

# The Provision of Inter-organisational Infrastructure as An Appropriate Role for Cosourcing

Mark Borman

*The University of Sydney, m.borman@econ.usyd.edu.au*

**Abstract** — A case study of credit unions in the financial services sector in Australia designed to examine the motivations and constraints to cosourcing – or the sourcing of a common activity jointly by a group of organizations – and assess whether the provision of inter-organisational infrastructure is an appropriate focus for cosourcing

**Keywords**—infrastructure, financial services, outsourcing, core capabilities.

## I. INTRODUCTION

A number of organisations have recently begun to actively seek opportunities where existing services can be provided jointly. In the UK, for example, three banks and Unisys formed a joint cheque processing venture [1]. It would be useful therefore to understand the factors that determine whether such initiatives are appropriate. Given that the activity concerned is typically no longer conducted in house the outsourcing literature – and in particular that relating to why outsource and what to outsource – would seem to be a logical starting point. However while Gallivan and Oh [2] recognise a class of outsourcing – cosourcing – where a group of organisations come together to obtain a common service from a supplier, a review of the literature suggests that little research has been conducted in the area.

The current paper seeks to start to address this deficiency by proposing that a focus on the provision of inter-organisational infrastructure is an appropriate role for cosourcing

## II. THE COSOURCING DECISION AND A FOCUS ON INFRASTRUCTURE

While research examining the motivation for outsourcing draws from many theoretical perspectives, one is particularly relevant with regard to determining what to outsource from a *strategic* perspective: resource based theory [3]. When one moves from outsourcing to cosourcing it is also necessary to consider the benefits of acting jointly. Here it is suggested that there are two

potential sources – based upon economies of scale and network externalities.

### A. Economies of scale

Economies of scale refer to production and distribution efficiencies which come with larger size [4]. From a supply side perspective the benefits have long been recognised as a motivation for outsourcing [5]. Cosourcing introduces a demand side dimension. As a group of organisations aggregate their demand a potential supplier should become better placed to realise economies of scale in meeting it.

### B. Network externality theory

Network externality theory suggests that the “value of a unit of a [network] good increases with the number of units sold” [6]. The classic example is telecommunications where the value increases as the number of customers grows. The actual value of a network good is determined by key characteristics such as complementarity and compatibility [7]. The work of Katz and Shapiro [8] suggests that cosourcing may be beneficial for activities where there are either direct – connectivity related – or indirect – where the value of a unit of the good increases with the number of units sold – network effects that are either direct – where the JSP facilitates connectivity – or indirect for example as a consequence of the wider availability of complementary goods.

### C. Resource based theory

Resource based theory suggests that firms secure success by utilising their unique resources comprised of intangible and tangible assets that are tied semi-permanently to the firm [9]. From the resource based perspective, success is maximised where organisations focus their attention on those areas where their distinctive capabilities lie [10] and rely on others for the provision of ancillary activities. Not all of these activities are likely to be appropriate for cosourcing – what organizations consider core and ancillary will of necessity vary. Cosourcing will thus be limited to those activities considered ancillary across a number of organizations – with organizations acting individually to outsource their remaining ancillary activities.

It is suggested here that one appropriate focus for cosourcing therefore will be on the provision of inter-organisational infrastructure – see Figure 1.

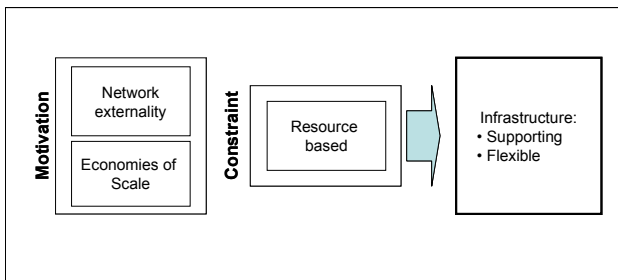


Figure 1: Inter-organisational infrastructure as an appropriate focus for cosourcing

Based upon a synthesis of the research at the time, Duncan [11] defined infrastructure as “a set of shared, tangible, IT resources that provide a foundation to enable present and future business applications” (p38). From such a perspective infrastructure provides support for the delivery of varied and adaptable applications [12]. There exists a reasonably extensive body of literature considering infrastructure within a single organisation (see for example [13], [14], [15], [16]) and several attempts have been made to identify what characterises such infrastructure – for example Star and Ruhleder [17] and Weill and Vitale [12]. However little work appears to have been conducted considering infrastructure that serves a group of organisations. Weill et al [14] and Weill and Vitale [12], for example, acknowledged infrastructure as existing outside the firm but did not consider it further. One exception is the work of Borman [18] who suggested that there are two defining characteristics of such infrastructure – that it *supports* the activities of the organisations using it and is sufficiently *flexible* to allow those organisations to exploit it in different ways.

Referring back to Duncan [11] these characteristics can be seen to directly contribute to the fundamental proposition of infrastructure serving as an enabling foundation. The first requires that the infrastructure does not function as an end service itself but rather facilitates, or is incorporated, into the end service delivered by each organisational user i.e. it underpins rather than overlays the activities of individual organisations. The second can be seen to build upon this supporting role by ensuring that organisations can incorporate the infrastructure into their operations in the manner most suited the individual needs i.e. it does not force excessive standardisation. Such a perspective may satisfy the requirements of the resource based theory. Wernerfelt [9] suggested that organisations secure success by utilising their unique resources to differentiate themselves. Ensuring cosourcing function in a supporting role and does not inhibit flexibility will enable organisations to tailor their use of it to best exploit their individual capabilities.

The remainder of the paper consists of the presentation and analysis of a case study of an instance of cosourcing, that is perceived by users to be successful, to ascertain both whether economies of scale and / or network externalities

are motivating influences and whether the cosourcing displays the necessary characteristics to be considered inter-organisational infrastructure.

### III. METHODOLOGY

The financial services sector was selected as the broad domain for the empirical work as it has been identified as well suited to outsourcing due to the repetitive nature of many processes and their information intensive nature [19]. The focus was on credit unions which are member owned financial institutions that provide a comprehensive range of retail banking products and services. Around 180 credit unions currently operate in Australia with 3.6 million members and more than \$29 billion in assets. The specific instance of cosourcing examined was the core banking system and associated computer services. A core banking system is the IT application that provides the core transaction processing capabilities – encompassing back office, origination, front office and teller processing activities – that enables a credit union to develop and manage its various savings and loans products. The computer services to support the operation of a credit union’s core banking system are provided either internally or by a computer bureau. Bureaus vary with regard to whether they are independent commercial providers, or collectively owned by credit unions, and whether one or multiple core banking systems are supported. The range of options available is illustrated in Figure 2.

Core banking system	System hosting	
<b>Core banking system 1</b> <i>Head contract; credit unions jointly agree and fund developments which are ultimately determined and undertaken by the commercial provider</i>	<b>Inhouse provision</b> <i>Core banking system hosted inhouse by credit union</i>	
	<b>Computer bureau A</b> <i>Credit union owned service provider</i>	
	<b>Commercial services provider</b> <i>Credit unions aggregate purchasing power but have individual contracts</i>	
<b>Core banking system 2</b> <i>Aggregate purchasing power; individual credit union contracts; developments determined and undertaken by the commercial provider</i>	<b>Inhouse provision</b> <i>Core banking system hosted inhouse by credit union</i>	
	<b>Computer bureau A</b> <i>Credit union owned service provider</i>	
	<table border="1"> <tr> <td> <b>Computer Bureau B</b>  <i>Credit union owned intermediary manages the relationship and provides a subset of services</i> </td> <td> <b>Commercial services provider</b>  <i>Provides the bulk of hosting services, no direct contact with individual credit unions</i> </td> </tr> </table>	<b>Computer Bureau B</b> <i>Credit union owned intermediary manages the relationship and provides a subset of services</i>
<b>Computer Bureau B</b> <i>Credit union owned intermediary manages the relationship and provides a subset of services</i>	<b>Commercial services provider</b> <i>Provides the bulk of hosting services, no direct contact with individual credit unions</i>	
<b>Core banking system 3</b> <b>+ Computer bureau C</b> <i>Head contract; development determined and undertaken by the credit union owned bureau; system and bureau bundled</i>		

Figure 2: Core banking system and hosting options

The case study method was employed as it is seen as particularly appropriate where research and theory are at a

formative stage and a phenomenon is not well understood [20]. The case work presented here is primarily explanatory and draws upon the work of Dubé and Paré [21] with regard to the approach followed. It was therefore decided that the primary locus of triangulation would be between different organisations [22]. Of course, where possible and appropriate multiple interviews were conducted within a credit union to provide internal triangulation. While not ideal such a situation is not unique and there are numerous instances of other research (for example [23], [24]) where it has not been possible or has been nonsensical to conduct interviews with multiple actors within an organisation. Furthermore in all cases it was possible to achieve a degree of internal triangulation through the review of credit union documentation – primarily annual reports and board papers.

The sampling strategy followed can be seen as a combination of *intense* (in that the particular instance of cosourcing selected was one that was perceived to be very successful) and *maximum variation* (in that a diverse range of individual credit unions were selected in order to identify common factors that cut across variations) [25]. Because cosourcing was not universal amongst credit unions it was possible to examine whether the factors identified influenced the decision both from the perspective of credit unions that cosourced and those that did not. This represents an extension to much of the existing case study research on outsourcing where the focus has solely been on organisations that outsource (for example, [26], [27]).

A total of 14 credit unions were interviewed representing over 25% of the total asset base of the sector. Interviews were between one and two hours in duration and a semi-structured interview protocol was followed.

Credit Union	Total assets
CU1	< \$100m
CU 2	< \$100m
CU 3	\$100-\$500m
CU 4	> \$500m
CU 5	> \$500m
CU 6	\$100-\$500m
CU 7	>\$500m
CU 8	\$100-\$500m
CU 9	>\$500m
CU 10	< \$100m
CU 11	>\$500m
CU 12	\$100-\$500m
CU 13	>\$500m
CU14	\$100-\$500m

Table 1: Credit unions details

#### IV. RESULTS

The interviews suggested that both economies of scale and indirect network externalities serve as motivating forces for the cosourcing decision. In addition the cosourcing examined appears to function flexibly in a supporting role

allowing organisations to focus on and exploit their specific core capabilities. As such it can be seen to serve as inter-organisational infrastructure. However it also became apparent that cosourcing is unlikely to be monolithic and that a variety of options is desirable both to ensure competition between suppliers and to meet the different preferences of specific organisations. Furthermore cosourcing was seen as introducing a need to compromise with other credit unions. As such, and as Figure 3, illustrates cosourcing is likely to lead to multiple infrastructures rather than a single one.

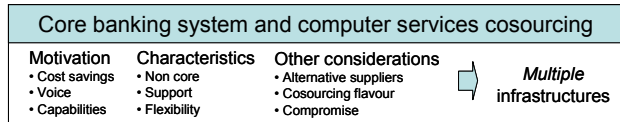


Figure 3: Cosourcing and the emergence of multiple infrastructures

##### A. Motivation

Core banking platforms and the computer bureaus that host them were seen by the majority of credit unions as areas where they had similar needs and could benefit from coming together to secure access to economies of scale.

*“We are a medium sized credit union and we want access to those services, we rely on some of those large credit unions to get that aggregated purchasing power so that we get a reasonable price”* CU14

*“We’re small, we just can’t fund huge IT programmes”* CU3

The desire for voice or the ability to get on the radar screen of suppliers can be seen as an indirect network externality – in that the voice increases as the number of credit unions utilising a particular option increases.

*“If I was to negotiate, number one, they’d say well who are you? How big are you? How many members do you have etc., and they’d basically put me on the bottom of the pile”* CU6

*“The aggregated voice that you can do if you all speak as one voice, you can .. make some sort of demand and it might be a fair sizeable chunk of their business”* CU14

Additional advantages however were also suggested for small and medium sized credit unions – including access to technical and managerial capabilities.

*“small get access to new technology, large get volume based transaction discounts”* CU5

##### B. Non core, supporting and flexible

From a capability perspective the majority of credit unions see their core banking system and computer bureau as critical not core. Furthermore they were firmly seen as serving in back office support roles.

*“Because it’s your core banking system, everything hangs off it and everything goes through it.. you can’t run the business without it. Yes it is a tool, but it is just so critical it has got to be part of every consideration”* CU9

*“core is anything that touches the members.. happy to outsource the back office – things that the customer will not notice”* CU5

*“You can focus on your core business, focus more on your core business and doing what you do well, rather than focusing on those things that you then do very efficiently”* CU14

*“it’s opaque, it’s chugging away, and it has no bearing on the business.”* CU3

In only a few cases was the basic core banking system or computer bureau seen as core and in those circumstances they were retained inhouse.

The credit unions were also generally of the view that even with a common core banking platform there were considerable opportunities to configure it differently and build upon it with front end applications to develop points of differentiation ie there was an opportunity for flexibility.

*”with enough parameters that you can make it look and feel different and be different”* CU9

However it was also recognised that if you diverged too far from the core you could create problems for yourself.

*“the minute you are a very highly modded site it costs you much, much more to get everything bolting on the way it should”* CU11

Furthermore it was not recognised universally that the cosourcing option engendered sufficient flexibility.

*“Why did we remain in-house? .. It gives us flexibility.. If we want to run reports today, two days time, right this minute or whatever, we have that flexibility to run reports. Whereas if you’re with an IDPC<sup>2</sup>, you have to put in a request for work, explain why, give some priority to it. So we don’t quite have the flexibility”* CU6

*“better off being masters of our own destiny and staying in-house... enabled us to do was move very quickly with product development”* CU9

It should also be noted that not all non-core activities are considered equal, that some are more sensitive than others and this may impact the likelihood of cosourcing.

*“The general ledger footprint is identical.. [it is non-core but] aggregation is probably a phase that everyone’s got a bit nervous about, I don’t want someone else doing my numbers or sharing, doing my numbers as well as the credit union next door to me’s numbers”* CU12

### C. Supplier competition

Credit unions were generally keen to have access to multiple alternative suppliers.

*“they’re a commercial entity, they’re out to make a buck and we’ve had first hand experience when they’ve sold us modifications to the system that we know one of the credit unions before us paid for the same modification”* CU12

*“they’re negotiating agreements and if we don’t like it we can find another bureau”* CU14

*“Think it is good that there are alternatives- around three is right.. not more because [the industry] can not support but three gives choice”* CU5

However it was also recognised that decisions were long term and there were differing perceptions as to how easy actual change was.

*“do not revisit the decision often because it is such a major task to change”* CU6

### D. Cosourcing choices

The interviews suggested that there is more than one flavour of cosourcing. The cosourcing of computer bureaus for example differs with regard to whether the focus is primarily on buying power or operation.

*“The host agreements are all separate .. So this is just purchasing power.. What we’re trying to do is to get as much of the cost benefit without selling your soul. We think we’ve got a half way house. So why go that extra step if you don’t have to. That’s our position. We negotiate together, but at the end of the day we are separate entities. We are separate businesses, with the same supplier. That works for us.”* CU3

Even where the cosourcing is oriented towards operation there is variation with regard to the functionality provided, how standardised the operating environment is and the pricing of contracts.

*“part of the reason why we like the [core banking] solution was it actually did away with a lot of those third party relationships you had to maintain to keep all those things going”* CU9

*“if you start running two platforms on your bureau, then it adds an extra layer of cost. It’s much more efficient to run only one platform.”* CU5

<sup>2</sup> IDPC – Independent Data Processing Centre. The common term for the cosourced computer bureaus used by credit unions

*“[Credit Union X] is getting it at a better price than me because what’s happened is as the company makes more sales the unit cost of doing all the business comes down and for new customers it applies that. It’s not going to say to us as a steady customer, look, good news because we signed X, Y, Z, we’re going to cut your price by 3 cents in the dollar.”* CU7

Such variation in part reflects the differing organisational perspectives as to what is appropriate. For example there are conflicting views with regard to the amount of functionality a core banking system should provide.

*“The beauty of that is, not coming as a package.. it’s all modular”* CU14

*“[Application 1 is] very expensive to deal with. They have a core and then you have half a dozen different subsets that are provided by different providers. So you have installation costs and project management costs associated with all of those subsystems”* CU12

*“The number of suppliers that you are dealing with brings complexity for your depth of interface and then managing, you know, if you are making changes in your core one does it happen in the other application”* CU13

There was also seen to be the potential for a particular cosourcing arrangement to be come too large, cumbersome or unmanageable..

*“There’s only ten of us, when it was 250 users you got rooted”* CU4

#### *E. Compromise*

A dependency on other credit unions was also seen to be introduced with cosourcing. In structuring cosourcing arrangements interviewees suggested that one of the most difficult tasks was managing the balance between the individual credit union and the group as a whole. In addition being part of a group introduces the risk that the group will not always seek to move in the same direction.

*“There is inherent compromise in all of these systems...”* CU4

*“I think there is always strength in numbers, but it is also making sure that the people who are then agreeing to the development, there is a common understanding and agreement of what needs to be done. I think the numbers give you benefit but it is making sure that everybody is on the right page and agreeing to the right direction and looking at it from, not only their self interest point of view, but the benefit of all parties involved.”* CU13

*“For years and years, we pushed and pushed to get this done, and no one seemed to be interested because they’d never had it before in the other system. To this day we still*

*haven’t got it. That’s frustrating. .. when you’re in a group you’ve got to wear the down side as well”* CU3

*“The system had to be selected to suit all sizes. This system can run on all sizes, but it runs better on the bigger organisations”* CU14

## V. DISCUSSION AND FUTURE RESEARCH

The cases suggest that when considering cosourcing two of the driving forces are indeed externalities and economies of scale. They also suggest though that benefits will likely vary across organizations in accordance with internal characteristics such as existing cost structures. In terms of whether providing inter-organisational infrastructure may be an appropriate focus for cosourcing the evidence is broadly positive. It would appear that the cosourcing examined both functions in a support role and provides flexibility and thus satisfies the necessary characteristics to be considered infrastructure. However the comments regarding not straying too far from the norm suggest that there are limits to flexibility and it is not absolute.

Furthermore it is interesting that interviewees emphasised both their preference for there to be a number of alternative suppliers and the compromise that cosourcing requires. It is likely that taken in combination these factors – different perceptions of what is required, the desire for competition and the need for compromise – explain why multiple cosourcing arrangements have developed rather than a single one.

In terms of future research, given the comment that some non-core activities are too sensitive to cosource, it would be useful to examine in more detail what characteristics of an activity make it amenable or not to cosourcing ie looking beyond the basic core, non-core divide.

It would also be useful to look in more detail at appropriate combinations of participants for cosourcing. Is there for example an optimum number of participants beyond which the incremental transaction costs of managing the cosourcing arrangement outweigh the incremental scale benefits (see for example the work of Hancock et al [28] regarding diseconomies of scale) or compromise becomes too problematic. Are there preferred compositions – for example that avoid or embrace the inclusion of a partner that is of a significantly larger scale than the other participants. What are the important organisational considerations – relating to factors such as strategy, structure, processes and culture ([29], [30], [31]) – to ensure that there is an appropriate “fit” between participants.

Furthermore how easy is it to identify a set of common interests that is stable over the long term for a group of organisations. In other words is cosourcing likely to be a common phenomenon or are there sectoral difference that

will influence the likelihood of organisations working together (as Hagedoorn [32] might suggest)? At a minimum variations in the extent of environmental uncertainty [33] and the degree of competition [34] may have an impact.

Finally it is also important to seek to examine in more detail the concepts of support and flexibility. What exactly do they entail and what are the implications in areas such as systems integration (does flexibility best provided through extensive or limited integration?).

#### REFERENCES

- [1] C. Roberts, (2004) "Back-office central," *Business Review Weekly*, Jan 22-28 2004, p18.
- [2] M.J.Gallivan and W. Oh, "Analysing IT outsourcing relationships as alliances among multiple clients and vendors," 1999, *Proceedings of the 32nd HICSS*.
- [3] J. Dibbern, T. Goles, R. Hirschheim and B. Jayatilaka, "Information Systems Outsourcing: A Survey and Analysis of the Literature". *DATABASE*, (35) 4, 2004, pp6-102.
- [4] A.D. Chandler, *Scale and scope; The dynamics of industrial capitalism*, 1990, Harvard University Press, Cambridge.
- [5] R. Venkatesan, "Strategic sourcing – To make or not to make," *Harvard Business Review*, 1992, (70:6), pp. 98-107.
- [6] N. Economides, "The economics of networks," *International Journal of Industrial Organization*, 14, 1996, pp673-699.
- [7] O. Shy, *The economics of network industries*, 2002, Cambridge University Press, Cambridge.
- [8] M.L. Katz and C. Shapiro, "Systems competition and network effects," *Journal of Economic Perspectives*, 1994, Spring
- [9] B. Wernerfelt, "A resource-based view of the firm," *Strategic Management Journal*, 5, 1984, pp171-180.
- [10] J. Hagel, III. and J. Seely Brown, "Your next IT strategy," *Harvard Business Review*, 79(9), 2001, pp105-113.
- [11] N.B. Duncan, "Capturing flexibility of information technology: a study of resource characteristics and their measure," *Journal of Management Information Systems*, 12 (2), 1995, pp37-57.
- [12] P. Weill and M. Vitale, "What IT infrastructure capabilities are needed to implement e-business models," *MIS Quarterly*, 26 (1), 2002.
- [13] S.H. Chung, R.K. Rainer and B.R. Lewis, "The impact of information technology infrastructure flexibility on strategic alignment and applications implementation," *Communications of the Association for Information Systems*, 2003(11), 2003, pp191-206.
- [14] P. Weill, M. Subramani and M. Broadbent, "Building IT infrastructure for strategic agility," *Sloan Management Review*, Fall, 2002, pp57-65.
- [15] J.C. Brancheau, B.D. Janz and J.C. Wetherbe, "Key issues in information systems management: 1994-95 SIM Delphi results," *MIS Quarterly* 20(2), 1996, pp225-242.
- [16] J.C. Henderson and N. Venkatraman, "Strategic alignment: A model for organizational transformation via information technology," in: T.I. Allen and M.C. Scott Morton (eds) *Information Technology and the Corporation of the 1990s*, 1994, Oxford University Press, Oxford.
- [17] S.L. Star and R. Ruhleder, "Steps towards an ecology of infrastructure: Design and access for large information spaces," *Information Systems Research*, 7(1), 1996, pp111-135.
- [18] M. Borman, "Inter-organisational infrastructure in the Australian travel sector," *Proceedings of the European Conference on Information Systems*, 2004.
- [19] R. Winter, "Retail Banking im Informationszeitalter - Trends, Geschäftsarchitektur und erste Beispiele," in S. Leist and R. Winter (eds), *Retail Banking im Informationszeitalter*, Springer, Berlin, 2002, pp.29-50.
- [20] I. Benbasat, D.K. Goldstein, and M. Mead, "The case study research strategy in studies of information systems," *MIS Quarterly*, (11:3), 1987, pp.369-386.
- [21] L. Dubé and G. Paré, "Rigor in information systems positivist case research: current practices, trends, and recommendations," *MIS Quarterly*, (27:4), 2003pp.597-635.
- [22] R. Yin, *Case study research: design and methods*, 1984, Sage, Beverly Hills.
- [23] L.M. Applegate and J.J. Elam "New information systems leaders: A changing role in a changing world", *MIS Quarterly*, (16:4), 1992, pp.469-490.
- [24] S.Watts and J.C. Henderson, "Innovative IT climates: CIO perspectives", *Strategic Information Systems*, 15, 2006, pp.125-151
- [25] M.Q. Patton, *Qualitative research and evaluation methods*, (3rd ed.), 2002, Sage, Thousand Oaks.
- [26] M.C Lacity, L.P. Willcocks and D.F. Feeny, "The value of selective IT sourcing", *Sloan Management Review*, 1996, Spring, pp13-25
- [27] D. Feeny, M. Lacity and L. Willcocks "Taking the measure of outsourcing providers: successful outsourcing of back office business functions requires knowing not only your company's needs but also the 12 core capabilities that are key criteria for screening suppliers", *Sloan Management Review*, 2005, 46(3), p41-49.
- [28] D. Hancock, D.B. Humphrey, and J.A. Wilcox, Cost reductions in electronic payments: The roles of consolidation, economies of scale, and technical change," *Journal of Banking & Finance*, 23, 1999, pp.391-421.
- [29] S. Newell, S.L. Pan, R.D. Galliers and J.L. Huang "The myth of the boundaryless organization: Technology does not make cultural and business boundaries disappear simply because it exists," *Communications of the ACM*, 44(12), 2001, pp74-78
- [30] W.W. Burke and G.H. Litwin, "A Causal Model of Organizational Performance and Change," *Journal of Management*, 18(3), 1992, pp532-545
- [31] M.S. Scott-Morton (ed) *The corporation of the 1990s*, 1991, Oxford University Press, New York
- [32] J. Hagedoorn, "Understanding the rationale of strategic partnering: Interorganizational modes of cooperation and sectoral differences," *Strategic Management Journal*, 14, 1993, pp371-385.
- [33] O.E. Williamson, *The economic institutions of capitalism: Firms, markets, relational contracting*, 1985, The Free Press, New York.
- [34] M.E. Porter, *Competitive advantage*, 1985, The Free Press, New York.