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The Airline Alliance Group as a Loosely Coupled System: Insights into Alliance Governance from Organisation Theory

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Abstract

This notion of loose coupling can be used as a meta-concept in organisation theory when trying to understand complex, evolving networks consisting of heterogeneous members that are interdependent but have different local agendas. This paper applies an extension of the coupling metaphor to an examination of the structural development of airline alliance groups, which are currently the most developed type of multilateral alliance.
In brief, loosely coupled systems are characterised by relatively ambiguous structures, decentralisation, delegation of discretion on one hand and responsiveness between distinct and relatively autonomous organisational units on the other. These features result in interplay between centripetal forces –pushing airlines toward more cooperation- and centrifugal forces –inducing airlines to retain as much autonomy as possible.
Describing the strengths and weaknesses of loosely coupled organisational systems based on extant literature on the concept, and introducing the notion of *partial* coupling, the paper will explore in how far there are behavioural and structural limits to alliance group integration and the creation of a strong alliance governance body in favour of a more loosely coupled structure. Implications for governance at the levels of both the alliance group and individual member airlines will be discussed.

Keywords: Loose Coupling, Multilateral Alliances, Airlines, Centrifugal, Centripetal

Introduction

Airline alliance groups are interesting organisational configurations in that they consist of multiple types of links between a very heterogeneous set of actors that are autonomous, but increasingly interdependent.

These groups are also a fairly recent phenomenon - they only came about in the early 1990s, and because there are no examples from other industries on how to build up, and govern, these multilateral alliances, airline managers have to go about conceiving of these alliances without any blueprint.

This paper uses the coupling metaphor to explore some of the dynamics of airline alliance group development. Describing the strengths and weaknesses of loosely coupled organisational systems based on extant literature on the concept, and introducing the notion of *partial* coupling, we will explore in how far there are behavioural and structural limits to alliance group integration and the creation of a strong alliance governance body in favour of a

more loosely coupled structure. Implications for governance at the levels of both the alliance group and individual member airlines will be discussed.

Multilateral alliances in the airline industry and their development

Multilateral alliances between airlines are agreements of tight cooperation between autonomous, but increasingly interdependent, organisational actors. They have a significant impact on the entire firm, its operations, and even the degree to which it might retain operational autonomy (for a very useful description of multilateral alliances and their dynamics, see e.g. (Vanhaverbeke *et al.*, 2001).

Intensive, multilateral co- operation between airlines is a relatively new phenomenon which arose out of changes in the carriers' operating environment, notably the increasing liberalisation of air transport markets (1978 in the US, from 1992 in the EU). This significantly increased the possibilities for competition between airlines. The reaction of the participants in the newly liberalised market was to move towards consolidation, and because mergers and acquisitions are often difficult to achieve in this industry due to anti-trust concerns and national ownership regulations, the number of non-equity co-operative agreements between airlines has increased from around 200 in 1991 to well over 500 in 2005. Co-operation takes place mostly in the area of scope expansion, where airlines link their route systems to provide their customers with access to their partners' route systems, thereby increasing the choice of destinations for each airline's customers. At the time of writing, there are three major airline alliance groups, namely the STAR alliance (led by Lufthansa and United Airlines), oneworld (led by British Airways and American Airlines), and SkyTeam (led by Air France / KLM and Delta Air Lines). These alliance groups consist of independent firms that co-operate horizontally in order to meet a market requirement (seamless connections to a large and global range of destinations) that no single actor could fulfil by himself. The organisation of these alliance groups can take various forms, but can involve very tight integration of members and might eventually even entail members submitting to an "umbrella organisation" in the form of a joint alliance governance board. At the time of writing, more than 65% of worldwide air traffic is provided by airlines that are members to an alliance group, and this number can be expected to grow further, as passengers come to expect increasingly "seamless" travel to a large number of destinations.

One interesting characteristic of these groups is that they consist of multiple links between several organisations which are established without the overall directional guidance of a superstructure, or the presence of an organisational blueprint.

Thus, instead of presupposing an overarching strategic rationale, it is suggested here to conceive of alliance groups as snapshots in an ongoing process of negotiation between partners, this process being the outcome of each firm's dealing with the "tradeoff between autonomy and survival" (Pfeffer *et al.*, 1978). In other words, we suggest to assume a transformative (Marion, 1999; Marion *et al.*, 2001) or bottom-up teleology (Stacey, 2000; Stacey *et al.*, 2000) when examining the dynamics of multilateral alliance development. In brief, this perspective assumes that organisations are "inventing themselves", and that their development is to a lesser extent shaped by following a clear strategic long-term plan imposed from the top of a hierarchy, but rather by communal and individual adaptations to environmental shifts, constant negotiation with that environment, and a step-by-step enactment of strategy and structuring in function of a larger (and rather more vague) understanding of an overall "future" of the organisation. This understanding, in turn, is also subject to constant re-negotiation. In simple terms, it means that the organisation –in this case the airline alliance group- continuously (re-)invents itself as airline managers go about the daily business of building cooperation on one hand, and protecting their own airline's autonomy, on the other. One can say that the way to cooperate multilaterally and how to negotiate the "trade-off between autonomy and survival" (Pfeffer *et al.*, 1978) is being enacted by airline managers as they continuously coordinate resource allocation issues and decision-making with partners, all while aiming to retain a maximum of autonomy for their own firm.

To understand (inter-) organisational evolution from this perspective, it is important to examine the forces that shape, or even co-determine, the development of this organisational phenomenon. It is these forces which, in the end, will determine the interplay between loose and tight couplings of the organisational elements.

In brief, we can distinguish between centripetal forces (pushing airlines toward tighter cooperation) and centrifugal forces (pulling airlines away from each other as they strive to maintain autonomy) in alliancing.

Centrifugal	**Centripetal**
× legislation	× deregulation
× shareholders	× economic cycles
× uncertainty	× domino effect
× responsibility to shareholders	× passenger expectations
× allegiance to own airline	× benefits of scale
	× benefits of scope
	× uncertainty

Table 1: some centrifugal and centripetal forces in airline alliance building

To mention some of these forces, national and antitrust legislation frequently pose a limit to the degree of airline integration, as do, on the managerial side, their responsibility to their own shareholders and a certain allegiance to their airline, which makes airline managers naturally suspicious of too tight integration that could jeopardise their firm's independence. Also, the awareness of the nowadays fairly high costs sunk into alliance membership often makes them shy away from such an investment in uncertain (and thus unpredictable) times.
Uncertainty, however, also works in a centripetal way in that airlines are motivated to cooperate in order to create a more predictable immediate operating environment. It should become clear from this discussion that one of the most important aspects that shape the structural dynamics of airline alliance groups is indeed the nature of links between partners.

The coupling metaphor as a conceptual tool to understand evolving systems

In brief, loosely coupled systems are characterised by *relatively* (it is indeed important to keep in mind that loose coupling is a relative property) ambiguous structures, decentralisation, delegation of discretion on one hand and responsiveness between distinct and relatively autonomous organisational units on the other. These features result, as mentioned above, in interplay between centripetal forces –pushing airlines toward more cooperation- and centrifugal forces –inducing airlines to retain as much autonomy as possible.
The loose coupling perspective allows the observer of alliance group development to take a nonteleological stand (Weick, 1976); in other words, the focus is on a *process*, without prescribing, seeking, or attaining, an outcome; this is a viewpoint that is applicable when dealing with phenomena that are currently emerging without a blueprint, and where local agendas are defining interaction.
Possibly the most straightforward definition of loose coupling has been given by Weick (1976) as "*a situation where elements are responsive but retain evidence of separateness and*

identity". The interest in examining the degree of coupling between organisations or organisational elements, and especially the concept of loose coupling, gained some first popularity in research on educational institutions (Weick 1976) and later extended to systems theory within organisation studies (Orton *et al.*, 1990). It has in recent years been increasingly used to understand complex dynamic systems (e.g. (Beekun *et al.*, 2002; Dubois *et al.*, 2002; Rowan, 2002; Spender *et al.*, 1999; Staber *et al.*, 2002). In brief, a system is made up of elements, and our understanding of any system can be enhanced by examining the degree of coupling between those elements. Following Orton and Weick (1990), we can distinguish four coupling situations:

If between elements in a system…

- there is neither responsiveness nor distinctiveness: it is not really a system…
- there is responsiveness without distinctiveness: the elements can be said to be tightly coupled
- there is distinctiveness without responsiveness: the system is decoupled
- there is both distinctiveness and responsiveness: the elements can be said to be loosely coupled.

The usefulness of this metaphor is seen in that it can explain how organisational slack and a certain lack of permanent control and direction could very well be features of fit, functioning organisations. In a sense, loose coupling is one of the reasons for the agency problem, because loose coupling can be produced by lodging intention with one person, and action with another (Weick, 1976).

It must be noted here that loose coupling in itself is a "neutral" issue, i.e. neither inherently good nor bad. The effects of loose coupling can indeed be either functional or dysfunctional (Weick, 1976).

Table 2 depicts the main conceptual differences between tight and loose couplings. Tight coupling between organisational elements requires fixed and pre-defined links, whereas looser coupling allows for flexible, emergent, and often only temporary links. Accordingly, whereas tight coupling implies a direct interaction with little or no time lag, loose couplings can involve indirect actions that happen at a later time and to a lesser extent. Another key distinction is the way systems adapt: In tight coupling, adaptation to new circumstances or to one partner is done through 're-coding', in other words, both sides mutually agree on a new set of rules. In loose coupling, adaptation might or might not happen; it is typically slower,

more linked to local circumstances, and more 'organic' in process. An example are taut command structures as compared to a hands-off management approach.

	Tightly Coupled	**Loosely Coupled**
Links	Fixed & pre-defined	Flexible, emergent, sometimes temporary
Synchronisation	Synchronous	Asynchronous
Interaction Style	Direct	Direct / Indirect
Interaction Type	Dependent	Interdependent
Adaptation	Via re-coding	Through transformation (if at all)
Objective	Efficiency, Scale economies	Survival, flexibility
Consequences	Anticipated	Emerging
Governance	Fix objectives, then steer towards them	Set rules and possibly limits, then let emerge
adapted from (Kaye, 2003)		

Table 2: Main conceptual differences between loose and tight couplings

Accordingly, the governance of loosely coupled systems has to take into account these differences. In a tightly coupled system,

The airline alliance group as a loosely coupled system

In one of the seminal works on loose coupling, Weick (1976) underlines the rather wide manner in which the loose coupling metaphor has so far been used. He lists fifteen common ways to refer to loose coupling, of which three do directly apply to airline alliances at the inter- firm level:

1. A relative absence of governance regulations.

Even though all existing airline alliance groups are currently moving toward the establishment of some sort of governance superstructure or management body, and even though the group itself is governed by a set of regulations ensuring issues such as membership fees, safety and service standards, IT infrastructure and codeshares, these are almost exclusively of *operational* nature. There is still no clear directive (or strategising) authority over members that is vested in a superstructure.

In fact, ultimate strategy authority rests with individual airlines. Even though alliance group membership represents significant sunk costs in terms of membership fees and the alignment of infrastructure (airport facilities, IT systems), they can opt to leave an alliance group after the expiration of a contractual period.

2. Decentralisation.

An airline alliance group must be considered a decentralised organisation for very much the same reasons that apply to point one: even though there is (nominally) a steering committee or governance company situated in one location (Frankfurt for STAR, Vancouver for oneworld), this superstructure so far has only very limited powers. Ultimate authority rests with airlines (and is thus not only geographically dispersed, but also subject to varying regional cultural, economic and regulatory influences and constraints). At best, there might exist regional clusters within airline alliance groups, i.e. the Northern European cluster within STAR, consisting of Lufthansa, Austrian, LOT and SAS.

3. Delegation of discretion

In the airline alliance group case, discretion is delegated *upstream*, i.e. in due course towards a governance structure. The problem with this is that it is the elements that are eventually to be governed that determine the authority which the superstructure will eventually have over them. In this process, it must be taken into account that the airlines' representatives who are entrusted with constituting such a governance superstructure are still employed by, and owe allegiance to, individual airlines. It is therefore highly probable that whatever issue they might favour concerning a governance structure will be very much put forward in function of an individual airline's wishes, instead of in light of what might be favourable to the alliance group as a whole. In fact, it is even likely that the constituents will –consciously or not- try to limit the authority the superstructure could acquire over their firms, in an aim to maximise payoffs from alliance membership while minimising costs sunk into, and other dependency from, this membership. What this leads to is in fact one very strong centrifugal force, pulling members away from tight integration, and from the alliance group superstructure taking up (too much, or any significant) authority over them.

Diverse couplings at multiple layers

Thus far, the airline alliance group presents itself as a loosely coupled system with an incomplete governance structure, whose development is very much determined by local

rationales (preventing truly tight integration and a logic that would operate in favour of the whole system). Tight couplings do, however, occur on some operational levels, with the harmonisation of IT infrastructures being the most prominent one.

A further issue to be considered is that of the layers within which coupling occurs: Indeed, "*loose coupling may occur in a number of dimensions: among individuals, among subunits, among organisations, between hierarchical levels, between organisations and environments, among ideas, between activities, and between intentions and actions*." (Dubois *et al.*, 2002). This means that organisations can be tightly coupled in some parts, and loosely coupled or decoupled in others.

This implies that the unit of analysis has to go beyond the organisational dyad, i.e. it must behold a *system*, comprised of *elements*: two elements can only be decoupled, loosely coupled, or tightly coupled. But if one beholds two systems, each composed of elements, then it is possible to distinguish between decoupling, tight coupling, loose coupling and partial coupling; the latter referring to some elements from each of the systems being tightly coupled with each other, while others are loosely or not at all coupled.

This paper argues that the relationship between partner airlines –and thus, the alliance group as a whole- can be examined from the viewpoint of coupling between elements such as, in the present example, functions and departments of airlines. To do so, this paper will later introduce the notion of partial coupling.

In a very interesting piece on the construction industry as a loosely coupled system, Dubois and Gadde (2002) identify two layers in the industry which can also be said to apply to air transport alliances: they distinguish between tight coupling at individual project level, and loose couplings based on collective adaptations in permanent networks. In brief, tight coupling at micro level is needed to ensure efficient communications flows, economies of scale and short processing times at project level, while loose coupling at the macro-level is a way to cope with the high complexity that is inherent in that industry. This complexity (and it is indeed striking to what extent the seemingly unrelated field of construction resembles the airline industry) is seen to be related to (a) uncertainty of where the industry is going, and (b) at the same time high interdependence of actors.

Translated to the airline case, this differentiation of coupling according to layers would mean that between two, three or more partner airlines, there can be tight couplings between some functions or departments, loose couplings between others, and no couplings at all between others yet.

Figure 1 schematically depicts this principle between two hypothetical airlines.

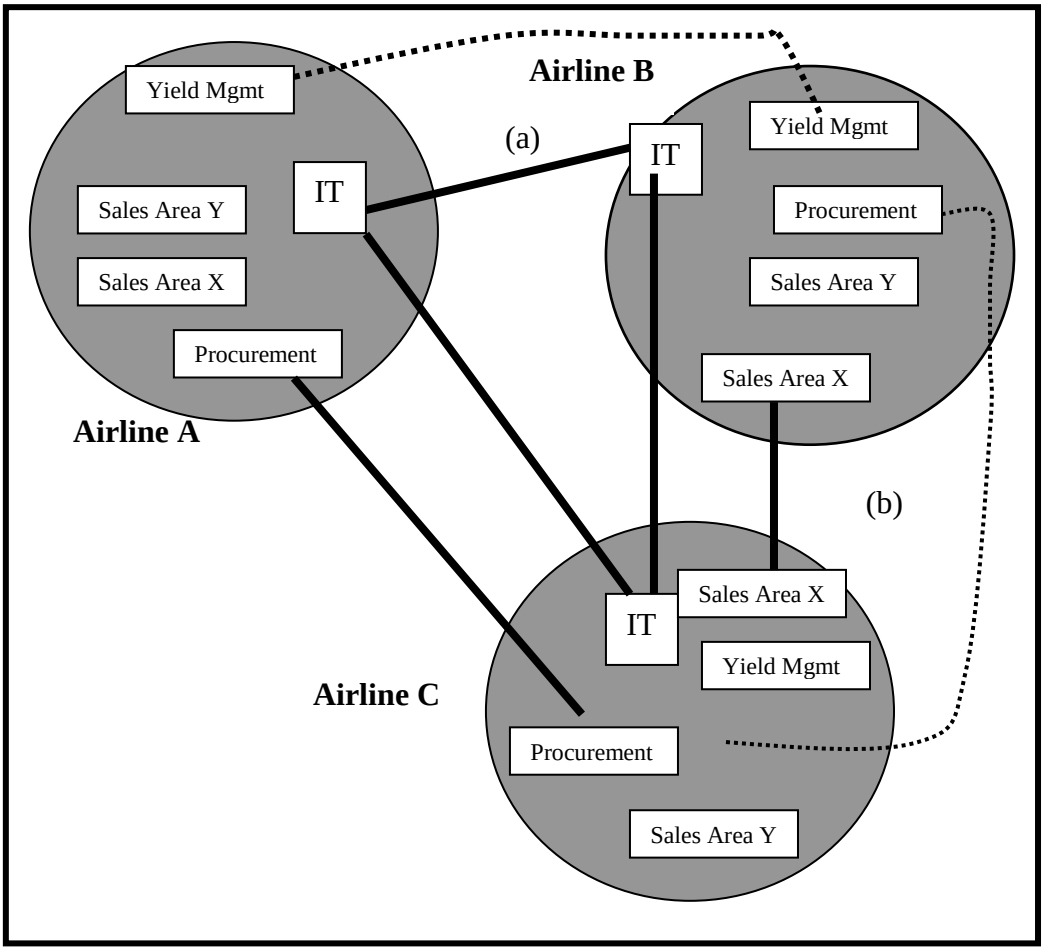

Fig. 1: depiction of couplings between airline functional elements: (a): tight; (b): loose

In this example, we take three airlines from within an alliance group, and examine the links between them at the departmental or functional level. A very typical set-up for most alliance groups, and particularly pronounced in the STAR alliance with airlines related to Lufthansa, is that each firm's IT systems are tightly coupled. In the STAR case, for example, the accession of Austrian Airlines to that group in the mid 1990s required that airline to completely change their IT infrastructure within a very short time. Practically, this meant that thousands of employees had to undergo conversion training, with courses being offered throughout the day and most of the night on a shift rota. Tight coupling between firms' IT systems carries significant benefits of scale and reduces transaction costs; as an alliance-specific investment of considerable weight, it can create trust (Kleymann *et al.*, 2001); however it also represents significant costs sunk into alliance membership for the airline, and can reduce its standalone capability in case it chooses to opt out of membership.

Similarly, airlines B and C have, in the example, chosen to tightly couple their sales activities in a specific market ("Sales Area X"). In practice, this often means joint utilisation of marketing agencies, city offices, and contacts with tour operators etc. In the airline case, tight couplings in the sales and marketing sectors frequently carry significant economies and benefits of scope.

Couplings of the looser kind exist, in the present example, between the Yield Management functions of airlines A and B, and the procurement function of airlines B and C. Loose couplings in procurement can involve joint sourcing of nonessential material, and/ or material that would not require a high degree of standardisation, whereas tight coupling in this area would mean joint warehousing in a just-in-time type regime, or adaptation to jointly established standards (such as the KSSU and ATLAS procurement alliances between airlines of the early 1990's, or the more recent joint procurement of a fleet of A 320 type aircraft by a group of South American airlines). Tight couplings here require, once more, significant sunk costs in terms of joint standards and operating procedures.

The highly variable couplings we can observe within an airline alliance group, and which in reality are of course much more complex than this simple scheme could depict, could be understood as a way to cope with industry uncertainty (Dubois and Gadde 2000), for example, leading to temporary coalitions in highly uncertain environments based on heterogeneous rationales.

Dubois and Gadde also underline several advantages of loose coupling which can explain the advantages of not-so-tight integration: First, loose coupling between organisational elements permits each element to adjust to local contingencies without this adjustment necessarily affecting the whole system. In airline alliance groups, because each airline is loosely coupled to partners, they can individually adapt or react to changes in local markets or economic conditions without a need for the whole alliance group to react. Second, they argue that loosely coupled systems are more sensitive to their environment as a whole, because each system element –in the present case, each airline- will have conserved its own environmental sensing mechanisms –such as continuously updated market knowledge, or links to the home country's socio-cultural and political institutions. Third, "*loosely coupled systems preserve the identity, uniqueness, and separateness of elements and may therefore generate variety. The system can retain a greater number of mutations and novel solutions than would be the case with a tightly coupled system; The greater freedom in a loosely coupled system would*

imply that the actors deal with the problem in a multitude of ways, thus favouring variety and innovation" (Dubois and Gadde, 2002).

In addition to the uncertainty avoidance mechanisms discussed above there are, however, also several downsides to such a complex web of different couplings between firms. Rowan (2002) has described what he calls the danger of "tangled couplings"; in other words, a tangled web of incompatible and competing couplings. To revert to the schematic example depicted above, tight coupling between partner airlines' IT systems (a very common tight link) might conflict with each airline's wish to keep its yield management completely decoupled from that of partners. Similar, if somewhat less dramatic, tangled coupling can be observed in tight links between some market areas (such as the "joint ventures" Lufthansa operates with SAS, Austrian Airlines and United on markets between Germany and Scandinavia, Eastern Europe and the US, respectively) and desired looser or non-coupling in other regions. Tight couplings involve significant sunk costs, which, while reducing risk in one side, increase risk on another (Kleymann and Seristö, 2001).

Implications for Alliance Governance

First of all, describing alliances using the coupling metaphor sharpens the eye for those features of an alliance group which distinguish it from a large multinational firm (or, for that matter, an airline merger): there are limits to integration, there is organisational slack, there are inefficiencies of coordination between alliance members that would be intolerable in an "integrated" organisation, or a firm. It is here that airline managers tend to identify the first shortcomings of a loosely coupled system as an alliance group: The expected economies of scale can easily be overshadowed by coordination costs (Spender and Grevesen, 1999), and indeed they often are. In addition, economies of scale can be limited in a loosely coupled system because as loosely coupled elements adapt locally, these local reactions often do not allow the reaping of scale benefits (Weick, 1976).

However, the argument should not stop there. First, integration (mergers or market joint ventures) are not always possible, due to antitrust legislation and national ownership laws. Second, there are several advantages in maintaining loose coupling in an organisational system that is, by its very nature, going to remain operationally decentralised to a very large extent. The advantages of local responsiveness have already been mentioned above.

A prime characteristic of loose coupling between organisational elements is that changes affecting one element do not necessarily affect any other element. This can be of an advantage to the alliance group in that it buffers the overall group from reactions to environmental

changes that might just have been necessary in one or two regions, but which would not justify adaptations from the part of the whole system. It can also be of a certain disadvantage in that within loosely coupled systems, information necessarily travels slower, with increases in coordination time and –costs.

Weick (1976) has identified a number of managerial problems imposed by Loosely Coupled Systems which are applicable to the task of alliance group management. It is useful to conceptually separate these issues according to the organisational level at which they merit consideration.

At the level of the individual airline, loose coupling can foster anachronistic practices in the sense that there is less pressure on the overall system to respond to small changes in the environment. The change "hits" one element of the system, but because of loose coupling it does not influence the whole system – so that as some parts of the system may adapt to environmental changes, others will not. This can be especially acute in case of a failure of local airlines to read information correctly. Even if an alliance-group wide information system is in place, there can be discrepancies in how this information is "received", or "read". Also, certain changes – for example, adjustments of service standards- can also be very slow to filter through a loosely coupled system.

At the alliance group level, the information flux problem can imply that novel solutions found at individual level can be difficult to diffuse through the system. In the reverse direction, overall control and coordination of the implementation of alliance-level decisions is often difficult. This is also linked to the fact that as individual managers' allegiances are to their airlines first and the alliance groups a far second, the willingness to comply (or comply "enthusiastically") is not always given.

Couplings are thus reinforced - or resisted- by the centrifugal and centripetal forces mentioned above. The art of alliance group construction is to take into account –and, if possible, harness- these forces while keeping loose couplings wherever possible in order to ensure flexibility and local responsiveness. Table 3 gives an overview of the main requirements for a functional alliance group, and the implications for group structuring this might have.

REQUIREMENT		**IMPLICATION FOR STRUCTURING**
large enough to offer scope to passengers *but* **small enough to be governable**	**as many members as possible** *but* **not all of them in alliance core.**	**tier structure**
local responsiveness of members	alliance must allow each member to be "the Best they can be"	**limits on exclusivity**
global seamlessness & cohesiveness		**JV's in key markets; roof brand; joint marketing**
credibility to customers *and* **credibility to member airlines**	avoid excessive member fluctuation; provide coherence in products & policies	**"Joint Ventures" in key markets**
flexibility in an unstable environment	avoid specific dependence on partner(s)	**few equity ties;** **costs only sunk into alliance itself**
costs savings through scale economies	offer tangible ($$$) benefits to members	**roof organisation for procurement**

Table 3: Alliance requirements and implications for group structuring

First of all, an alliance group needs a certain size in order to be able to offer passengers a large choice of destinations. Alliance groups are already judged by the number and global spread of destinations offered. On the other hand, more members of different sizes and from different regions imply a very heterogeneous base, which is rather difficult to manage, especially since there are few ownership ties within an alliance group, and decision-making by fiat is thus seldom possible. One way to ensure global reach while keeping decision-making processes manageable is to establish a tier structure, where a few airlines constitute an alliance core –these are tightly coupled to each other and to the alliance group itself- and they also collaborate with airlines on a looser, or route – by – route basis. These second tier airlines are 'contributors' to the alliance group.

In the same vein, members need to be locally responsive, i.e. they need to be able to strike codeshares with whoever they deem fit without these decisions being too tightly coupled to overall alliance group policy. This implies that there ought to be a limit on alliance group exclusivity requirements. On the other hand, an integral part of the alliance group is coherence in its presence across very different markets. Here, service brands can be tightly coupled through, for example, Marketing Joint Ventures in key markets, joint brands etc.
A further important issue is that of dependence and interdependence: Any form of partnership implies two things: there are costs sunk into it, and there are dependencies created between partners. Sometimes these go one way only; sometimes they are *inter*dependencies, going both ways. In an increasingly unstable operating environment, entering dependencies and sinking costs into a relationship carries increased risk. While this appears to be an unavoidable fact of life, there is an interesting way to mitigate this dilemma that lies precisely in the very nature of airline alliances: Since these are multilateral groups, they represent an organisation in their own right. It is thus increasingly possible, for a member airline, to sink costs into, and depend on, not any one particular airline partner, but the group itself. This is one very powerful mechanism to create mutual interest in alliance-well-being and it might help to preclude airline self-serving behaviour, one of the rather strong centrifugal forces in alliancing. Lastly, and as a further argument for the strengthening of an alliance group roof organisation, the tangible benefit of membership that comes right after enhanced network presence is that of cost savings. These can be achieved through joint procurement. Again, coupling would take place between the individual airline and the alliance group, rather than with any other specific airline.

This leaves us with an alliance group that is far from being a monolith on one extreme, and a loose and diffuse collection of codeshare agreements on the other. Group governance and group structuring will need to take into account the various centrifugal and centripetal forces at work. Examining types and degrees of couplings between organisational elements can be an effective tool for understanding these dynamics.

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