Telecommunications and Networks in knowledge management,

role of technology in knowledge management (Internet search and knowledge management),

Week 9 Technologies to manage Knowledge: Artificial Intelligence; Human Expertise Application: Knowledge-based systems; Explicitly using historical knowledge: Case-based reasoning Systems

Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

<http://www.kmbestpractices.com/telecommunications-company.html>

**TELECOMMUNICATIONS COMPANY**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | **Business:**  **Headquarters:**  **Employees:** | Telecommunication Products and Services  USA  71,000 | | |  |  | | --- | --- | | **ANNUAL SALES**  **ANNUAL ASSETS**  **MARKET VALUE** | 37,827 (US$ MILLION)  55,272 (US$ MILLION)  15,221 (US$ MILLION) | |

Providing voice and data communications services to large and small businesses, consumers and government entities. The Company and its subsidiaries furnish domestic and international long distance, regional, local and Internet communications services

**SITUATION**

In the late 1990s, the company’s earnings indicated a shift in demand from traditional long distance to:

* Emerging products and services (i.e., data, IP and wireless) enabled by new technology
* New competitors that began to erode the company’s market share

In order to remain the market leader, the company needed to rapidly arm its sales force with accurate information to make quicker and better decisions. The sales force was also grappling with existing problems:

* E-mail distribution of product and service information prevented associates’ archiving of information
* Sales associates frequently had difficulty closing sales because contract or product specific information was not easily accessible
* Sales associates had to call into headquarters in order to get contract or product specific information; response time was not optimal
* Traditional sales training methods were insufficient due to the wide range of products and services offered
* Company content was located in a number of disparate sources

**STRATEGY**

The company defined a strategic sales support intranet program to enhance revenue growth and increase customer satisfaction  
  
The company invested a significant amount of resources in the initial rollout and defined the initial target audience to be a focus group or a line of business that would most likely increase revenues  
  
Implementing IKE © (the Information and Knowledge Exchange) involved 4 success factors:

* Good content management
* Fast downloads
* Easy and intuitive
* Cost-effective

The initiative obtained buy-in from data owners to allow access to their information  
  
The Knowledge Community facilitator role was created to promote collaboration and team stewardship

**ACTIONS**

IKE © (the Information and Knowledge Exchange sales support intranet) was created to rapidly, effectively, and uniformly communicate change from headquarters to the field

* IKE © was originally designed to provide sales information to 4,000 sales employees, it now handles 14,000 regular users throughout the company
* The company created a foundation of knowledge sharing by flying employees to a one week Knowledge Community Symposia where they would be introduced to the IKE© Homepage to begin the sales transformation

'Community Conference Calls' were held by a Knowledge Community Facilitator, SMEs, and an IKE © representative in order to maintain the feeling of community after the symposia  
  
The initiative implemented Q&A Boards that served as a focal point for frequently asked questions and sales support  
  
Feedback from employees was encouraged and captured through 'Community Conference Calls', Q&A Boards, quarterly surveys, and compiled sales feedback received via IKE ©  
  
Knowledge Communities held conference calls and teletraining sessions to familiarise employees with IKE ©  
  
Quarterly sales recognition awards were granted to best solutions promoting best practices

**TECHNOLOGY**

Corporate intranet through IKE ©

**BENEFITS**

Single point of contact for support needs from headquarters  
  
Greater sales force effectiveness:

* Dramatically increased sales associate productivity (30%) resulting in more selling time
* Proposal development time was cut by 50% as a result of using templated proposals
* Responses to complex information requests were reduced from 40 hours to approximately 4 hours
* Escalation and issue resolutions are reduced by 40%

Lowered cost by eliminating existing legacy system and reducing email traffic

Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

ain Challenges Of Knowledge Management:

Telecommunications Sector As An Example

Telecom Business Research Center and Dept. of Business Administration, Lappeenranta University

of Technology

Dept. of Business Administration, Lappeenranta University of Technology

Lappeenranta

Kalevi.Kylaheiko@lut.fi

Abstract

This paper deals with the issues of profiting from mutual interfirm and partnership formation

between large incumbent firms and small spezialized suppliers. We emphasize the nature of knowledge

relevant for partnerships decisions. A dynamized transaction cost economics model is launched in order

to grasp the issue of profiting from partnership. In order to be able to analyze also the value-creating

aspects the basic model is extended by introducing the main determinants of transaction/network

benefits as well. Finally, the implications of our model are scrutinized in the field of telecommunications

in Finland.

Keywords: knowledge management, transaction costs, dynamic capabilities, partnerships

Introduction

Knowledge management has received plenty of scholar and managerial attention in the 1990s.

Competitiveness of the modern knowledge-based firms is more and more based on their intellectual

assets. Various consulting activities as well as research and product development demand careful

management of knowledge (e.g. Sarvary 1999). There are hundreds of managerial books, articles and

even devoted journals on the topic. There is no doubt that the creation and transfer of knowledge is a

key competitive asset of today’s knowledge-based businesses. However, the concept of knowledge

management is used vaguely and without strict scientific base. Because of its peculiar commodity

properties knowledge is hard to capture theoretically and manage in real life businesses (Nonaka and

Konno 1998).

In the following we clarify the multi-faceted knowledge management concept and set it into the

context of a dynamized transaction cost theory. The knowledge-related transaction costs and benefits

are illustrated in the asymmetric R&D partnerships common in the telecommunications industry. Our

focal point is the issue of how to profit from cooperation and partnerships between large incumbent

firms and small spezialized suppliers.

Following the tradition of evolutionary economics (e.g. Nelson and Winter 1982;

2

Kyläheiko 1998), we emphasize such knowledge related processes as replication of existing

knowledge base, learning induced partial replication, knowledge creating, knowledge integrating

and knowledge transferring mechanisms. In order to be able to analyze these mechanisms we

combine evolutionary economics-related ideas with the so-called dynamic capability view.

The pioneers of this tradition, Teece and Pisano (1994, 537), interpret firms as generators of

dynamic capabilities, which help “in appropriately adapting, integrating, and re-configuring internal and

external organizational skills, resources and functional competencies toward changing environment.”

According to this view the competitive advantage of firms lies in dynamic capabilities “rooted in high

performance routines operating inside the firm, embedded in the firm´s processes, and conditioned by its

history”.

On the nature of knowledge

We start from the main knowledge related mechanisms. Fig. 1 below consists of three basic

knowledge categories. Tacit knowledge (“know-how”) is assumed to be embedded either in the firm

organization as a whole (which makes it easy to protect against the imitation attempts of rivals) or in

teams or sometimes even in single persons (which can fairly easily to be “bought” by rivals). Tacit

knowledge gives rise to cumulative learning based internalities which enable a firm to exploit the

economies of scale and utilize better outsourcing opportunities. There are two types of basic

mechanisms which make internalities possible; replication and partial replication. These learning

effects make path-dependent firm-specific trajectories possible and enable the crucial differences

between firms even within the same industry.

Generic knowledge and codified information in turn make it possible to exploit the

externalities generated through other (external) knowledge bases. They are sources of network

externalities and the most important mechanisms related to them are knowledge transferring and

knowledge creation through integrating tacit know-how with generic knowledge.

3

Figure 1: Knowledge categories and knowledge-related mechanisms

Next we combine these categories with the issue of knowledge management. Sarvary (1999,

95-96) has defined knowledge management as a ”business process through which firms create and use

their institutional or collective knowledge”. He continues that knowledge management can be seen “as a

technology that transforms information into knowledge”. According to the dynamic capability view the

firms can be seen as responses to knowledge related problems i.e. repositories of knowledge. Firms

that are able to create and manage knowledge, which is valuable to others, are able increase their value.

Knowledge becomes a source of competitiveness. Figure 2 below illustrates this idea.

Information Knowledge

- technological

- other

Core competence

- technological

- other

Focus on core competencies

Knowledge repository

Figure 2: Core competence-based strategy as a result of firm as a knowledge repository

Evolutionary knowledge management view

Next we explain how the firms function as knowledge repositories. Evolution of knowledge is

analyzed in terms of knowledge creating, transferring and integrating processes using the “Blind

Variation-Selection-Retention” scheme. The main role of alert entrepreneurs is to trigger off

variation-generating new combinations (technical artifacts, new routines, etc.) on which selection

works. However, selection always needs time to operate and to pick up fitter new combinations. This,

in turn, depends upon the organizational inertia. In the evolutionary theory of the firm organizations

have a double role: (i) the sources of "new combinations" (variation) and (ii) providers of a stable

hierarchy of path-dependent routines and capabilities which are continuously replicated (retention or

NATURE OF KNOWLEDGE

TACIT KNOWLEDGE GENERIC KNOWLEDGE CODIFIED KNOWLEDGE

Embedded in

(i) the whole organization

(ii) teams

(iii) individuals

-hard to transfer know-how

-easy to protect

-path-dependent + idiosyncratic

-source of cumulative internalities

-fairly easy to transfer

-fairly hard to protect -easy to transfer

-very hard to protect

Sources of network and other

knowledge-related externalities

(i)

replication

(first-loop learning)

(i) partial replication

(second-loop learning)

(iii) transfer

KNOWLEDGE

CREATION

THROUGH

INTEGRATION

KNOWLEDGE-RELATED

MECHANISMS

4

replication).

The former means that there are replication mechanisms that guarantee the necessary stability

and continuity. According to Nelson and Winter routines function as an organizational memory. The

role of tacit knowledge is important and new information will always be conceptualized in the

framework of old established organizational routines (capabilities).

In order to analyze replication mechanisms, Nelson and Winter introduced such important

concepts as static and dynamic routines. Static routines replicate existing organizational and

technological competencies. Through only partial replication there is room for adaptational changes.

Dynamic routines are routines through which the firm can "learn by learning" and diffuse generic scientific

and engineering knowledge. The dynamic capability concept rests on dynamic routines and can be

defined as "the capacity of a firm to renew, augment, and adapt its core competencies over time."

(Teece, Pisano and Shue 1992: 18). Dynamic capabilities generate new organizational and technological

competencies by combining (i) joint contributions of tacit internal learning, (ii) R&D search routines, (iii)

complementary assets, and (iv) generic knowledge. Consequently, dynamic routines and dynamic

capabilities reflect and actualize the firm's latent competencies, which opens new business

opportunities.

If successful, dynamic routines and capabilities make it possible to earn entrepreneurial rents

through superior core capabilities (competencies). Consequently, the evolutionary dynamic capabilities

view stresses differences between firms even within the same industry and, consequently, strategies

based on intended efforts to renew and adapt the firm's core competencies through partial replication

mechanisms. Differences in the ability to generate entrepreneurial rents reflect differences in efficiencies.

Now we are ready to outline the basic message of the evolutionary theory of the firm in the

context of knowledge management. The emphasis is not on resources per se, but on evolving routines

and capabilities and mechanisms through which a web of coordinating relationships connecting firm-

specific resources are replicated. The resource base of the firm determines its routines and is subject to

learning and variety through the path-dependent search and learning mechanisms that the firm uses.

The emphasis is "on the challenge of leveraging the existing resource position into a more favorable

future position" (Winter 1995: 151). Figure 3 summarizes our basic evolutionary knowledge

management view.

5

Figure 3: The basic framework of an evolutionary theory of the firm in the knowledge context (cf.

Kyläheiko 1995, 223).

On transaction and management costs and benefits

Introduction

Our evolutionary knowledge management view regards the firm as an organization, which

combines partly tacit and cumulative know-how (“techno”) with generic information (“logy”).

Heterogeneity of capabilities implies that the boundaries of the firm have to be interpreted as strategic

devices when outlining a firm’s knowledge management strategy. It is a question of how to generate

more value and how to strengthen the competitive position by using internally produced/ externally

acquired capabilities and resources in the most efficient way.

Fig. 4 below assumes that the firm as a value chain consists of different activities or transactions.

All the activities are based upon routines/capabilities which are partly tacit and partly generic. Some

internal and external capabilities already exist (static), whereas some have to be developed from the old

ones through partial replication or created through knowledge integration (dynamic). Some of the

activities can be bought from other firms (i.e. outsourced capabilities), whereas some of the activities

REPLICATION PARTIAL REPLICATION PARTIAL FIRM BOUNDARY

GOAL: SUSTAINED COMPETITIVE ADVANTAGE

TECHNOLOGICAL ARTIFACTS

-in terms of performance characteristics of services/products

-

CORE CAPABILITIES

CAPABILITIES

-path-dependent

-idiosyncratic

ROUTINES

HABITS, SKILLS & ASSETS

LUCK

CREATION OF NEW

COMBINATIONS

KNOWLEDGE BASE

-from tacit to codified RESOURCES

-financial

-physical

-human

-technological

-organizational

-cultural

TACIT KNOWLEDGE

(“TECHNO”)

-firm-specific know-how

-economies of scale & scope

GENERIC KNOWLEDGE

(“LOGY”)

LEARNING

SEARCH PROCESSES

SELECTION

ENVIRONMENTS

(market/non-market)

INTEGRATION of different knowledge bases

TRANSFER of different knowledge bases

EXTERNAL CAPABILITIES & RESOURCES

6

are based upon internal capabilities. Outsourcing costs i.e. the costs of using the market are called

transaction costs (relating to search, planning, negotiating, monitoring, and enforcement) and the

insourcing costs i.e. the costs of running the firm are called management costs (relating to

administration, control and monitoring as well as the costs of using low-powered bureaucratic

incentives).

Figure 4: Dynamic transaction and management costs and benefits

When the firm utilizes its own resources and capabilities it can build on cumulative learning and

exploit the economies of scope through replication. It can also utilize competence-enhancing innovations

or even use monopoly power over other firms. These all are the benefits related to in sourcing strategy.

We call them management benefits (cf. Dietrich 1994).

On the other hand, when the firm uses the market option (i.e. outsourcing) it can exploit high-

power incentives through fierce competition, economies of scale through specialization, flexibility and

variation generated through many alternative partners. A firm can also cope with radical uncertainty and

competence-destroying innovations. We call them transaction benefits.

The central knowledge management issue now is to find out such a governance structure i.e. a

combination of outsourced, networked and insourced activities or transactions which minimizes the sum

of transaction and management costs at the same time when the value obtained through transaction and

management benefits is maximized

Main determinants of static transaction and management costs

The concept of transaction cost has proved to be fruitful when explaining the boundary of the

activities in which the firm engages. Williamson (1975) explicated the following determinants that give

rise to (static) transaction costs: (i) bounded rationality, (ii) opportunism, (iii) information impactedness,

ACTIVITIES

Cost-minimizing

&

Value maximizing

strategy option

INTERNAL ROUTINES & CAPABILITIES

Existing (static) Not yet existing

Static & dynamic management benefits

-exploitation of monopoly power

-economies of scope

-cumulative learning

Production +

costs

Static & dynamic management

costs

A1A2A3An

EXTERNAL ROUTINES & CAPABILITIES

Existing (static) Not yet existing Static & dynamic

transaction costs

Static & dynamic transaction benefits

-high-powered incentives

-economies of scale due to specialization

-flexibility

-more variation

7

(iv) frequency of transactions, and (v) asset (site, physical, brand name or human asset) specificity.

Moreover, Teece (1986) introduced such concepts as complementary capabilities and the

appropriability regime. The former consists of external routines and capabilities (cf. Fig. (3)) that are

needed to complete a firm's internal capabilities. The complementary external capabilities, which have to

be outsourced, affect the bargaining situation the more, the more inefficient are their markets. This

implies higher transaction costs and, consequently, more insourced solutions. The appropriability

criterion determines how easily a firm can protect its innovation from imitation. It depends upon legal

protection and tacitness. The more tacit knowledge, the lower are transaction costs and vice versa. Our

first knowledge management lessons are now:

The insourcing solution is the best option when (i) uncertainty and the danger of opportunism

are high, (ii) there are only few providers of complementary capabilities, (iii) innovation is systemic by

nature and requires large specific investment, (iv) appropriability (protectability) of new knowledge is

weak, thus implying the danger of a free rider imitator, (v) the markets of complementary assets are

inefficient, and (vi) trust between partners is lacking.

The arm’s length outsourcing solution is preferred when (i) the degrees of uncertainty and

complexity are minor and the danger of opportunistic behavior is small, (ii) there are many providers

available, (iii) innovation is autonomous and no high specific investment are needed, (iv) protection is

tight, and (v) the markets for the complementary capabilities are competitive. The hybrid form between

market and integration options is the network solution which will be discussed more carefully in chapter

5.

Main determinants of dynamic transaction and management costs

In the longer run, different sources of governance costs can no longer be held constant but have

to be endogenized. For example, in the turbulent emerging phase of a new technological trajectory (e.g.

telecommunications) the role of tacit knowledge is high and it is easier to obtain a strong appropriability

position than in the case of well-established mature trajectory (e.g. automobile industry). One can

anticipate a tendency towards vertically more integrated solutions as the technological trajectory

becomes more stabilized due to decreased technological uncertainty and increased standardization. The

automobile industry offers a good example.

On the other hand, when the firm faces a new not yet fully developed technology trajectory it is

very risky to bet only on one horse. It would be better to let the variation-generating forces of open

markets do their job and exploit the fruits through a networking strategy. On the other hand, also the use

of markets may be hazardous due to risk of opportunism. This situation is typical for telecommunications

with radically new technologies.

The question is, whether it is more efficient (i) to generate new and develop old internal

capabilities through continuous internal second-loop learning and large R&D inputs (“an integrated

conglomerate strategy”) or (ii) to acquire external capabilities from the open market (“a hollow firm

strategy a’la IBM’s PC’s”) or (iii) to exploit economies of scale and scope through networking (“a

networking firm strategy”).

We shall call the costs of transferring capabilities over the firm’s boundaries dynamic

8

governance costs (Langlois 1992). They can further be divided into dynamic transaction costs (i.e.

persuading, negotiating and teaching with the providers of external capabilities) and dynamic

management costs (persuading, negotiating and teaching within the firm of own when trying to

create/develop a capability internally or persuading, negotiating and teaching external partners when a

firm-made activity is tried to sell).

.

Main determinants of governance benefits

Traditional TCE literature does not deal with the issue of transaction or network benefits at

all, which means that they implicitly assume that these benefits are in a way independent of governance

structures. This is, of course, not true. There are different benefits which arise from different governance

structures. These benefit categories are of great importance, since they are closely connected with the

knowledge- based value adding processes and key mechanisms, such as replication, partial replication,

creating of new knowledge, value creating through integrationg, and transferring.

In order to clarify these categories we extend and modify Dietrich’s (1994, 38-48) approach

which is based on two distinctions. On the one hand, he differentiates between static transaction costs

(Cm) and static management costs (Cf), where C denotes "costs" and "m,f" denote "market" and

"firm's internal organization" respectively and, on the other hand, between dynamic transaction

benefits (Bm) and dynamic management benefits (Bf). Our extensions dynamic transaction and

management costs can be differentiated by using \*’s. Internal benefits (Bf) introduce explanatory items

which are important in the knowledge management context, namely (i) internal path-dependent

capabilities and (ii) advantages of monopoly and other strategic power achieved through

idiosyncratic capabilities. Dynamic benefits (Bm) of using the market include such explainers as

economies of scale and increased variation. Now we can introduce our more extensive and

dynamized governance cost formulations as follows:

(i) Outsource iff Bm – Cm – Cm\* > Bf – Cf –Cm\* or Bm - Bf > Cm-Cm\* - Cf-Cf\*

(ii) Insource or network iff Bm - Cm – Cm\*< Bf – Cf- Cf\* or Bm - Bf < Cm – Cm\*- Cf-Cf\*,

Bm\* = Dynamic transaction benefits (ability to exploit economies of scale, high-powered incentives,

flexibility, increased variation through many potential partners, ability to utilize competence-destroying

innovations).

Cm = Static transaction costs (depending upon opportunism, few partners available, asset or

capability specificity, inability to cope with parametric uncertainty, complexity, strong dependence on

complementary assets holders, systemic nature of innovation, low appropriability, organizational inertia

against newcomers)

Cm\*= Dynamic transaction costs (persuasion and learning costs with the providers of outsourced

external capabilities).

Bf\* = Dynamic management benefits (ability to use monopoly and other strategic power, ability to

use asymmetric knowledge, ability to exploit economies of scope and utilize cumulative tacit know-how

and competence-enhancing innovations, increased absorptive capacity)

Cf = Static management costs (monitoring and management costs of a large bureaucracy, high

sunken R&D costs, low-powered incentives, lack of variation of ideas).

9

Cf\* = Dynamic management costs (persuading, negotiating and teaching costs within the firm

when a new capability has to be generated, inability to cope with radical uncertainty).

Toward the explanation of the rise of partnerships and other network solutions

The rapidly increasing networks as organizational governance structures can be regarded as

hybrid forms between market and vertically integrated solutions. Partnerships are preferable when there

are determinants, which simultaneously speak for both insourcing (e.g. uncertainty, danger of

opportunism, asset specificity, low appropriability of new knowledge) and for outsourcing (e.g. the

need for high-powered incentives and greater variation of new ideas). A typical precondition for the

emergence of networks is also the pursuit of economies of scale and scope at the same time. These

two important concepts belong to the domain of dynamic transaction/management cost determinants. In

addition, trust and reciprocity among partners are badly needed to impede opportunism.

A brief sketch of the usage of our dynamized TCE-based knowledge management analysis in

the field of telecommunications can now be introduced in terms of our former equations (i) and (ii). Let

us think about the situation which is fairly typical in the telecommunications sector where partners are

asymmetric. When a small innovative service-producing firm tries to contact a large partner it faces a

problem of lacking reputation/references. However, if it manages to effectively utilize trust-generating

mechanisms it may result in successful network solution.

Our example can be illustrated as follows. Because of lacking trust, high-powered incentives,

and economies of scale both the partner candidates prefer dynamic market benefits ( Bm > Bf ) at the

same time when they, however, face a situation where market uncertainties are very high as well as the

threat for opportunistic behavior of potential market partners (Cm > Cf ). In such a frustrating situation

there is no co-operation or market activities to be expected, since the governance cost implication

appears to be the following one: Bm – Cm - Cm\* < 0 & Bf – Cf - Cm\* < 0 i.e. no activities

take place.

Fortunately, this is not the whole story. If a small partner can signalize that its innovative ideas,

cooperative learning and trust are possible and worth of trying. Cm may decrease enough when the

non-cooperative prisoners’ dilemma game changes into the cooperative coordination game through

trust-enforcing mechanisms so that we obtain a new management cost condition: Bm – Cm – Cm\* > 0.

Together with the old transaction condition Bf – Cf – Cm\* < 0 this new situation implies that a

network solution arises!

The next step could be to take into account cumulative path-dependent internal learning

processes which increase the dynamic management benefits (Bf) within the firm. Interestingly, it may

now happen that a vertical integration between the partners becomes more profitable than a

network solution and so the governance structure changes again. As a matter of fact something alike

seems to be happening within such high-tech industries as telecommunications where there are signs

about more integrated organizational solutions after the rapid networking phase. This tendency is

fostered through stabilization of technological trajectories which means that the appropriability regime

will become weaker i.e. static transaction costs (Cm) increase.

10

Challenges for Knowledge Management in the Telecommunications Sector

In the turbulent telecommunications sector the convergence of information technology,

telecommunications and the content industry has created potential business areas, where knowledge of

different actors is needed. The technological discontinuities e.g. the Internet and the E- Commerce are

creating possibilities for specialized suppliers. The emerging E-Commerce requires special

telecommunication software for actor identification and authentication. Large scale customer care and

billing as well as various data base services need further development for the E-Commerce to flourish.

In the New Economy the competitive players must be able to focus on dynamic core capabilities.

The partnering large firm in the telecommunications is motivated by the possibility to gain

dynamic capabilities by external linkages. According to our TCE framework the situation belongs to

network structures since it contains both the determinants for insourcing (market and technological

uncertainty, opportunism and low appropriability) and outsourcing (need for variation, flexibility and

high-powered incentives). The asymmetric partnerships also offer transaction and management benefits

to be gained. However, because of the partnering firms’ asymmetry (Fig. 5) the transaction and

management costs are remarkable.

LARGE INCUMBENT FIRMS

• Flexibility and risk-orientation

• Entrepreneurial management

• Visions stressed over planning

• Problems in delegation

• Fast decision-making

• Unhierarchy

• Free communication flows

• People-embodied resources

• Adaptation to the environment

• Lack of organizational legitimacy

• Person-based trust

• Rigidness and risk-aversiness

• Professional management

• Long-term strategic planning

• Developed methdods and processes

• Consensus-based decision-making

• Hierarchical decision-making

• Restricted communication

• Capital and know-how

• Attempt to control the environment

• Established organizational reputation

• Organizational vs. person-based trust

SMALL SPECIALIZED SUPPLIERS

Figure 5: Characteristics of small and large technology firms

Costs for large incumbent firms: Management costs are mainly caused by internal inertia. The

NIH-phenomenon, not-invented-here resistance is common. Partnerships may also be seen as a critique

towards in-house competencies. Existing partners or in-house development may be favored, since the

new partnership may be seen as risky causing difficulties to present operations.

In order to establish a new partnership the key employees must invest time to learn of and

commit themselves to the new venture. In addition to partner company culture and people there is the

new technological knowledge, which must be learned in order to be able to absorb it. The dynamic

costs of negotiation and teaching result from additional negotiations, meetings and memos since

there are no socialization through physical proximity (Nonaka and Konno 1998) and learning by just

being around and receiving bits and pieces of information to adapt to the large firm culture and mode of

operation. The potential scale economies may be lost. A new partnership changes the large firm’s

position in a network of firms. It may lessen options to partner with competing firms or even harm

the existing relationships.

11

Costs for small specialized suppliers: Small telecommunications firms have the management

costs of developing the organization investing e.g. in quality system to satisfy the large firm partner

selection and auditing. Small firms may need to adapt their systems e.g. project management or

electronic data communications to the large firm’s needs. Small firms may need to recruit new staff or

teach the present employment to meet the large partner’s demands.

Establishment of a partnership with an incumbent firm may create major negotiation costs.

Finding the right people and establishing the partnership agreement is time-consuming. Administration

and control costs may become quite large. The small firms need to learn the large party’s

organizational culture, adapt itself, and build a wide interface in order to safeguard themselves against

potential change of the contact persons due to organizational changes. Loss of small firm key

personnel is a potential cost. If the large firm personnel would behave opportunistically, there would be

a great risk of losing valuable proprietary information. There is also the potential cost of creating

a competitor. The small firm flexibility and decision-making may slow down. The small firm may lose

its R&D focus because of the changing needs of the large partner. A cost of losing an alternative

partner is also relevant. In the telecommunications the firms cooperate and compete within networks. If

a small firm works closely with e.g. one telecom operator, it is unlikely that it is able establish similar

relationship to a competing telecom operator. Also the tight partnership agreement may practically

block the small firm future activities in the field, thus generating high hol-up risks and transaction

costs.

Benefits for large incumbent firms: The partnering large firm could benefit by increasing the

variety for different customer segments and markets. It may focus on its core competencies and enjoy

the economies of scale and scope at the same time. Local supplier offering may suit better the local

customer needs. It would not be necessary to build all the competencies internally, but encourage small

software suppliers to develop their niche applications. Small firms may be highly motivated to create

innovative and cost-efficient solutions. Partnerships may increase the flexibility and lower the risk

inherent in new technologies and new projects by offering a technology window to new technologies.

They may also postpone or replace the need to hire new employees. Partnerships with small firms

extend the large firm employees personal network and may generate some innovative practices and

processes. As the new partnership extends the existing network of relationships, it may bring new

potential contacts and partners e.g. a university start-up brings the potential relationships with other

university graduates or researchers known by the start-up. If the small firm or start-up is in “an exiting

and new field” it may even bring positive visibility to the large firm, who may want to refresh its image

towards state-of-the-art technology firm. A partnership with a small and specialized supplier may act as

a pre-competitive move.

Benefits for specialized small suppliers:The small firm may benefit from large firm’s

complementary and rich resources e.g. finances for R & D or an existing marketing channel. It may be

able to target several markets simultaneously. A very important benefit from a partnership with an

incumbent firm is the legitimization of the small firm and its products (reputation effect). Through the

partnerships the small firm may also be able to push its products towards standardization. Large firms

12

also have better skills to handle regulating agencies and lobby, if necessary. A demanding large

customer may also force the small firm to continuously increase its competitiveness in producing high

quality and state-of-the-art service. Partnership with a large firm enables the small firm also to learn of

the processes and practices of the professional firms e.g. quality system and project management.

Potential competition may be changed towards cooperation. A partnership announcement may also act

as a pre-emptive competitive move towards small firms’ competitors.

Conclusions

In this paper we have developed an evolutionary knowledge management model which makes it

possible to derive the basic determinants that give rise to static and dynamic transaction and

management costs and benefits. This model is applied to the partnership problems between asymmetric

firms both analytically and then empirically using the Finnish telecommunication sector as an example.

The results are straightforward and show that our model really captures some of the most crucial

aspects concerning these dyad relationships.

13

References:

Dietrich, M. (1994): Transaction Cost Economics and Beyond: Towards a New Economics of the

Firm, Routledge, London.

Kyläheiko, K. (1995): Coping with Technology, Lappeenranta University of Technology, Research

Papers 48, Lappeenranta.

Kyläheiko, K. (1998): Making Sense of Technology, International Journal of Production

Economics (56-57): 319-332.

Langlois, R.N. (1992): Transaction-cost Economics in Real Time, Industrial and Corporate Change

(1): 99-125.

Nelson, R.R. - Winter, S. (1982): An Evolutionary Theory of Economic Change, Cambridge,

Harvard U.P.

Nonaka, I - Konno, N.(1998): The Concept of “Ba”: Building a Foundation for Knowledge Creation,

California Management Review (40), 40-54.

Teece, D. J., (1986): Profiting from Technological Innovation: Implications for Integration, Col-

laboration, Licensing and Public Policy, Research Policy (15): 285-305.

Teece D. J, (1998): Research Directions for Knowledge Management, California Management

Review (40), 289-292.

Teece, D. J– Pisano, G. (1994): The Dynamic Capabilities of Firms: An Introduction, Industrial and

Corporate Change (3), 537-556.

Sarvary, M. (1999): Knowledge Management and Competition in the Consulting Industry, California

Management Review, (41), 95-107.

Williamson, O.E. (1975): Markets and Hierarchies: Analysis and Antitrust Implications, New

York, Free Press.

Winter, S. G. (1995): Four Rs of Profitability: Rents, Resources, Routines, and Replication in

Montgomery, C.A. (ed.): Resource-Based and Evolutionary Theories of the Firm: Toward a

Synthesis, Dordrecht, Kluwer Academic Publishers, 147-178.

14

Title: Main Challenges Of Knowledge Management: Telecommunications Sector As An Example

K-M. Blomqvist1

K. Kyläheiko2

1 Telecom Business Research Center and Dept. of Business Administration, Lappeenranta University

of Technology, PO Box 20, FIN- 53851 Lappeenranta, FINLAND,

2 Dept. of Business Administration, Lappeenranta University of Technology, PO. Box 20,

FIN-53851 Lappeenranta, FINLAND, FAX: +358 5 621 2649, E-mail:

Kalevi.Kylaheiko@lut.fi

Citations (4)

References (12)

* [**The Effect of**](https://www.researchgate.net/publication/309722415_The_Effect_of_Domestic_Violence_on_Students_'Achievement_from_Educational_Advisors'_Perspectives)