irrationality; similarly, loose coupling centers upon the tension between two opposites - autonomy and

connectedness.

The loosely coupled organisation might best be perceived as walking a tightrope. If the coupling is too loose, the benefit of the coupling is lost. On the other hand, if the coupling is tight enough to benefit the constituent parts, the addition or deletion of units will disturb those units, and therefore the coupling is no longer 'loose', as Weick (1976) uses the term.

The transnational linkages among airlines appear to meet the requirements of loose coupling. Even when linked, they maintain their original, separate identities (though this cannot be said of relationships such as that between USAir and its associated commuter airlines). Furthermore, the pattern of linkages can be dismantled or altered without disturbing the units themselves. For example, if Swissair and Singapore Airlines sold their reciprocal 5% stockholdings, it might, at worst, have a small impact on their traffic volumes but it would not harm the structural integrity of either airline.

Hypotheses

What variables affect the extent to which an airline will form minority stockholding links with airlines in other countries ? What variables affect the extent to which an airline will form a non-equity (i.e, joint marketing) links with airlines in other countries ? These questions form the primary focus of the current study. For purposes of this study, both forms of linkage (equity and non-equity) will be included under the 'loose coupling' label.

First, it is anticipated that smaller airlines will be more likely to engage in loose-coupling arrangements. The discomfort of uncertainty causes an organisation to seek ways of controlling its environment (Pfeffer & Salancik, 1978), and uncertainty is likely to be greatest for the smaller participants. Forming links with other industry members is one way of reducing uncertainty :

H1 : Smaller airlines form more international loose-coupling links than do larger airlines.

Operating revenue was used in this study as the measure of airline size.

Secondly, uncertainty is likely to be greatest for those airlines in the most precarious financial position, and such uncertainty may drive those airlines toward linking with other airlines :

H2 : Airlines with a lower profit margin form more international loose-coupling links than do airlines with higher profit margins.

Thirdly, the uncertainty surrounding the Common Market's move toward a unified economy may encourage airlines within the Common Market to increase control of their environments through loose coupling :

H3 : Airlines in Common Market countries form more international loose-coupling links than do other airlines.

A similar phenomenon may occur among US airlines because of the instability and turbulent nature of the US airline market, due to its early move toward deregulation and its low degree of market concentration relative to other

countries :

H4 : US airlines form more international loose-coupling links than do other airlines.

This is especially evident if the US airline industry, with its many players, is compared to the Canadian airline industry, which consists of only two major carriers and their associated commuter airlines - not exactly a high uncertainty situation. As this hypothesis suggests, the Canadian airlines, being beneficiaries of a low-uncertainty environment, have not formed any equity links with non-Canadian airlines to date (although there has been a joint marketing agreement not involving stock transactions).

Data and Variables

Data on linkages among airlines were obtained from articles in the popular business press (Martindale, 1989; Feldman, 1989; Westlake, 1990). Only stockholdings of 50% or less were included, because more than 50% stockholdings constitute tight coupling, not loose coupling e.g. Air France's 51% holding in Euro-Berlin. Also, only linkages that crossed international borders were included, because domestic linkages tend to violate Weick's (1976) requirement that the units maintain separate identities (as in the USAir / Allegheny example).

Data on independent variables were obtained from the '1988 World Airline Report' (published 1989), which reports end-of-1988 data. There are tremendous difficulties in obtaining consistent data for airlines in so many countries; some airlines had to be excluded due to lack of data, leaving a reduced data set of 85 airlines. Of these 85 airlines, 24 were US, five were Canadian, four were British three were French, and there were no more than two from any other country. Most of the linkages studied here occurred during 1989.

The two dependent variables are indices of the extent to which an airline was linked with other airlines :

'Equity links' was the number of equity minority stockownership links between an airline and other airlines outside its headquarters nation. This measure includes both relationships in which the focal airline is the buyer of stock and those in which the focal airline is the seller of stock. For example, this variable ranged as high as seven in the case of Scandinavian Airlines (SAS), which is engaged in reciprocal stock ownership and seller of stock with Swissair and Finnair. Further, it owns stock in Continental Airlines, 'Airlines of Britain', and Lan Chile, for a grand total of seven equity links.

The dependent variable 'All Links' includes both equity linkages and non-equity links - the latter consisting of joint marketing agreements that have not yet been institutionalised through stock purchases. (Joint agreements concerning computerised schedule and fare systems were excluded). A problem arises in that a reciprocal equity link counts as 'two', while a non-equity link, which is reciprocal by nature, is counted as a 'one'. Therefore, to avoid double-weighting the equity-link component, the number of non-equity links was multiplied by two, as follows :

'All links' = 'Equity links' + [2 (number of non-equity links)]

This variable ranged as high as 15 in the case of (once again) Scandinavian Airlines, which has seven equity links, as described above, and four non-equity links (these being with Canadian International, Varig, Thai, and All-Nippon Airlines).

Results

Because the dependent variable distributions were non-normal and bounded at the lower end, TOBIT, a specialised form of regression, was used.

The variable 'Equity links' is associated with revenue (i.e. organisational size), but in the direction opposite that hypothesised. The larger the airline (in terms of operating revenue), the more equity links it had ($p < .01$). Also, Common Market and US airlines were less likely to engage in equity links - findings that were also significant in the direction opposite that hypothesised ($p < .05$ and $p < .01$, respectively). Profit margin had no impact. However, a very low R-squared of 11% indicates that these results should be interpreted with great caution.

A higher R-squared, 32% was found in the regression of the 'All links' variable, suggesting that greater importance can be attached to these findings. Yet the same pattern exists here as for the 'Equity links' variable; once again, size (revenue), whether the airline was Common Market based, and whether it was US based were all significant in the direction opposite that hypothesised. (Significance levels were the same as for 'Equity links'.) Again, the profit margin had no impact. The similarity between these two sets of results indicates there is little difference between those factors affecting participation in equity based forms of loose coupling and those factors affecting participation in non-equity based arrangements.

Discussion

None of the hypotheses were supported. What is interesting, however, is that three of the four dependent variables were significant in the direction opposite that predicted - regardless of how 'extent of loose coupling' was operationalised. The larger the airline, the more likely it is to form transnational inter-airline linkages. Surprisingly, those airlines most likely to form such linkages are in neither the Common Market nor the US.

These forms of airline loose coupling appear not to be techniques by which smaller airlines can grow stronger; rather, they are techniques through which already large airlines can become even more dominant in the global air travel market. The trend toward loose coupling does not strengthen the small players.

Nor can this trend be explained as a phenomenon arising from deregulation and environmental turbulence in the US and Common Market. Non-US airlines and non-Common Market airlines are most likely to participate in this trend of inter-airline linkages. These unexpected findings admittedly raise more questions than they answer. It's interesting to note that some of the most active airlines in this trend are European airlines headquartered outside the Common Market -

Scandinavian (Sweden based, though with participation by Denmark and Norway), Swissair, and Austrian Airlines. Possibly, airlines in Europe - but outside the Common Market - perceive themselves to be in an even more precarious situation than the Common Market airlines.

The hypotheses of this paper were based on the assumption that loose coupling is a reaction to uncertainty. That is still the case, in spite of these unexpected results. But the earlier arguments of this paper are erroneous in at least one respect : The smaller, less profitable airlines face greater uncertainty and were expected to engage in loose coupling; this reasoning does not take into account that smaller, less profitable airlines lack the resources to engage in such inter-airline linkages. The larger airlines may not face as much uncertainty as the small carriers, but they do face some uncertainty - and more to the point, they have the resources to carry out a program of stock-swaps and other forms of linkage to foreign airlines.

It is always dangerous to draw public policy ramifications from such a limited study. Nevertheless, these results may suggest that airline loose coupling across national borders represents an attempt to make an end-run around various nations' anti-trust laws and restrictions on foreign ownership of a country's airlines. The current trend may increase market concentration, decrease competition, and may make it even more difficult for small airlines to compete in a less regulated international airline industry. The public policy implications of this phenomenon bear closer scrutiny. Further research might examine how this trend toward inter-airline linkages affects competition in the international airline market after deregulation.

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