

# Coordination in service supply networks: insights from “Airport Collaborative Decision Making”

*Martin Spring*

*Department of Management Science, Lancaster University Management School, UK*

*Kostas Selviaridis*

*Department of Management Science, Lancaster University Management School, UK*

*Konstantinos Zografos*

*Department of Management Science, Lancaster University Management School, UK*

## Abstract

We examine the relationship between governance (alignment of interests) and coordination (alignment of actions), of mutually-dependent organisations in extended service networks. Research on governance has explored the interplay of contractual and relational mechanisms, mainly in dyads. In service operations management, interaction between provider and customer is understood as ‘co-production of value’. We examine the link between the two, and how coordination is achieved among several closely-interdependent organisations on a single site. ‘Collaborative Decision-Making’ practices in airport operations provides the setting for the study, and we propose an initial framework to explain the role of information sharing and coordination mechanisms.

**Keywords:** Service Supply Networks, Coordination, Air transportation

## Introduction

The growth in outsourcing (Sako, 2006) and the emergence of service ‘solutions’ (Nordin and Kowalkowski, 2010) has given rise to new patterns of business service activity. The large, vertically-integrated firm is in decline as an organisational form (Langlois, 2004), with activities increasingly being provided in complex networks of business-to-business (B2B) service provision. In many instances, what was a unitary organisation with wholly-owned assets and in-house staff becomes a collection of subcontractors and solution providers, in the form of staff and assets, often co-located on one site. This has radical implications for the form of service operations processes.

Some outsourced service activities are relatively separate from others: for example, photocopiers leased to business clients and maintained by both remote and face-to-face interaction, or outsourced cleaning. Others, however, are more deeply interdependent with other activities in the operation: for example, the interactions between permanently-assigned maintenance staff and users of capital equipment in defence or transportation systems, or the outsourced operation of paint lines or internal logistics in automotive assembly plants. Construction and other sectors use project-based subcontracting, which is widely researched; our focus, in contrast, is on interdependent outsourced services in relatively enduring operations.

Considerable attention has been given to dyadic outsourcing of business services, and to the relative merits of different governance mechanisms and forms of contracting between a service buyer and provider. In abstract and rather general terms, such arrangements have also been understood to allow the ‘co-creation of value’ (Vargo and Lusch, 2004); various forms of performance-based contracting (Doerr et al., 2005, Selviaridis and Wynstra, 2015) are seen to incentivise providers to work with their customers to achieve the outcomes desired by the customer. By comparison, relatively little attention has been given to how processes are actually carried out in such circumstances. Concepts such as co-production of value and relational governance are important pointers toward the ethos and basic rules of engagement between organisations but, in the end, work needs to be done: machines repaired, cars painted, buildings cleaned. In other words, in order to co-create value, operations processes need to be designed and executed, within and between and organisations (Sinha and Van de Ven, 2005). As Gulati et al. (2005: 417) put it, ‘not only cooperation (alignment of interest) but also coordination (alignment of actions) is required’.

As such, our research objective is to provide initial insights into the nature of coordination between interdependent firms in co-located service networks, complementing existing research in B2B services on governance mechanisms (i.e. alignment of interests) with coordination (i.e. alignment of actions). It also adds to the limited body of research on inter-organisational coordination in B2B service operations and, in doing so, sheds light on the practical accomplishment of the ‘co-creation of value’ in complex service networks.

## **Literature review**

### *Outsourcing and governance of dyadic and network relationships*

An important concern in the literature on strategic alliances and outsourcing is the interaction between contractual and relational governance mechanisms (Poppo and Zenger, 2002, Cao and Lumineau, 2015) in a dyad between buyer and supplier. There is always some form of contractual relationship, and the question is the extent to which and the ways in which other forms of governance interact with the contractual.

Service supply networks of the kind we examine here entail various forms of interdependence among at least three separate organisations. Each pair may or may not be a buyer-supplier dyad: for example, there may be interdependence between two suppliers to the same customer (Wynstra et al., 2015). This means that relational mechanisms overlay a mixture of contractual and non-contractual linkages: as Collins puts it, parties ‘plan to co-operate with someone with whom they have no direct market relationship, in order to improve the efficiency of the performance of a contract they have with someone else’ (Collins, 2009: 200), leading to what he terms ‘heterarchical’ co-ordination mechanisms.

### *Services and their implications*

Inspired by TCE (Williamson, 1979), some have seen services as inherently problematic to outsource due to the supposed difficulty in assessment and control of quality. For example: ‘When a firm outsources services it should expect to have significant potential for overpayment and under-servicing’ (Ellram et al., 2008: 157). While it may be the case that knowledge-intensive services present difficulties in defining and measuring quality (although see Davenport (2005)), so do complex ‘products’. As such, we prefer to concentrate on the fundamental definitional characteristics of services.

Rather than relying on IHIP characteristics (Lovelock and Gummesson, 2004, Spring and Araujo, 2009), we adopt a more institutional perspective. One way to characterise this is that service processes are those where the customer provides an input (Sampson and Froehle, 2006). Customers can also play a number of roles other than acting as suppliers (Sampson and Spring, 2012). While the scope, responsibilities and intended outcomes of these roles may be defined in contracts and SLAs, there is always a greater or lesser degree of discretion in the way a particular service delivery episode is conducted – in other words, how an operations process within and between firms is carried out. As Richard Normann puts it, in the ‘moment of truth’:

‘the service provider and the service customer confront one another in the arena...At that moment they are very much on their own. What happens then can no longer be directly influenced by the company’ (Normann, 2002: 21)

Service processes in practice, then, are enacted in part through a combination of standard operating procedures, contractually-defined requirements, the execution of instructions given by ‘the company’ – either through process stages mandated by written or computer-based instructions, the employment contract, or more specific direct instructions from a line manager. But in the ‘moment of truth’, in the space where discretion remains, and as circumstances change, service provider and customers must interact to deliver the required process. In other words, their action must be co-ordinated, not by managerial direction, but by action and interaction between provider and customer. Bear in mind also that, in our ‘heterarchical’ networks, there are interactions between companies who have no contractual relationship with one another.

### *Coordination*

Coordination has been an enduring concern in the study of organisations (e.g. Van de Ven et al., 1976). For example:

“In the broadly defined literature on organizations, most researchers agree that the paramount function of an organization is to coordinate human and physical assets within some interdependent system to efficiently produce a good or service” (Camerer and Knez, 1996)

Perhaps surprisingly, then, despite the need for operations processes to coordinate the execution of tasks to deliver the required outcomes, OM has rarely examined coordination as such.

Thompson (1967) identified three forms of interdependence: pooled, sequential and reciprocal, the last of which, he argued, “refer[s] to the situation in which the outputs of each become the inputs for the others” (Thompson, 1967: 55). As discussed, Sampson and Froehle (2006) argue that, in services processes, the customer provides an input. Hence, service processes arguably make greater coordination demands. Furthermore, as we move from pooled to sequential and then to reciprocal interdependence, increased levels of ‘decision and communication activity’ are required to achieve coordination. Thus, coordination in these specific terms is central to the delivery of service processes.

Most studies of coordination aim to identify different coordination mechanisms and to determine which one should be used under which circumstances. Okhuysen and Bechky (2009) argue that early treatments of coordination emphasised the design of tasks and organisations as the means for achieving coordination. In scientific management, coordination was to be achieved in particular by standardisation of tasks. Studies in the 1960s and 1970s took a contingency view, arguing that the design of coordinating mechanism depended on the nature of the task (Van de Ven et al., 1976) and, with an emphasis more on the design of organisations, that the mechanisms for coordination depend on the degree of differentiation between organisational units

which, in turn, depends on the uncertainty and dynamism of the business environment (Burns and Stalker, 1961, Lawrence and Lorsch, 1969).

More recent research on coordination has focused on how coordination is actually achieved in practice. As Okhuysen and Bechky put it, '[research]... is less concerned with optimizing structures for a given environment, and instead considers coordination as it happens, assuming that people in organizations must coordinate the work regardless of the organizational design' (Okhuysen and Bechky, 2009: 469). Drawing these together, they identify five broad categories of coordination mechanism: plans and rules, objects and representation, routines, and proximity (*ibid.*: 481). Note that their review only considered coordination within firms, not between firms.

In contrast, Srikanth and Puranam (2010) argue that established scholarship proposes two basic approaches to coordination: to design or redesign tasks to simplify interdependence and hence to rely on standardised procedures – essentially the same as plans and rules in Okhuysen and Bechky, and resonant with the argument for modularity in organisations (Baldwin and Clark, 2000) – or to create opportunities for intensive communication among interdependent actors (i.e. integrating mechanisms (Lawrence and Lorsch, 1967)). Srikanth and Puranam, however, suggest a third alternative – tacit coordination mechanisms, based on the existence of 'common ground' among interdependent actors (Srikanth and Puranam, 2010). They see this as particularly important in their chosen empirical setting, namely offshore outsourcing of business processes, where intensive communication is particularly challenging because of distance, but standardised rules and procedures are insufficient because the tasks are subject to uncertainty and time pressure.

Coordination is also affected (and effected) by information technology (IT) and information sharing. Argyres (1999) showed that 'IT can replace hierarchy': in other words, IT makes it possible to accomplish complex tasks across multiple organisations. There are two aspects to this: first, IT makes information processing less costly. Second, the use of IT among multiple organisations in Argyres' study required the establishment of a standard 'technical grammar', described as 'a set of social conventions around which engineers and managers from different firms could coordinate their activities without extensive communication between them' (Argyres, 1999: 164).

### *Firms*

Our starting-point was the decline of the large, vertically-integrated firm as an organizational form. And yet, some argue that 'hybrid' forms underpinned by network contracting seem to strongly resemble firms (indeed, Eccles (1981), in an early analysis of these forms, terms them 'quasi-firms'). Using construction projects (as Eccles did) as an example, Collins argues:

'If one examines only the form of the individual contracts, the construction project appears to be no more than a set of contractual arrangements. When one stands back and views the whole operation, however, it is plain that it has many features of an organizational hierarchy similar to those found within an integrated firm.' (Collins, 1999: 250-251).

So, what vestiges of 'the firm' remain in the organisational forms that are emerging in service networks? To address this, it is necessary briefly to reflect on what firms are. First of all, as Freeland and Zuckerman (2014) point out, 'there is no legal entity known as "the firm." Instead there are various legal forms of organization – corporations, partnerships, LLCs, sole proprietorships – that differ in the details of their legal constitution.' In Coase's (1937) formulation, the ability to defer detailed specification between principal and agent, because of uncertainty, is what defines the firm:

'The details of what the supplier is expected to do is not stated in the contract but is decided later by the purchaser. When the direction of resources (within the limits of the contract) becomes dependent on the buyer in this way, that relationship which I term a "firm" may be obtained.' (Coase, 1937: 391-392)

In this sense, then, the 'firm' is an abstract state of relationships between actors rather than a label for a particular sort of existing organisational entity.

This deferral of detailed decision-making is emerging as a theme in the contracting literature. Schepker et al. (2014) suggest that (see also Collins (1999)) the focus is moving away from the safeguarding function of contracts, and toward their role in coordination and adaptation. Schepker et al. argue that, under conditions of complexity – defined as 'the degree to which subtasks assigned to different parties interact with one another' – two problems arise: (1) 'any plausible contract becomes severely incomplete'; (2) if bounded rationality is present, 'ex ante contractual governance becomes inadequate, and ex post decision-making becomes of paramount importance'. Furthermore, the response should not be more complex contracts, but rather the allocation of broad decision rights to one party, or the specification of 'procedures for centralized or consensual decision-making' (Schepker et al., 2014: 215-216).

### **Research objectives, design and methodology**

Given this theoretical background, our research objective is to understand the interplay between formal design of task and structure, intensive reciprocal communication, and tacit coordination mechanisms, in a network of interdependent service providers. We seek to understand the link between the 'alignment of interests' e.g. through contracts, and the 'alignment of actions' using various coordination mechanisms. Our research setting also allows us to understand the roles of information sharing and co-location.

Airports are an excellent context for our research. They are co-located and densely inter-dependent service networks, operating under extreme time pressure and subject to short-term uncertainties. Recently, airports have been adopting a set of practices called 'Collaborative Decision-Making' (CDM), which is a structured way to encourage information-sharing among various partners. We examine CDM through the lens of coordination and related theoretical perspectives.

In this preliminary phase of the research, we utilise secondary data drawn from airport websites, and documentation associated with various CDM implementation initiatives. These include examples of the Memoranda of Understanding that are used to establish CDM initiatives in particular airports. Subsequent stages in the research will add primary data from interviews and observations at selected airports.

### **Findings**

In the air transportation industry, deregulation, outsourcing, and the emergence of global service providers have increased interdependency among multiple organisations (e.g. airlines, airports, ground handling operators, security service providers). This can be conceptualised as a service network involving commercial /contractual relationships and process interactions among the key actors (Figure 1).

#### *The main elements of CDM*

The central principle of CDM is that the various partners, notably the airport operator, airlines, ground handling providers and Air Traffic Control, share information about detailed operations: 'Airport CDM is about partners working together and making decisions based on more accurate and higher quality information, where every bit of

information has the exact same meaning for every partner involved.’ (EUROCONTROL, 2012: 1-1). It also establishes a ‘milestone approach’, which defines significant and commonly-agreed events in the progress of a flight:

- ‘A set of selected milestones along the progress of the flight (arrival, landing, taxi-in, turn-round, taxiout and departure), where the partners involved in the flight process change;
- Time efficiency performance, which is measured for each milestone or between two milestones.’ (EUROCONTROL, 2012: 3-15)

CDM arrangements use Memoranda of Understanding (MoUs), signed by multiple partners, to promote information-sharing among multiple actors (pilots, ground handling staff, Air Traffic Control). Information-sharing is in practice achieved by bottom-up adaptation of existing IT systems, not through the imposition of over-arching integrative IT (EUROCONTROL, 2009).

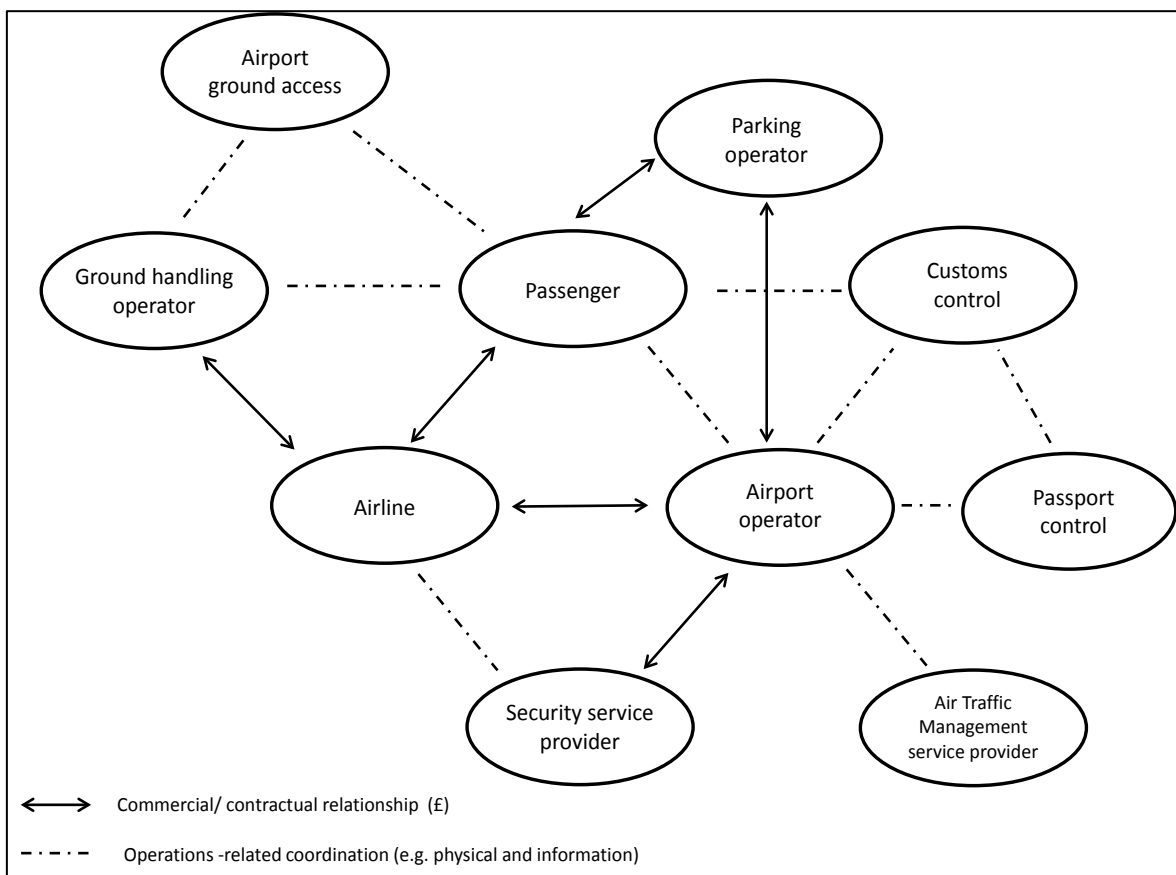


Figure 1: A stylised air transport service network

In the cases of the Helsinki Vantaa Airport and Warsaw Airport MoUs, it is explicitly required that partners share operational information, such as estimated landing time and actual taxi-in time, on each flight. Furthermore, information should be provided free of charge. Information may be provided to other parties, although charges may be applied: the MoU for Vantaa further reads as follows:

“The provision to and use of data by the Contracting Partners is free of charge. Partners who are not signatories to the MoU wishing to access data may be allowed to do so under agreement by the Steering Group. For using data under such a special dispensation, a charge is applicable by the decision of the Steering

Group. The charge can be avoided by becoming a signatory of the MoU.” (EUROCONTROL, 2012: A3-11)

The detailed arrangements for the provision of data to the Airport CDM database are the subject of Service Level Agreements between the Contracting Partners. In relation to this latter point, the Warsaw Airport CDM MoU makes mention of separate service level agreements (SLAs) that need to be agreed between partners regarding the provision of data to the CDM Airport database.

#### *Initial evidence on implementation*

Although detailed understanding of the operation of CDM in practice will only be possible with further empirical work, secondary sources point to some important issues. For example, there is clear evidence that information sharing helps at an operational level in dealing with delays:

*“In the past, dealing with these situations involved a lot of phone calls and questions for our hub controllers. Now, there is no need for open questions about what is happening. The information is available.” (Airport dispatcher, quoted in EUROCONTROL (2009))*

More generally, there is evidence that, through the process of CDM implementation and operation, partners come to better understand one another’s practices and issues:

*‘Airport CDM established a communication platform where we finally have an opportunity to meet with our partners regularly and also discuss other issues that we have.’ Jiri Roubicek, Czech Airlines (quoted in EUROCONTROL, 2009)*

*‘Before we started to implement Airport CDM, we had a more tower-oriented point of view. Now we understand the requirements of our partners at the airport much better’ Klaus Wehle, DFS, Frankfurt Tower (quoted in EUROCONTROL, 2009)*

#### **Discussion**

We seek to understand the interplay of different modes of coordination in service networks. Airport CDM is a set of policies and practices that, in their conception and implementation, have great potential to reveal these processes of coordination. Figure 2 is an attempt to capture these; A-D represent partner organisations.

At the heart of this is the service process activity of planes landing, being turned around, and taking off. This requires coordinated action among multiple actors. CDM seeks to achieve this in part through modularisation: the milestones approach defines the architecture of the service process and defines key events in the process that everyone agrees on – these are effectively ‘visible design rules’ (Baldwin and Clark, 2000); moreover, they are not only convenient events in the process, but also events ‘where the partners involved in the flight process change’ (EUROCONTROL, 2012). CDM also seeks to achieve coordination through information-sharing: against the agreed milestone structure, all partners have access to the same, pooled information. This contrasts with previous practice where one partner would have more up-to-date information than another. In some respects, this achieves coordination by reducing the need for reciprocal information exchange: ‘plans and rules’ in Okhuysen and Bechky’s (2009) terms, or tasks redesign to reduce interdependence in Srikanth and Puranam’s (2010). Hence, in Figure 2, the pooled information underpins the operational coordination of processes. There is a cyclical relationship between the two: information supports the process, and the process, as each event is completed, generates more information, which other actors can then use.

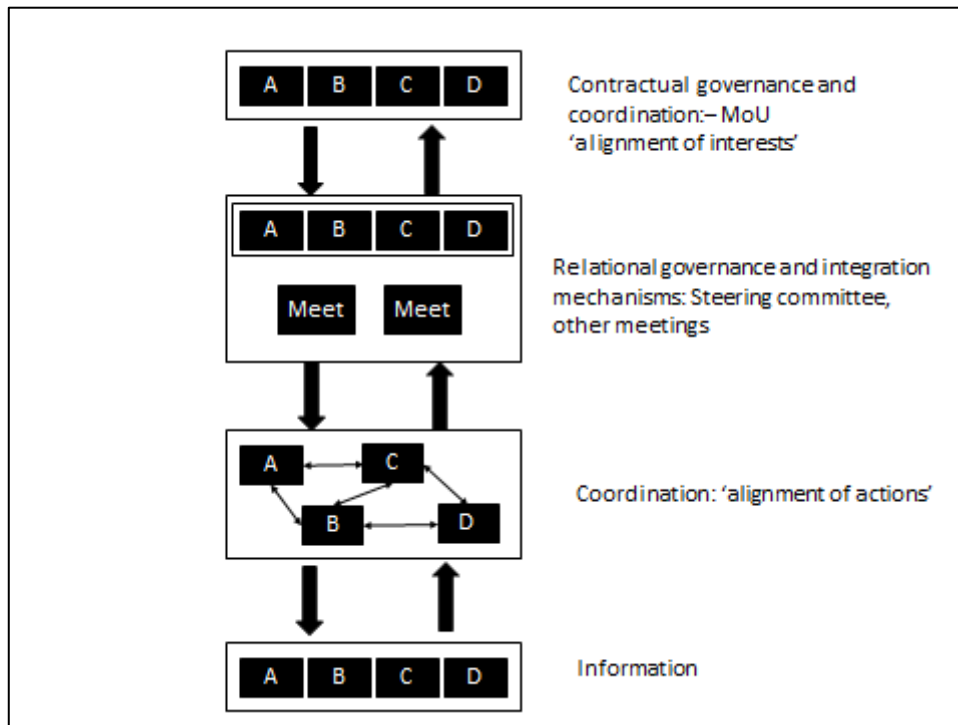


Figure 2 – Governance and coordination in CDM

The overarching mechanism by which these collective practices are enabled is the Memorandum of Understanding (top of Figure 2). While it serves to some extent to safeguard participants from opportunistic behaviour – shirking in relation to the timely provision of accurate information can be obviated, for example – this formal mechanism serves principally as a coordinating device (Mayer and Argyres, 2004, Schepker et al., 2014). The overarching intent of the MoU is then translated into implementation and operation of the CDM system through the vehicle of the Steering Committee. Other meetings are used to regulate the operation of the information sharing system e.g. frequent ‘system evaluation’ meetings are used to identify and remedy shortfalls in information quality or operations performance. Investment in the additional coordination mechanisms of the CDM approach is designed to reduce the information-processing costs of frequent *ad hoc* reciprocal adjustments between partners at the detailed operational level.

Evidence from implementations also suggests that various actors also gain much greater insight into others’ concerns and perspectives: so, ‘common ground’ (Srikanth and Puranam, 2010) is also established between co-located actors. Day-to-day operational coordination, then, feeds into the process of medium-term improvement of the systems, and engenders a greater ability to anticipate the interdependent actions in future periods.

It is notable that the MoU is signed between the partners present at a particular airport. Many of these may be part of international firms providing services (e.g. ground handling) to airports in many locations. But the fact of being co-located, and formally aligned through the MoU, can likely serve to develop an identification with the airport among staff employed by multiple, legally distinct organisations. It is interesting to speculate whether, in the ‘moment of truth’ of trying to solve a problem among interdependent service providers, employees’ first thought is for the good of their own organisation, or for the effective operation of the airport and the satisfaction of its



collective end customer, the passenger. For Kogut and Zander (1996), identification is a crucial part of what firms are for and what allows them to bring about co-ordinated action. In that sense, there is an open question as to whether the 'firm' (in Coase's sense) that matters is the particular ground handling company or airline, or the 'quasi-firm' of the airport operation as a whole.

## Conclusions

Our analysis, as summarised in Figure 2, is clearly specific to the CDM context. But we suggest that it also begins to point the way to a more general understanding of how service network governance mechanisms interact with B2B service processes. This is not in some general sense about setting the context or ethos, but about altering property rights (i.e. mandating information sharing) and related responsibilities, and collectively redefining processes (the milestone approach). The particular conditions that obtain in airports make this a special case, but similar principles can apply to many other settings. Our focus has been on enduring operations rather than time-limited project-based contracting settings. We consider that this is particularly important for OM, because, in delivering service to the end customer in operations as diverse as airports, universities, hospitals, infrastructure and logistics networks, the important unit of analysis is less and less the individual service provider, and more the collectivity of organisations that combine to deliver service, often at a particular site. The 'hybrid' or 'quasi-firm' is a major challenge for OM analysis and thinking for the future (cf. Hayes, 2008).

This study is so far based on secondary data sources. As a next step, we will be collecting primary data from specific airports to deepen our insights into how CDM is being implemented to coordinate service delivery and how different partners participate in the efficient turnaround of flights. Airports represent an extreme case, in that there are multiple, densely inter-related service providers operating under circumstances of great time pressure, with high-value assets (planes, landing slots) at risk, and a requirement for exceptionally high levels of safety and security. We expect that insights derived from this setting will allow us to understand more generally the factors that shape the approach to coordinating interdependent activities in service networks.

## References

- Argyres, N. S. (1999) The impact of information technology on coordination: Evidence from the B-2 "Stealth" bomber. *Organization Science*, 10, 2, 162-180.
- Baldwin, C. Y. & Clark, K. B. (2000) *Design Rules: The Power of Modularity*, Boston MA, MIT Press.
- Burns, T. & Stalker, G. M. (1961) *The Management of Innovation*, London, Tavistock.
- Camerer, C. & Knez, M. (1996) Coordination, organizational boundaries and fads in business practices. *Industrial and Corporate Change*, 5, 1, 89-112.
- Cao, Z. & Lumineau, F. (2015) Revisiting the interplay between contractual and relational governance: A qualitative and meta-analytic investigation. *Journal of Operations Management*, 33, 15-42.
- Coase, R. H. (1937) The nature of the firm. *Economica*, 4, 16, 386-405.
- Collins, H. (1999) *Regulating contracts*, Oxford ; New York, Oxford University Press.
- Collins, H. (2009) The weakest link: legal implications of the network architecture of supply chains. In: AMSTUTZ, M. & TEUBNER, G. (eds.) *Networks: legal issues of multilateral co-operation*. Oxford: Hart Publishing.187-210
- Davenport, T. H. (2005) The coming commoditization of processes. *Harvard Business Review*, 83, 6, 100-108.
- Doerr, K., Lewis, I. & Eaton, D. R. (2005) Measurement issues in performance-based logistics. *Journal of Public Procurement*, 5, 2, 164.
- Eccles, R. G. (1981) The quasifirm in the construction industry. *Journal of Economic Behavior & Organization*, 2, 4, 335-357.

- Ellram, L. M., Tate, W. L. & Billington, C. (2008) Offshore outsourcing of professional services: A transaction cost economics perspective. *Journal of Operations Management*, 26, 2, 148-163.
- EUROCONTROL 2009. Airport CDM. Brussels, Belgium.
- EUROCONTROL 2012. Airport CDM implementation: the manual. Brussels: European Organisation for the Safety of Air Navigation (EUROCONTROL).
- Freeland, R. F. & Zuckerman, E. 2014. The problems and promises of hierarchy: A sociological theory of the firm. Mimeo.
- Gulati, R., Lawrence, P. R. & Puranam, P. (2005) Adaptation in vertical relationships. *Strategic Management Journal*, 26, 5, 415-440.
- Hayes, R. H. (2008) Operations management's next source of galvanizing energy? *Production and Operations Management*, 17, 6, 567-572.
- Kogut, B. & Zander, U. (1996) What firms do? Co-ordination, identity and learning. *Organization Science*, 7, 502-518.
- Langlois, R. N. (2004) Chandler in a larger frame: Markets, transaction costs, and organizational form in history. *Enterprise & Society*, 5, 3, 355-375.
- Lawrence, P. R. & Lorsch, J. W. (1967) *Organization and environment: managing differentiation and integration*, Boston, Harvard Business School.
- Lawrence, P. R. & Lorsch, J. W. (1969) *Developing organizations: diagnosis and action*, Reading, MA, Addison-Wesley.
- Lovelock, C. & Gummesson, E. (2004) Whither services marketing: in search of a new paradigm and fresh perspectives. *Journal of Service Research*, 7, 1, 20-41.
- Mayer, K. J. & Argyres, N. S. (2004) Learning to contract: Evidence from the personal computer industry. *Organization Science*, 15, 4, 394-410.
- Nordin, F. & Kowalkowski, C. (2010) Solutions offerings: a critical review and reconceptualisation. *Journal of Service Management*, 21, 4, 441-459.
- Normann, R. (2002) *Service management: strategy and leadership in service business*, Chichester, John Wiley.
- Okhuysen, G. A. & Bechky, B. A. (2009) Coordination in organizations: an integrative perspective. *The Academy of Management Annals*, 3, 1, 463-502.
- Poppo, L. & Zenger, T. (2002) Do formal contracts and relational governance function as substitutes or complements? *Strategic Management Journal*, 23, 8, 707-725.
- Sako, M. (2006) Outsourcing and Offshoring: Implications for Productivity of Business Services. *Oxford Review of Economic Policy*, 22, 4, 499-512.
- Sampson, S. & Froehle, C. (2006) Foundations and implications of a proposed unified services theory. *Production and Operations Management*, 15, 2, 329-343.
- Sampson, S. E. & Spring, M. (2012) Customer Roles in Service Supply Chains and Opportunities for Innovation. *Journal of Supply Chain Management*, 48, 4, 30-50.
- Schepker, D. J., Oh, W.-Y., Martynov, A. & Poppo, L. (2014) The many futures of contracts moving beyond structure and safeguarding to coordination and adaptation. *Journal of Management*, 40, 1, 193-225.
- Selviaridis, K. & Wynstra, F. (2015) Performance-based contracting: a literature review and future research directions. *International Journal of Production Research*, 53, 12, 3505-3540.
- Sinha, K. K. & Van De Ven, A. H. (2005) Designing work within and between organizations. *Organization Science*, 16, 4, 389-408.
- Spring, M. & Araujo, L. (2009) Service, services and products: re-thinking operations strategy. *International Journal of Operations & Production Management*, 29, 5, 444-467.
- Srikanth, K. & Puranam, P. (2010) Integrating distributed work: comparing task design, communication, and tacit coordination mechanisms. *Strategic Management Journal*, 32, 8, 849-875.
- Thompson, J. D. (1967) *Organizations in action : social science bases of administrative theory*, New York, McGraw-Hill.
- Van De Ven, A. H., Delbecq, A. L. & Koenig Jr, R. (1976) Determinants of coordination modes within organizations. *American Sociological Review*, 41, 2, 322-338.
- Vargo, S. L. & Lusch, R. F. (2004) Evolving to a new dominant logic for marketing. *Journal of Marketing*, 68, 1, 1-17.
- Williamson, O. E. (1979) Transaction-Cost Economics: The Governance of Contractual Relations. *Journal of Law and Economics*, 22, 2, 233-261.
- Wynstra, F., Spring, M. & Schoenherr, T. (2015) Service triads: A research agenda for buyer–supplier–customer triads in business services. *Journal of Operations Management*, 35, 1, 1-20.