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Mika Immonen

PUBLIC-PRIVATE PARTNERSHIPS:
MANAGING ORGANIZATIONAL CHANGE FOR ACQUIRING
VALUE CREATIVE CAPABILITIES

Thesis for the degree of Doctor of Science (Technology) to be presented with due permission for public examination and criticism in the Auditorium 1382 at Lappeenranta University of Technology, Lappeenranta, Finland, on the 10 of June, 2011, at noon.

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ABSTRACT

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Public-Private Partnerships: Managing organizational change for acquiring value creative capabilities

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The objective of the dissertation is to examine organizational responses of public actors to customer requirements which drive the transformation of value networks and promote public-private partnership in the electricity distribution industry and elderly care sectors. The research bridges the concept of offering to value networks where capabilities can be acquired for novel product concepts. The research contributes to recent literature, re-examining theories on interactions of customer requirements and supply management. A critical realist case study approach is applied to this abductive the research which directs to describe causalities in the analyzed phenomena. The presented evidence is based on three sources, which are in-depth interviews, archival analysis and the Delphi method.

Service provision requires awareness on technology and functionalities of offering. Moreover, service provision includes interactions of multiple partners, which suggests the importance of the co-operative orientation of actors. According to the findings, portfolio management has a key role when intelligent solutions are implemented in public service provision because its concepts involve a variety of resources from multiple suppliers. However, emergent networks are not functional if they lack leaders who have access to the customer interface, have power to steer networks and a capability to build offerings. Public procurement policies were recognized to focus on a narrow scope in which price is a key factor in decisions. In the future, the public sector has to implement technology strategies and portfolio management, which mean long-term platform development and commitment to partnerships. On the other hand, the service providers should also be more aware of offerings into which their products will be integrated in the future. This requires making the customer's voice in product development and co-operation in order to increase the interconnectivity of products.

Keywords: service model, portfolio management, value networks, customer value, energy distribution, public service provision, public-private partnership

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"See first, think later, then test. But always see first. Otherwise you will only see what you were expecting. Most scientists forget that."

Douglas Adams

The creator of The Hitchhiker's Guide to the Galaxy

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PART II: PUBLICATIONS

LIST OF PUBLICATIONS

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1. Immonen, M., Pynnönen, M. and Kytölä, O. (2011) Strategic Management of Forest Industry Transformation, *International Journal of Strategic Change Management*, Accepted manuscript, Article in press.
2. Immonen, M., Pynnönen, M., Viljainen, S., and Partanen, J. (2009) Mapping Future Services: A Case on Emerging Smart Energy Metering Business. *International Journal Of Business Innovation and Research*, Vol. 4, No. 5, pp. 491 – 514.
3. Immonen M., Pynnönen, M., Kytölä, O., Liiri, H. and Sintonen, S. (2009) Future of Living: Assessment of a General Smart Home Concept, *EBRF '09- Conference Proceedings*, Jyväskylä, Finland, September 23 - 25, 2009.
4. Immonen, M., Tahvanainen, K., Viljainen, S., and Partanen, J. (2009) Emergence of New Services through Competitive Change: Evidence from a Finnish Electricity Utility, *ISPIM '09 Proceedings*, Vienna, Austria, June 21-24, 2009.
5. Immonen M., Tahvanainen K. and Viljainen, S. (2011) Supplier Relationships in Regulated Industries: Longitudinal Study on Energy Distribution, *International Journal of Procurement Management*, Accepted manuscript, Article in press.

CONTRIBUTION OF THE AUTHOR IN THE PUBLICATIONS

Publication 1

Responsibilities in the research: Participated in the research process as a researcher.
Data collection and analysis: Carried out part of the literature review in which service models are discussed. Participated in the construction of the results.
Writing the paper: Responsible for the writing process.

Publication 2

Responsibilities in the research: Responsible for the research process and planning.
Data collection and analysis: Responsible for data collection and constructing the results.
Writing the paper: Responsible for the writing process.

Publication 3

Responsibilities in the research: Participated in the research process as a researcher.
Data collection and analysis: Carried out the literature review. Participated in the data collection and formulation of results.
Writing the paper: Responsible for the writing process.

Publication 4

Responsibilities in the research: Responsible for the research process and planning.
Data collection and analysis: Responsible for data collection and constructing the results.
Writing the paper: Lead author, wrote most of the paper.

Publication 5

Responsibilities in the research: Responsible for the research process and planning
Data collection and analysis: Responsible for data collection and constructing the results.
Writing the paper: Lead author, wrote most of the paper.

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PART I: OVERVIEW OF THE DISSERTATION

1 BACKGROUND OF THE STUDY

1.1 Aim and motivation

The research explores the realized and potential organizational responses of public-owned firms and public organizations to customer requirements which tend to drive the transformation of value networks and promote public-private partnership (henceforward “PPPs”) in the electricity distribution industry and elderly care sector. The study presents a mechanism for bridging the market offering with supply networks through which capabilities and resources are acquired for novel product-service concepts. Furthermore, reasons for the increasing popularity of PPPs are examined. The outcome of this interdisciplinary research is the evaluation of theoretical concepts that explain different partnership models. The market acts in the Finnish energy sector and the need for intelligent service concepts in elderly care determines the particular set of customer requirements of research which obligate public service providers to search for new expedients for improving performance. The strategic change brings new requirements regarding the capabilities of an organization and the activity portfolios of actors, which is leading the emergence of service markets on the supply side. The emergent markets’ influence on the appropriateness of the procurement models applied by public service providers provides the starting point for this dissertation.

An analysis of trends which may influence, or have influenced, managers’ willingness to exploit PPPs in the electricity distribution and health care sectors constitutes the empirical pattern of this research. The attempts by management to increase the responsiveness of organizations to customer requirements provides grounds for architectural changes of service provision networks, emerging service markets, and specialized private suppliers which are evaluated in this research. The presented case studies provide illustrative examples of the theoretical views analyzed, which link existing industrial decision models to public sector management.

The core alliance and strategy literature mostly directs attention to the analysis of business networks and their dynamics, lacking contributions to networks that are closely related with the provision of public goods. What is different from industrial management to public service provision? Whilst open markets are driven by demand-supply balances, the provision of public goods depends on the formal goals of society which determine the demand conditions for sectors. The difference between public and private markets has not been emphasized in the literature, which mainly focuses on explaining the contexts of industrial networks lacking views to public service provision. Especially the steering effects of regulation should be included in the analysis of network offerings, and of network dynamics. Indeed, public procurement will focus increasingly on more complex products-service offerings, which will probably change supplier evaluation processes in the future. Under current public procurement laws, public sector management mostly pays attention to the purchase prices of services or products, which leads to a situation where proper PPPs do not occur due to the short term emphasis of analyses. However, the complex service systems on which future purchases are focused require a significantly more in-depth understanding of the characteristics of supplier relationships. In summary, including the contexts of public service provision and complex product systems into portfolio management creates the motivation for this research.

1.1.1 Features of public service provision

Public sector organizations have been created to deliver services for the wellbeing of the populace. For that purpose, authorities, local or domestic, are supposed to deliver public services to every citizen in precisely the same way, so that the basic principle is equality in front of the law and state (Cordella and Willcocks 2009). Therefore, the value creation logic of public service providers differs from private industrial corporations, from which management theories are mainly derived. The private sector directs its interest to shareholder value that is “private-value” generated by the owner’s interests (Matthews and Shulman 2005). However, public value, which public sector provision targets, is related to the achievement of

objectives set by government programs, the delivery of services to citizens, and the value of use of public goods (Matthews and Shulman 2005; Vargo, Maglio and Akaka 2008). Thus, public value is not directly related to operations efficiency, but rather contribution of actors to agendas of the public government (Cordella and Willcocks 2009; Matthews and Shulman 2005).

Despite the fact that public service provision should emphasize value delivered to clients, public-private partnerships, outsourcing and building shared service centers within public organizations are driven mainly by concerns for lowering costs or at least decreasing the deficit (Cordella and Willcocks 2009). Another rationale for outsourcing is the notion that the private suppliers are able to achieve economies of scale and scope that are not available for the client (Walker, Knight and Harland 2006; Caldwell et al. 2005; Aschhoff and Sofka 2009). Still, public sourcing should be targeted to create a few key suppliers that compete with each other because a fragmented market of suppliers is not able to provide such benefits in the long-term (Walker, Knight and Harland 2006). On the other hand, because of the political belief that open competition will increase the efficiency of the public sector (Cordella and Willcocks 2009; Parker and Hartley 2003) and the somewhat appropriate use of private management doctrines, the public sector presently tends to pursue economy, efficiency and effectiveness with a short-term, cost-cutting outsourcing approach (Erridge and Nondi 1994).

In the public sector, it is important to consider that the roles of the buyer, client and supplier need to be clearly differentiated. Local authorities have to identify the characteristics of the provided services and to match those with the needs of citizens, who are paying for the services directly or through taxation. The key point of actions is translating the specific needs into technical specifications to be included in contracts (Ancarani 2009). Therefore, the development of service provision is a complex interconnected multi-stakeholder system in which service providers, authorities and clients communicate with each other. The system is illustrated at a general level in Figure 1.

The two most important elements of the model are interactions between the end-user and the authority, and the authority and service providers. Regulation projects the needs of end-users (e.g. consumers), creating signals for monopolies to develop product and service offerings toward society's expectations, which may change the premises of operations. In the future, public monopolies are expected to operate in a more service-oriented manner. Thus, the integration of offerings from multiple service providers becomes a focal operation principle (Vargo, Maglio and Akaka 2008; Janssen, Joha and Zuurmond 2009). Public organizations need to orchestrate sources of supplies in the new operation environment when it operates as the core actor of the service provision network (Vargo, Maglio and Akaka 2008). Managing such trends is a topical issue in European countries in multiple spheres of authorities. However, mechanisms for the controllable creation of private market offerings are still obscure, which may lead to a significant risk of opportunism.

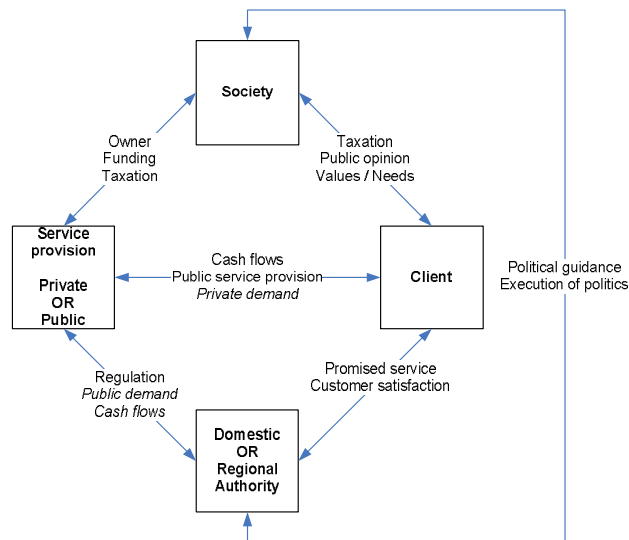


Figure 1 Roles and interactions of actors in public service provision, adapted from (Walker, Knight and Harland 2006; Aschhoff and Sofka 2009; Ancarani 2009; Edler and Georghiou 2007)

1.1.2 Procuring complex offerings

Recently, customer requirements in the health care and electricity distribution sectors are transforming towards integrated product-service systems in which the

demand is no longer focused on single products and transactions, but rather on solutions and co-operation. The systems emphasize the value of interactive operations in customer-supplier relationships, making the traditional advantages of technical system sellers irrelevant in many cases (Davies, Brady and Hobday 2007).

Complex systems are characterized as high cost and engineering intensive products, systems, networks and constructs which include products from a variety of suppliers (Kapletia and Probert 2010). The complexity can be determined using the quantity of tailored components and sub-systems, the hierarchical manner of the components, the level of integration, and the degree of technological novelty as indicators (Hobday 1998; Hobday, Rush and Tidd 2000). As a consequence, the novel customer requirements for integrated product-service systems will change the strategies of suppliers. Traditional system sellers are losing their advantage because customers call for system integrators which build their advantage on the following four elements: (i) providing in-depth analysis of a customer's business, (ii) identifying and diagnosing problems of customers in a proactive manner that increases the customer's awareness of its operational environment, (iii) offering solutions based on the seller's experiences of working with customers facing similar problems, and (iv) coordinating the integration of components from a variety of suppliers (Davies, Brady and Hobday 2007). Moreover, the novel solutions emphasize the importance of standardized solution-ready components that can be combined and re-combined at a low cost in new offerings. Service models introduce requirements for system design which have an impact on innovations regarding complex offerings (Davies, Brady and Hobday 2007). In the given circumstances, innovating and new product development requires far greater understanding of the limits and possibilities of technical systems, the capabilities of the supply network, and the needs of end-users. Therefore, interaction and collaboration between the system-integrator, customer and supply networks are essential throughout the development of competitive products.

Service systems, as defined below, fit well into the definition of complex systems. A service system can be divided into two parts: (1) service infrastructure, and (2)

customer service operations (i.e. observed service process) (Fließ and Kleinaltenkamp 2004). The infrastructure determines a firm's capability to manage operations in order to achieve the required outcomes. The service process and the supporting and processing resources constitute the service business model, which integrates external resources into a complete service product (see Figure 9). During service operations, a customer contributes to production by offering information, rights, physical objects, etc. Moreover, the customer can influence the quality of outputs by the ex-ante provision of operational information to foster the supplier's learning. Thus, the customer's contribution to the solution has been recognized as an important success factor for integrated product-service systems (Kapletia and Probert 2010). Processing and supporting resources are built on the firm's internal resources and the external value network (suppliers) of the company (Fließ and Kleinaltenkamp 2004). The service process itself is an intangible entity that integrates production technology, know-how, intellectual properties, human resources and physical goods (Tadelis 2007).

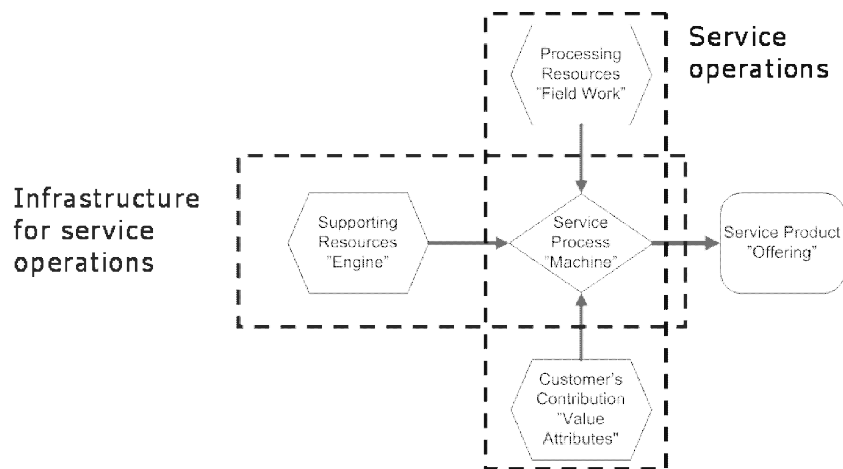


Figure 2 Service provision model (Fließ and Kleinaltenkamp 2004)

To ensure the creation of an offering that fits the customer's needs and creates maximum customer value, the customer view should be taken into account already in the early stages of business planning (Kapletia and Probert 2010). Thus, procuring integrated product-service systems requires ex-ante value co-creation, and

appropriately defined quality measurements which reward or penalize service providers (Caldwell, Roehrich and Davies 2009). Additionally, the control mechanism for service delivery has unique features in the case of integrated product-service systems. Integrated offerings involve features that tend to lead to complex contracts which are neither complete nor completely monitorable (Hobday 1998). Therefore, informal control mechanisms are based on mutual trust, and commitments are appropriate for steering operations in interdependent firms (Caldwell, Roehrich and Davies 2009). Due to a lack of competitive markets and an inability to form complete contracts, standardized prices for product-service systems are not available in many cases, which emphasizes the role of negotiations during the purchasing process.

1.2 Research gap

The fundamental question for business management during demand changes is whether to adapt business models and offerings or not. The actions taken depend on the competitive position of the firm and the competitive strategy defined by management. The management has three basic alternatives to make adaptations to the resources and capabilities of the firm. They can: (i) develop requisite capabilities independently, (ii) acquire novel difficult-to-imitate capabilities from the market, or (iii) use partnerships and supply networks for achieving the requisite performance (Holcomb and Hitt 2007). This research focuses on the third alternative and evaluates reasons behind the emergent public-private partnerships.

Theoretical models on partnerships have their origins in the 1980s when the transaction cost economics approach (Riordan and Williamson 1985) came into fashion among academics. The basic postulate of Williamsonian transaction cost economics is that firms exist because markets are inefficient (Riordan and Williamson 1985; Williamson 1973). It means that managing operations internally outperforms market governance modes because of the threat of opportunism and high monitoring costs involved in transactions. Transaction cost economics has, however, a strict focus on short term make-or-buy decisions, and it lacks a connection between resources and competitive strategy. In the early 1990s, the

resource based-view of the firm (henceforward “RBV”) was able to fill the gap between firm resources, competitive strategy, and customer value. With this view, firms build their valuable and unique resource combinations to gain a competitive advantage through resources to which they have access (Barney 1991; Galbreath 2005). Therefore, it is not a necessity for a firm to own all of the resources which are required in value creation in a business model (Espino-Rodríguez and Padrón-Robaina 2005). RBV, in contrast to transaction cost economics (henceforward “TCE”), does not offer direct metrics or analysis logics to assess the strategic value of resources, or to define the requisite performance targets. The interplay of changes in activities governance, the capability scope and competitive dynamics still need evidence from both qualitative and quantitative research (Jacobides & Winter 2005). In this view, the influence of service-based models as a driver of industry-wide reconstructions provides contributions to current literature.

The interdependence between the requisite performance and firm boundary decisions became a popular research topic in the mid 1990s. The research divided into two streams: the static and dynamic performance views of the firm, which compare the firm’s actual performance and the best available performance in the market. The method has been called either the relative capability position (McIvor 2008) or comparative performance (Jacobides and Hitt 2005; Jacobides 2005). Static performance is the efficiency of current processes, and dynamic performance indicates the firm’s capability to renew its processes (Chemawat & Costa 1993). Dynamic performance refers to skills to shape the firm’s resource portfolio to respond to changing competition (Teece 2007), which can never be the primary source of competitiveness (Eisenhardt and Martin 2000). The bias between static and dynamic performance can be derived from the predictability of the environment (Ghemawat and Costa 1993). Recent literature provides debate about the influence of performance metrics on the boundary decision in industrial organizations and industrial networks. However, more research is needed to explain the impact of service-based business models on the performance of the organizations which can be evaluated from the perspective of demand driven attributes. Recent literature suggests that combining industry trends into the analysis of value network

dynamism (Kotabe and Mol 2009) would provide important contributions to both academic discourse and management practices. Particularly, analyzing the impact of the selection of value creating partnerships on a firm's overall performance could provide advantageous insight into the industry evolution (Kotabe and Mol 2009).

Researchers' interest shifted toward cross-discipline approaches in the late 1990s because of the obvious deficiencies of existing frameworks in explaining the complexities involved in partnerships. These models are divided into two categories: content models and process models (Moses and Åhlström 2008). The content models of outsourcing explain conditions that would affect the outsourcing decision, whereas the process models offer structured processes to manage data gathering, analyses, and make-or-buy decisions. In general, content models can be divided into three categories on the basis of the disciplines they integrate. The models can be viewed as planes between axes derived from RBV, TCE, and the theory of firm performance. Outsourcing strategies for different activities of the firm can, therefore, be analyzed through the following views: (i) the RBV-Performance lens ((McIvor 2008), (ii) the Performance-TCE lens (Jacobides 2005; Jacobides 2008; Blomqvist, Kyläheiko and Virolainen 2002), and (iii) the RBV-TCE lens (McIvor 2009; Watjatrakul 2005). The research stream still needs applicable models that would help to recognize the optimal activity portfolio for the firm in particular circumstances and at a particular time (Kotabe and Mol 2009; Kotabe, Mol and Murray 2008; Murray and Kotabe 2005). The portfolio view still needs more accurate qualitative and quantitative methods, on which this study is focusing (Wagner and Johnson 2004).

The new customer oriented management approach reveals a group of emerging issues that provide avenues for future research. Existing theoretical constructs (TCE, RBV, Porterian competition, Teeceian dynamic perspectives, etc.) focus on distinct phenomena that are separately analyzed for specific purposes. However, the novel approach to analyze the firm and its interactions within a network of competitors, suppliers, customers, and new entrants or substitutes requires cross-disciplinary approaches to explain the logic of joint value creation (Dubois, Hulthén and

Pedersen 2004; Dubois and Pedersen 2002). Indeed, the impacts of single architectural changes on the whole population of firms in an industry, notwithstanding being integrated or not, should be concerned in the future because of systemic relations between network actors (Jacobides 2005; Jacobides 2008; Jacobides 2006). Despite that fact that there is space for more exploratory research to consider typologies of the decision making construct, little work has been carried out in the implementation of segmentation and the portfolio model of suppliers using a more integrative framework for the design and strategic positioning of the firm (Day, Magnan and Moeller 2010). Consequently, a research gap exists in the logic that interlinks customer requirements, requisite capability portfolios, and partner selection in ferment market conditions. Existing literature does not sufficiently depict the mechanisms by which customer preferences impact on value networks.

1.3 Research questions

This study aims to outline the logic explained in the previous section through the analysis of three basic concepts: 1) value elements of offering, 2) capabilities and performance attributes, and 3) the transaction environment. To augment the understanding of value network dynamism, the main question of this study is formulated as follows.

Research Question:

How can public organizations re-organize their internal and external architecture to create a service provision structure which corresponds to customer requirements?

The main question is divided into three sub-questions which bridge the research problem to the theoretical directions of the study. The first sub-question focuses on knowledge gaps in the resource-based view and the strategic value of activities of the firm. The second sub-question directs attention to issues regarding performance and capability perspectives as explanatory factors for the evolution of value

networks. The third sub-question incorporates determinants of transaction cost economics into the discussion on optimizing the governance of activity portfolios of the firm. The questions focus on determining the importance of each view in the decision process and on revealing the alternative interactions between different theoretical views.

An appropriate mechanism to integrate customer value analysis into models that would help to recognize the optimal activity portfolio for a firm in particular circumstances and at a particular time requires further development (Kotabe and Mol 2009; Watjatrakul 2005; Coates and McDermott 2002). Analyzing those interdependencies would increase awareness regarding the logic of recognizing capabilities which may leverage competitiveness in interaction (Coates and McDermott 2002). Research gaps in the dimension of value exist regarding issues that depict interconnections of customer needs and firm positioning, external sources of capabilities and partner selection. Therefore, the first sub-question is formulated as follows.

Sub-question 1:

How do customer requirements and business strategies drive the formation of business networks and public-private partnerships?

Acquiring capabilities outside the existing boundaries of the firm rather than developing the particular capabilities internally will unavoidably change the dynamics in that part of industry (Jacobides 2005). This idea of evolving value networks highlights the knowledge gap related to the question of how external firm boundaries and internal firm structures interact to shape the firm's performance and capabilities (Jacobides and Billinger 2006). The appropriate industry structures have been proven to rise to potential gains from trade and specialization in an industry because specialized suppliers may have potential for performance improvements in specific parts of offering (Jacobides and Hitt 2005; Jacobides 2008). This setting is rather clear in open competition in which the customer can choose the best available option among products or services. However, large monopolies in the public sector

have recently opened their boundaries for improving their performance due to changing legislation. Therefore, the second sub-question is formulated as follows.

Sub-question 2:

How does regulation impact the willingness of public organizations to exploit external business networks to improve their performance?

TCE explains the attractiveness of different governance modes of activities and partner selection in varying market conditions. An attractive direction is the consideration of the impact of value creating partnerships on a firm's overall performance (Kotabe and Mol 2009). Recognizing the most effective forms of complementary alliances has been acknowledged as a rising challenge in recent literature from both the managerial and academic viewpoints (Harrison et al. 2001; Ireland, Hitt and Vaidyanath 2002). Researchers aim to explain the following: i) partner selection criteria used in each context, and success rates of each approach (Holcomb and Hitt 2007), ii) appropriate forms of supplier portfolios of organizations and management of alliances in any given industry (Wagner and Johnson 2004), and iii) strategic purchases in supplier dominated (i.e. asymmetric) relationships (Caniëls and Gelderman 2007). Such studies should give explanations to whether and why selection criteria vary in each selected context and alliance type (Harrison et al. 2001), and which the systemic implications are of TCs in wider activity portfolios. Those attempts should have an emphasis on the interplay of changes in TCs and the scope of purchased activities for describing the competitive dynamics in an industry (Jacobides and Winter 2005). Consequently, the third sub-question is formulated as follows.

Sub-question 3:

How can public monopolies form their co-operative strategies if the activities are procured from emerging markets?

1.4 Managerial challenges in public service provision

The electricity distribution and health care sectors have historically been monopolies in Finland, and both have been steered by public authorities and public opinion through political systems. Until now, monopolies have not faced pressures to improve their performance, and thus, they have been willing to make only incremental, if any, adaptations to their operations and offerings to improve their correspondence to prevailing customer needs. However, service provision network structures have recently begun to change in both branches, as management has faced pressures to improve the overall effectiveness of the organizations.

In the health care sector, the most important driver for the structural changes is relatively reducing public financing per patient, which forces health care management to refocus service provision, to change service provision structures, and to find novel solutions for supporting the independent life of patients. Energy distribution constitutes another important part of the society's infrastructure, the importance of which will grow over time when the amount of e-services increases in many sectors. The energy market has been steered through regulation, which creates directing signals to monopolies for the development of products and services in terms of pricing and quality. The described transformation of environmental attributes of the stagnant public sector is leading to the opening of markets that are at present closed to open competition, or completely new markets.

The objective of the research is to analyze how the value networks in public service provision may change driven by customer requirements. Particularly, the study assesses events in which PPPs may provide advantageous solutions for organizational change when public sector responds to customer requirements. For this purpose, the research examines the outsourcing of supporting services in the electricity sector, and evaluates the potential influence of smart homes on public service provision networks in both the energy and elderly care sectors. The analysis of the energy distribution sector has two aims. The case shows which are the features in Finnish regulation model that drive disintegration in the public energy utility sector. Moreover, the case of the energy sector enables describing critical

points of decisions prior to the commitment to PPPs. The case of elderly care provides an illustration of novel offerings which can be expected to be released in the near future. Analyzing the offerings of smart homes provides a method to apply the resource-based view on network analysis which has potential to show factual requirements regarding capabilities of public service providers.

1.4.1 Changing volumes and offerings of health care

In Finland, the number of aging citizens has grown from 780 000 to 880 000 (12%) during the years 2001-2007 (see Figure 3). The growth of older age segments has been faster than the average growth of the population, which has led to an increase in the proportion of the age segment over 65 years from 15.5% to 16.5% of the entire population. The change in the population has incurred increasing elderly care expenses, which have risen 29% from approximately € 1 200 million to approximately €1 500 million in the above-mentioned time period (see Figure 4).

The proportion of the elderly needing care has been stable at 14-15% of the older age segment (age over 65 years), which means a rise from approximately 111 000 clients to 129 000 clients in the years 2001-2007 (data collected from the National Institute for Health and Welfare 2009). The cost savings achieved by municipal organizations through less expensive home care explain the shift of emphasis toward the care of outpatients and the higher independence of the clients. Therefore, the growth of the demand for elderly care services is not divided evenly over the structures. Two changes in care plans can be recognized. First, one half of the growth in demand occurs in regular home care in which the number of clients has grown. Secondly, the demand for assisted living facilities with 24-hour assistance has almost doubled during the same period, while the number of clients of ordinary assisted living facilities has remained at the same level. However, home care clients in most cases require more services and constant assistance later in life, which typically means a shift to assisted living in the existing circumstances. Keeping customers who have multiple diseases in home care will emphasize its proportion in elderly care expenses especially because of the rising costs in home nursing.

Altogether, the structural change of elderly care may indicate that clients with a rather high need of assistance will receive care in a home-like environment.

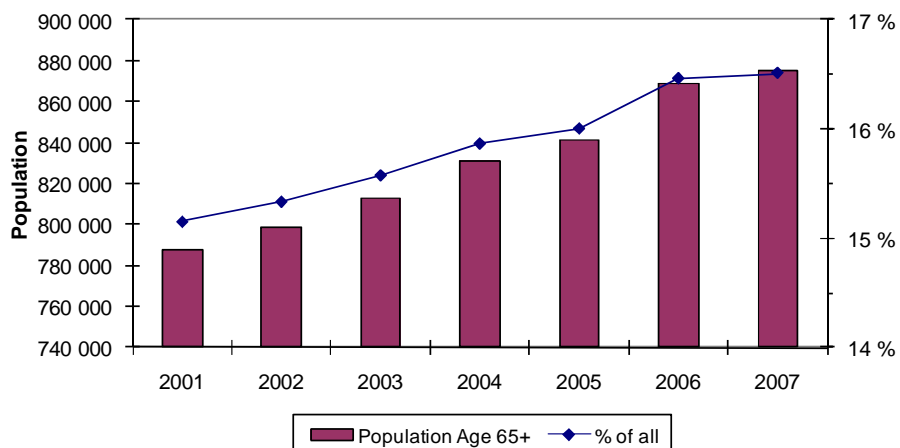


Figure 3 Aging population in Finland (years 2001–2007) (source: Statistic Finland 2009)

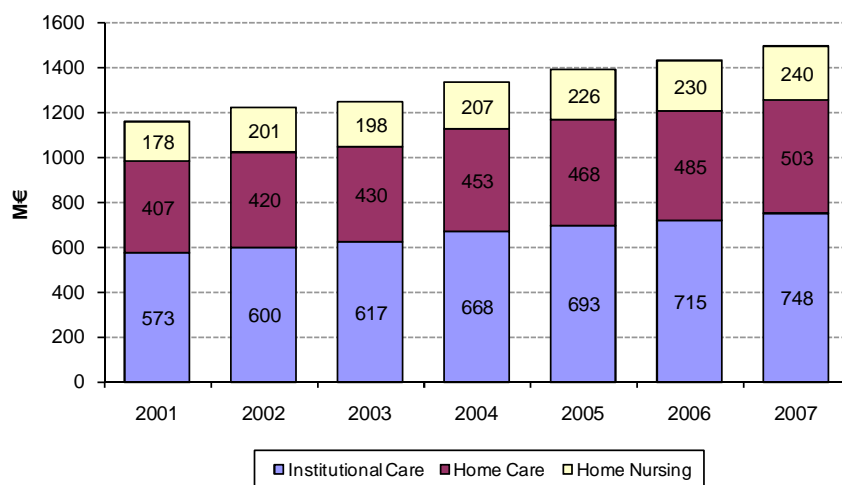


Figure 4 Expenses of elderly care in Finland (2001–2007) (source: National Institute for Health and Welfare 2009)

1.4.2 Regulation of electricity supply for efficiency and quality

The Finnish regulation model of electricity distribution has developed in three stages to its contemporary form (Honkapuro 2008). The first regulation stage in the

years 1995-2005 focused on the reasonability of pricing, and it was based on actual costs and case specific inspections. The first decisions on reasonable prices were first introduced on 1999. Next, actions taken regarding the regulation models included the introduction of efficiency benchmarking in 2001, and standard compensations for over 12-hour interruptions in 2003. The first regulatory period began in 2005 and extended to the end of 2007, when a three-year monitoring period was introduced. The major changes to the previous regulatory model were compensations for overcharging and anticipatory characteristics added to the model (Honkapuro 2008). The second, prevailing regulatory period covers the years 2008–2011. The most important changes in the regulation model concern the quality of the energy supply and the role of efficiency benchmarking (Honkapuro 2008). In the future, the need for higher energy efficiency and environmentally friendly solutions are emerging global challenges which will have significant impacts on the infrastructures and the conventional business architectures particularly in the energy distribution sector.

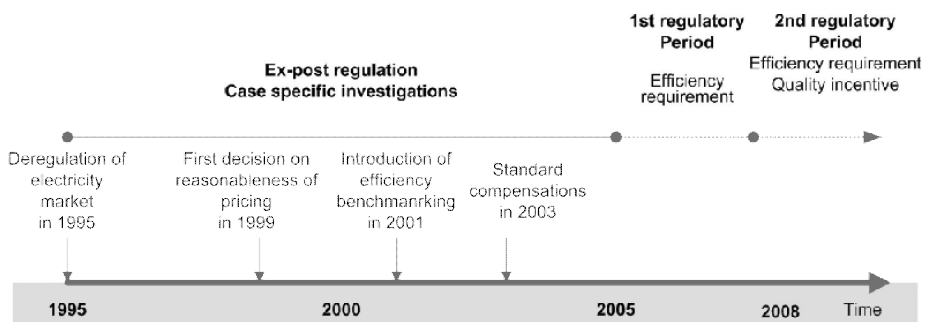


Figure 5 Key regulatory actions in the electricity distribution industry.

The upcoming changes will, on the other hand, drive the convergence of energy and home system industries, which are in many cases seen distant at present (Strbac 2008; Peine 2009; Wood and Newborough 2007). Therefore, analyzing the change of the Finnish elderly care system in parallel with the change of the energy distribution sector has appropriate arguments. Energy efficiency is often understood to be based on technical solutions. However, understanding expedients to change customer habits and behavior is as important a factor as the technical features of the

system, which therefore will unavoidably affect the design of future services (Boardman 2004; Gyberg and Palm 2009; Henryson, Håkansson and Pyrko 2000).

1.5 Positioning the research

Management of strategic change in organizations is a very broad topic that incorporates multiple research streams. Therefore, all researches in the field should be explicitly positioned into scientific disciplines. This research contributes the school of industrial organizations economics, which origins from disciplines of competition in industries and microeconomics (Barney 1986). The emphasis of the research is on interactions in the operation environment and characteristics of the organization which enables reaching and sustaining a competitive parity or competitive advantage. The major viewpoint of the research in the selected context concerns issues of adjusting offerings and value network architectures to fit customer needs in order to define value creating strategies for the organization. This research contributes to portfolio management frameworks in the intersection of the fields of technology management, supply management and management of organizations (Figure 6).

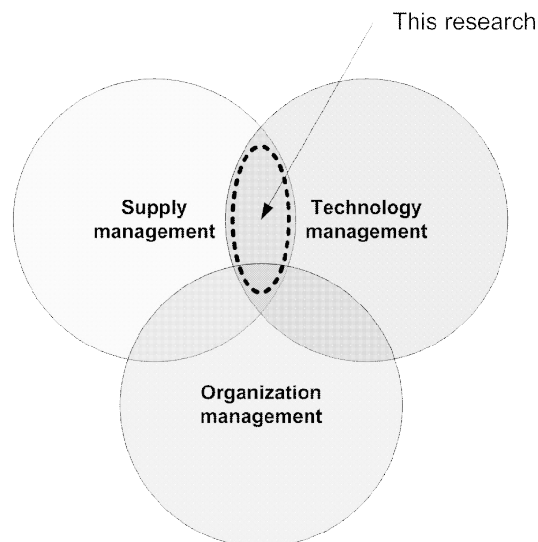


Figure 6 Positioning the research into fields of industrial economics

Technology management in this research is targeted to analyze the implications of BRV in portfolio management, which provides a theoretical background for recognizing value creating capabilities, skills and resources in supplier networks (Barney 1991; Ireland, Hitt and Vaidyanath 2002; Barney 2001; Baloh, Jha and Awazu 2008). RBV provides broad guidelines for analyzing the contribution of the existing resources and capabilities to the competitive strategy of the firm, which limits its applicability to internal analysis. However, building customer driven portfolio strategies needs extensive understanding regarding alternative sourcing strategies for requisite capabilities from external networks. The network dimension of value creation connects supply management to a natural part of the research. Supply management contributes RBV by providing methods for building activity portfolio strategies that enable value creation for the customer (McIvor 2008; McIvor 2009; Dubois and Pedersen 2002; Kraljic 1983; Olsen and Ellram 1997; Dubois and Fredriksson 2008). An analysis of the governance modes of the activities in the portfolio concludes the study, providing guidelines to choose an optimal organization structure for ensuring the efficiency and responsiveness of the firm (Wajtrakul 2005; Jacobides and Winter 2005; Arnold 1999).

1.6 Structure of the thesis

The thesis is divided into two parts: the introduction and publications (see Figure 7). The first part provides an overview of the study in which the backgrounds, motivations, summary of the theoretical background, research approach, results, and conclusions are presented. The second part consists of five separate publications aiming to answer the research questions from different perspectives. The conclusions of the research are based on findings presented in the publications.

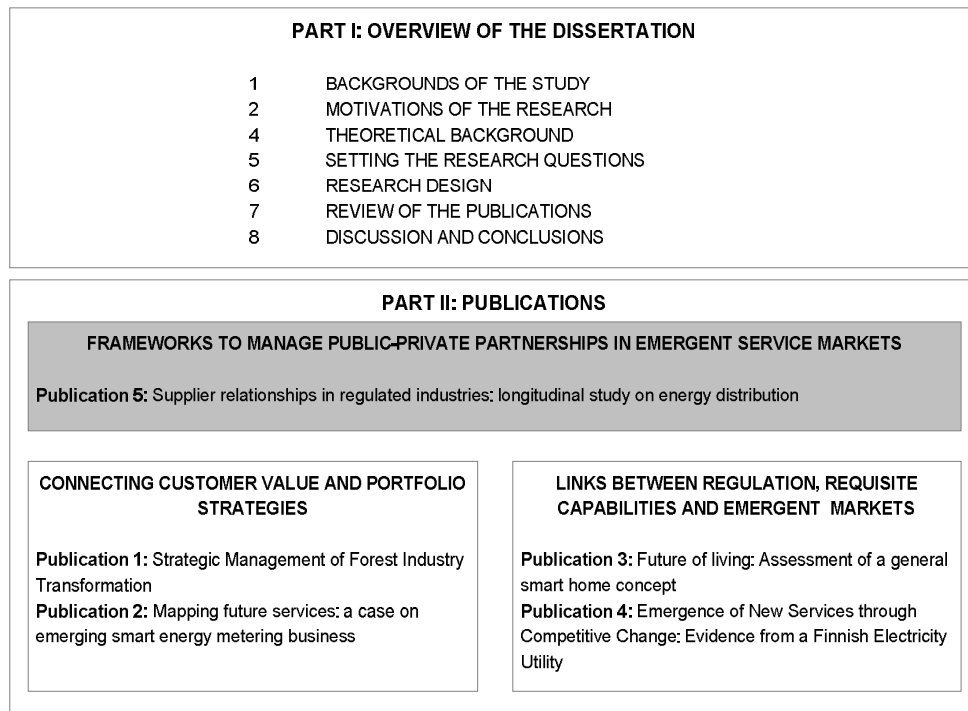


Figure 7 Outline of the thesis

The publications of the thesis have been divided into three categories by their topic. Publications 1 and 2 aim to depict the relationship of customer value and portfolio management through the analysis of functionalities of offerings to which value networks can be linked. Publications 3 and 4 concentrate on the demonstration of the dynamics of value networks in public service provision, in which the influence of demand changes and regulation on market emergence through outsourcing is analyzed. Publication 5 concludes the discussion regarding portfolio strategies by demonstrating two supply portfolio models. Figure 8 presents the relation of each publication to the theoretical background to which they contribute.

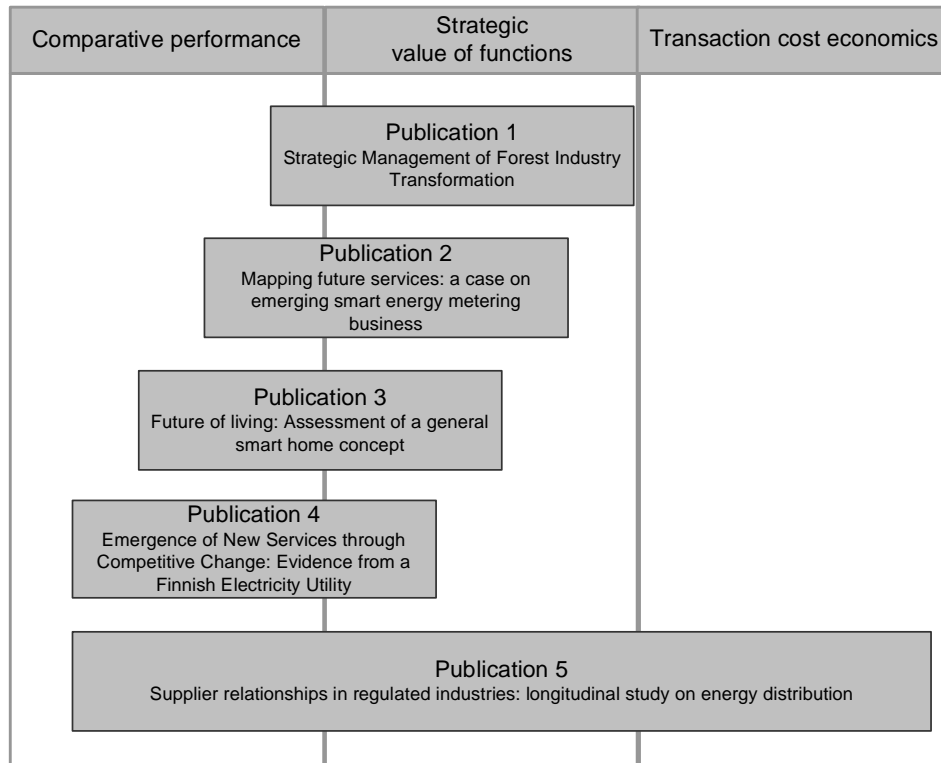


Figure 8 Publications positioned with theoretical background

1.7 Definitions for key concepts of the research

Key concepts for network analysis

Market – is an interface between the customer and suppliers in which delivered services, physical items, prices, criteria for quality, terms of delivery and transacting methods are determined (Jacobides 2005). The market interface thus determines the mechanism by which the customer and supplier are linked to each other.

Offering – depicts outputs of the value network targeted to fulfill the needs of customers (Pynnönen, Ritala and Hallikas 2011). The basic element of the offering is the value stream, which contains physical goods, information, services and resources provided to the customer. The offerings are designed to respond to recognized customer value attributes with relevant value streams (Allee 2000).

Service - is a process of doing something for another party in collaboration by integrating internal resources and capabilities to external ones to co-create value (Vargo, Maglio and Akaka 2008; Lusch, Vargo and O'Brien 2007). By definition, services are wide processes in which gain in customer value has a focal role instead of single activities or technical product features.

Activity – (Function) is the basic element of the supply chain which integrates resources and capabilities in order to produce ex-ante defined outputs, which can be physical products, information or service operations (Dubois, Hulthén and Pedersen 2004). Activities are individual items in networks.

Activity networks (“Industrial networks”) – are supply networks which consist of stages of production. The activity network is defined through offerings which determine all of the activities that are requisite for value creation (Dubois, Hulthén and Pedersen 2004). Thus, the concept of the activity network is wider than that of the supply chain, which is directed to produce single products.

Actor (Organization or Firm) – is an entity with the objective to manage activities and resources which are involved in specific activity networks (Dubois, Hulthén and Pedersen 2004). The financial and resource limitations are realized at the actor level at which offerings are assessed based on their profitability or other performance measures.

Activity portfolio – includes operations carried out by an actor. In contrast to the activity network, the activity portfolio is limited to the activities which are appropriate to be managed within an organization for optimizing performance (Kotabe, Mol and Murray 2008). The activity portfolio consists of basic value creative activities of production, supportive activities of production, and general internal management activities. The boundaries of the activity portfolio can be defined through the costs of internal management of activities, transaction costs of outsourced activities, and implications of governance decisions for the firm's ability to create competitive distinction (Kotabe and Mol 2009).

Context specific concepts

Public actor (Public sector organizations) –creates, develops and delivers services to promote the well-being of the population (Matthews and Shulman 2005). The operation principle of public actors is delivering services to every citizen in precisely the same way, which means the equality of citizens in front of the law and state (Walker, Knight and Harland 2006). Thus, rationality, fairness and equality are the characteristics of the procedures of public actors.

Public value – is related to the achievements of the public actor in relation to objectives set by government programs and the delivery of services to citizens (Cordella and Willcocks 2010). Thus, public value is not directly related to the efficiency of actions and economic effectiveness, but rather to the capability of public actors to provide external benefits.

Regulation – is a general term for the expedients of policy makers to steer both private and public actors to behave in a way which optimizes the delivered public value and to promote competition (Yarrow 2003). The regulation includes a collection of norms, guidelines, restrictions, obligations and sanctions which provide authorities a controlling structure for the network of public service provision (Cossent, Gómez and Frías 2009; Kinnunen 2006).

Public-private partnership (“PPP”) – is a special type of alliance in which a private firm and public organization co-operate to gain value in public service provision. PPPs facilitate transferring the role of the state as an organizer, a controller and a regulator of outputs which include also the expectation of the higher efficiency of the private sector (Parker and Hartley 2003). PPPs include multiple types of alliances from different contractual relationships to joint ventures (Essig and Batran 2005) which are manifest in long-term commitments between the public and private sectors (Zitron 2006).

2 THEORETICAL BACKGROUND

2.1 Strategy, Performance and Transaction costs

The firm and its interrelationship with the business network are the focal point of this study. Particularly, the research focuses on analyzing issues related to PPPs and inter-firm co-operation as actions which are driven by changing customer demands. Discussion on PPPs as customer driven actions place activities in the key role of the research because they are the basic units of value chains. Therefore, the approach is to analyze firms as a collection of resources and governance structures of activity portfolios.

The sub-optimization of organizations has led to less than desired results in many cases when new procurement policies are planned in the private and especially the public sector (McIvor 2009; Busi and McIvor 2008). To avoid such failures, the firm should be assessed as a group of activities and processes that works as an interdependent system within a network which is determined in order to meet the requirements of product or service markets (Wagner and Johnson 2004; Dubois, Hulthén and Pedersen 2004; Dubois and Pedersen 2002; Coates and McDermott 2002). The demand based-view of the organization is near the the resource-based view of the firm, in which firms build their competitiveness on valuable, rare, difficult to substitute, and costly to imitate resources that provide a basis for differentiation (Barney 1991). Thus, competitive strategies guide the formation of the system of activities. In the short term, a competitive strategy prioritizes the cost efficiency, quality and flexibility of operations (Coates and McDermott 2002) and assumes that customer needs are rather static and the development of industry incremental. Changes in prevalent business methods in the industry do not occur in the short term, and thus, the obsolescence of activities is not an immediate threat to actors (McGahan cop. 2004.; McGahan 2004; McGahan 1994). The dynamism of the environment has a more definitive role in the long term, which forces the business actors to upgrade their capability portfolio. Therefore, managers should make an effort to actively leverage capability portfolios rather than cope with

structural forces, or to simply apply positioning approaches to achieve profits (Galbreath 2005; Galbreath and Galvin 2008).

According to the integrated view, competitive strategies are derived from opportunities in specific market frameworks in which customer expectations are depicted in terms of product or service content, quality and transaction methods. In this context, the firm should be able to integrate and link various activities and different resources to meet the required product characteristics in order to be competitive (Coates and McDermott 2002). This directs attention to 1) the downstream market interface, 2) optimizing the governance of activities, and 3) potential sources of capabilities. Each market offering, existing or emerging, requires a particular set of resources and capabilities which are heterogeneously divided over the business network due to historical development paths of industries and firms. Indeed, the value of resources and activities depends on both the characteristics of a single item, and the connections and interrelations of the item with wider value creation system (Jacobides and Billinger 2006). Thus, the value creation mechanisms of firms should be based on approaches to integrate firm specific capabilities and capabilities of suppliers applying methods that offer superior customer value.

Based on the previous, the three main theoretical directions of the study are theories of competitive strategy: transaction costs economics, and theories of firm performance and the systemic nature of capabilities. The theories can be described as follows (see Figure 9): The competitive strategy view is used to evaluate the influence of customer needs on the desired structure of the firm and outsourcing decisions. Performance factors, both dynamic and operative, explain the interconnection of the firm strategy and benefits of the emergence of a specialized supply market. The transaction cost view aims to determine the most attractive governance mode of each activity using market complexity and the strategic importance of an activity as a measure.

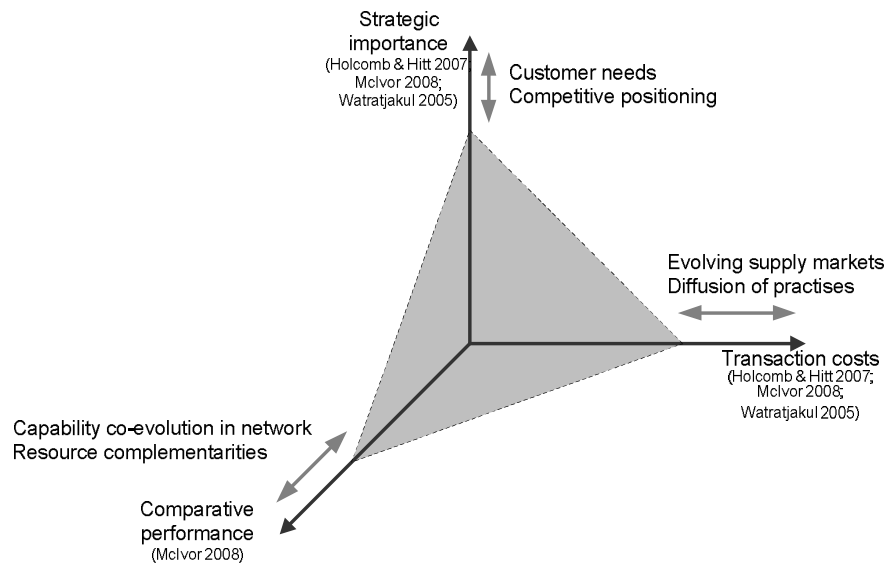


Figure 9 Theoretical dimensions of the research

2.2 Assessing the dimensions of activities

In this section, we will discuss the three basic theoretical streams in order to define the appropriate measurements for the dimensions, and to discuss their relation to the management of activity portfolios. Later sections aim to analyse content models which are based on the analyzed dimensions. Particularly, discussion concentrates on the further development of RBV/Performance (McIvor 2008) and RBV/TCE (Watjatrakul 2005; Arnold 1999) based approaches.

2.2.1 Strategic value

The strategic value of activities is analyzed in this section based on their contribution to two basic Porterian competitive strategies that are the differentiation strategy and the cost-leadership strategy (Porter 1998.). The value determinants of activities are derived through several theoretical approaches which are briefly reviewed. The selected theoretical approaches are the resource-based view (RBV), accounting performance and the industrial networks view. Overall, the contribution

of various activities to the firm strategy in the selected portfolio seems to be the most confusing and the least established view from the theoretical perspective.

The RBV targets to explain the determinants that increase the distinctiveness of the firm in a competitive industry, leading to higher customer loyalty and enabling the firm to gain profits over the industry average. The RBV, thus, determines the activities that contribute to the external value (i.e. customer value) of the firm as a differentiating factor that enables sustainably increasing incomes (Barney 1991). We call this distinctive value or Vd. In this setting, the RBV of the firm reveals such functions that are critical to pursuing a differentiation strategy (i.e. activity generates extra value for the customer). In the service oriented business logic, the value of use determines the customer value of the service offering (Vargo, Maglio and Akaka 2008; Grönroos 2011). Thus, one way to define the distinctive value of activities is assessing their contribution to support customer action which differentiates a service from its competitors and substitutes.

The concept of value for the customer “VC” is complex because of multiple attributes and the dynamics of the value preferences of the customer during the service process. The value of public service provision consist of five primary forms of value for the customer (Ancarani 2009; Woodall 2003), which are:

- I. *net VC*, balance of benefits and sacrifices
- II. *derived VC*, notion of use value of outcomes which is derived from consumption-related experience
- III. *marketing VC*, perceived product attributes
- IV. *sale VC*, reduction in sacrifices or costs
- V. *rational VC*, assessment of fairness in the benefits-sacrifices relative to the notion of the exchange value and the intrinsic value

The rational customer (end-user) is able to select products, services, and service providers which fit best to actual demands, whilst pre-purchase evaluations of

public goods are typically carried out by authorities. In the public service provision, it is important to consider that the roles of the buyer, end-user and supplier need to be clearly differentiated to enable appropriately defined service structures. Especially authorities have to identify characteristics of the service provided and match those to citizens' needs, which means translating the specific customer need into technical specifications to be included in contracts (Ancarani 2009). The VC of service, however, changes over the service process from pre-purchase to service operations and re-agreement (see Figure 10).

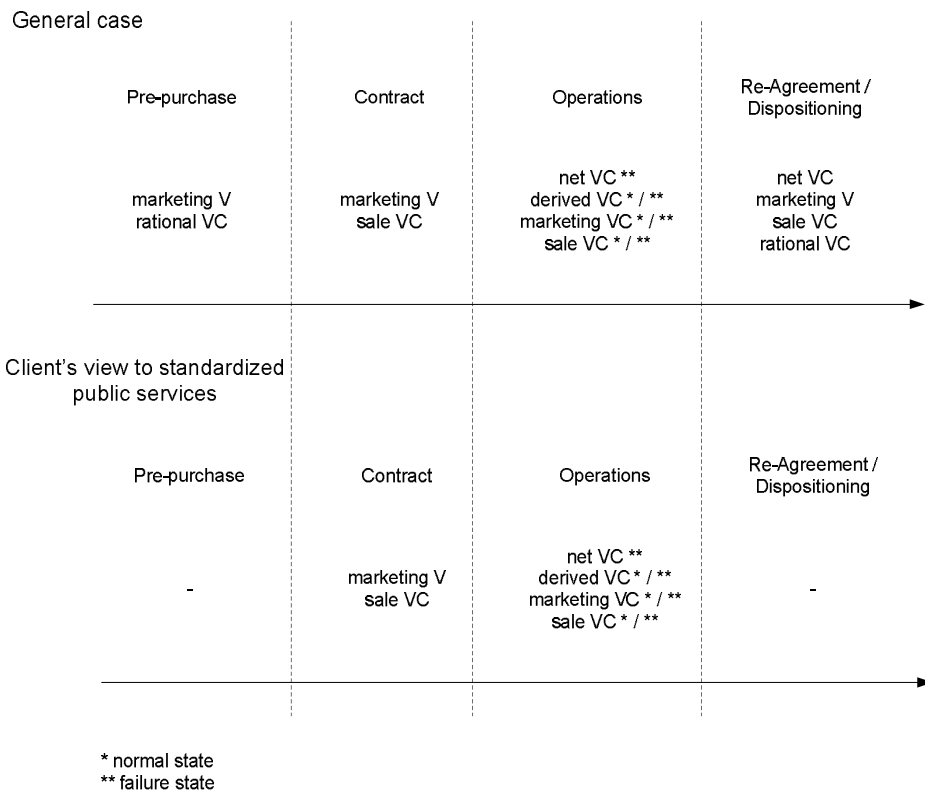


Figure 10 Value for customer in public service provision (Ancarani 2009)

However, the attributes of the RBV are too vague, including both explication issues and the contribution to managerial issues which arise from the pursuit of cost efficiency. We call this the value of the cost structure and budgetary control of activities, or Vc. According to the cost efficiency view, the value of activities depends on their importance in creating exceptional performance leading to a higher

rate of returns from investments or an improved competitive position enabling sustained price reductions (McIvor 2008; Dubois and Pedersen 2002). However, assessing the monetary value of activities might be complicated in the novel business models in which organizational boundaries are unclear and activities are located in open networks (Ford 2010).

Both of the previous views focus on either single products or activities as independent entities. As a contributing framework, the industrial network approach evaluates the value creation potential of an activity through its connection to other activities involved in the production process (Dubois and Gadde 2002). We call this feature value through interactions or V_i . The interdependence of activities occurs in several ways. Activities can be sequentially interconnected (stages of production), pooled interconnected (common resources), or reciprocally interconnected, in which case two activities have to be harmonized in terms of their outputs, resources or coordination levels (Dubois, Hulthén and Pedersen 2004). What, then, do interactions mean in portfolio management? Evaluating portfolios through their network interactions provides two directions for activity or supplier categorization. First, activities can be divided into peripheral activities and hubs according to the amount or quality of interactions. Peripheral activities have weak connections to the surrounding networks, whilst hubs connect with multiple network entities, creating control points in the supply networks (Merminod, Paché and Calvi 2007). Second, activities can be divided into specialization clusters based on the exhibited technological resources or capabilities which provide a basis for the consolidation of organization management (Roseira, Brito and Henneberg 2010). Both of the activity clustering methods provide tools to evaluate a supplier relationship when organizational boundaries are determined within the portfolio. The quality and amount of interaction in an activity indicate the potential of coordination issues in an externalized function regarding appropriate value generation, and resource or capability clusters depict the areas to which development actions should be targeted within the focal organization.

2.2.2 Comparative performance of a firm

Static performance (Ps) refers to the efficiency of current processes, and dynamic performance indicates the firm's renewal capability (Ghemawat and Costa 1993). Static performance describes the firm's accounting performance, technical production frontiers, financial metrics, or other technical factors. This view emphasizes explicit performance attributes, which enable the comparability of the processes of the firm to those of its competitors or potential suppliers. Relative productive capabilities have a direct impact on the willingness of the management to change its governance models and on the emergence of service innovations through changing the vertical scope of the internal value chain (Jacobides and Hitt 2005; Jacobides 2005; Jacobides 2008).

In general, dynamic capabilities are the skills to shape the firm's resource portfolio in response to changing competition and customer needs (Teece 2007). Hence, the dynamic performance of the firm (Pd) depends on its organizational and strategic processes, which are more or less formal, such as taking co-operative approaches and making product adaptations for ultimate customer value (Eisenhardt and Martin 2000). However, dynamic performance can never be the primary source of competitiveness (Eisenhardt and Martin 2000). Therefore, long-term performance always returns to the static performance of the firm. The balance between the requisite level of the static and dynamic performance of an organization depends on the predictability of the environment (Ghemawat and Costa 1993). The service-oriented business models, however, tend to change the requisite performance balance of the firms to emphasize dynamic performance because of changing customer value preferences. Service orientation directs customers' attention to offerings when they do not buy the product but are willing to pay for the integrative capabilities of the service provider (Lusch, Vargo and O'Brien 2007).

2.2.3 Complexity to use external service providers

Transaction costs always occur when opportunism and bounded rationality in inter-firm relationships become evident due to uncertainty about the price mechanism and

specificity of assets (Holcomb and Hitt 2007; Riordan and Williamson 1985; Williamson 1973). In general, transaction cost indicates risks involved market or hybrid governance of activities which managing is as important as reducing it in complex and high value strategic relationships (Hallikas et al. 2005). This dissertation evaluates the level of transaction costs related to (i) the phase of the market development, (ii) asset specificity and mutual dependence, and (iii) the ability to determine complete contracts about purchased services.

The phase of the markets can be delineated by the level of rivalry, rate of innovations, stability of market offering and pricing models among suppliers, and the volatility of prices. We call these market-based transaction costs, TC_m . Asset specificity creates mutual dependencies between transacting partners because of the commitment to partnership specific investments which may have no value outside the particular business activities limiting future options. We call these dependence-based transaction costs, TC_d . The ability to define complete contracts depends on multiple features of purchased services. The scope of the offering involved in service products, technical features, and the duration of the supplier relationships tend to influence the gap between service agreements and delivered service operations. We call these contract-based transaction costs, TC_c . The overall costs of transactions are sum of the three types of relationship specific transaction costs which depends on the market environment and the service offering.

2.3 Combining theories into portfolio models

2.3.1 TCE and Value based portfolio models

The two dimensions of activities (i) *strategic value* and (ii) *market complexity and general applicability* steer the firm in its boundary decisions. These dimensions for item or activity evaluation have been traditionally applied in the supply portfolios that are developed with an empiric emphasis. The first applications of the supply portfolios aim to determine item level material management which dismisses the process or activity level of production (Kraljic 1983). A similar portfolio model by Watjatrakul (2005) sets out to evaluate market risks and activity contributions to the

customer value through the RBV and transaction cost economics with theoretical links. The models divide the firm's activities and supplies into four categories:

- I. Low specificity non-strategic resources (LSNR) or non-critical items: LSNR includes common resources and knowledge that are easy to imitate by competitors at a low cost. Therefore, the resources cannot be a source of sustained competitive advantage for a firm. Supplying markets are typically mature, which emphasizes price competition in the supplying industry.
- II. Low specificity strategic resources (LSSR) or leverage items: The resources of this category cannot independently be a source of sustained competitive advantage. Market governance is available if the supplier's business concept offers improvements to long-term performance, leading to a bilateral relationship between the service provider and the company.
- III. High specificity non-strategic resources (HSNR) or bottle-neck items: These resources are designed for special purposes for the company or utilized in highly specific environments or market segments. Thus, they have only little value outside the company. Using market governance is complicated, and the features of the service market should be clearly identified. It is advantageous if the company can sustain the option to resume hierarchical governance.
- IV. High specificity strategic resources (HSSR) or strategic items: HSSR is essential for the company's long-term success. Moving the resources to a service provider would seriously harm further development and may direct the company to lose its competitive advantage. Thus, there are no options for market development through outsourcing.

Including governance options in resource categories enables assessing the most efficient cooperation models for each activity (see Figure 1a) (Holcomb and Hitt 2007; Watjatrakul 2005; Kraljic 1983; Arnold 1999). The evaluation array highlights the following features about the firm's activity portfolio: The firm should manage standard resources (low or moderate value and TCs) through market

governance and hold the resources within firm boundaries if they are highly specific or strategically essential. At the levels of low and moderate specificity or strategic value, an activity can be managed through partnerships in which cooperation is formal and efficiency is the most powerful decision factor. When transaction costs or strategic value reach a critical level, formal cooperation or joint ventures are likely to provide gains.

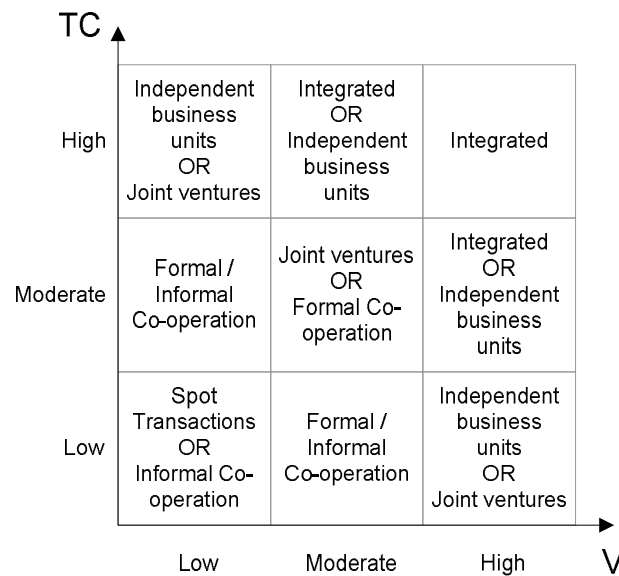


Figure 11 Supply portfolio array using transaction cost-value dimensions, adapted from (Watjatrakul 2005; Kraljic 1983; Olsen and Ellram 1997; Arnold 1999)

2.3.2 Performance – value based portfolio models

The performance - value based model targets to evaluate the suitability of processes for outsourcing using competitors and suppliers as a yardstick for potential performance gains from partnerships (McIvor 2008) (see Figure 1b). According to McIvor (2008), “the analysis is concerned with identifying the disparity between the sourcing organisation and potential external providers of the processes under scrutiny. It allows an organisation to focus on whether it will be detrimental to its competitive position to outsource certain organisational processes.” The value dimension in this model determines the processes’ contribution to competitive

advantage, which can be assessed based on competitive factors that differentiate the firm from its competitors.

- I. *High performance and high value processes that are critical to competitive advantage:* Internal development of the processes is desirable if the firm is able to sustain its competitive position. Partners may be used if the firm decides to build competence elsewhere, providing a stronger competitive position in the future.
- II. *High performance and low value:* Processes in this category have multiple governance options. The most desirable option is to consider externalizing the process through supplier development initiatives by either selling a business unit or using spin-off arrangements.
- III. *Low performance and high value:* The options of outsourcing and internal development are both available for these activities. Internal development is preferable if performance gaps to competitors are not significant and investing in processes leads to sustainable superior performance. Partnerships are preferable if performance over competitors is either difficult or costly to achieve by internal actions of the firm or the value of the process is likely to diminish through technology development or changes in the business environment.
- IV. *Low performance and low value:* This category includes routine processes in which more capable suppliers are available. Using partners that are specialized in service provision is a potential way to manage these activities. However, the management should consider optional relationship strategies to avoid opportunism in market-based governance modes.

To further analyze the information content of the array, we need to concentrate on the general implications of performance and value. The matrix suggests three major directions for portfolio management based on the contribution of activities to competitive strategies (see Figure 2). Low value activities should be moved to

market governance using either transaction based approaches in mature markets or developing a competitive supply market in the medium term. Market development may include new market creation through spinning off an activity if the firm has developed high performance in a particular area and the activity has market potential outside the current context in the future (McIvor 2007). At the moderate level of value, the most important task of the management is to focus attention on long-term partnerships to ensure the availability of supplies and flexibility of operations. At the high level of value of the activity, the management has two options to form portfolios. Whilst high performance and high value activities should be developed internally, the lower performance (or if gaps are recognized) activities can potentially be acquired using value creating partnerships or co-operating with competitors if the specific activities include path dependent capabilities (Baloh, Jha and Awazu 2008).

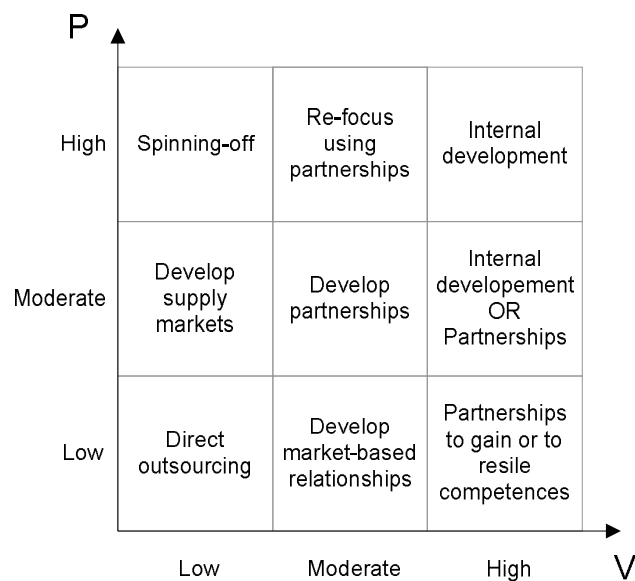


Figure 12 Supply portfolio array using performance/value dimensions (adapted from (McIvor 2008))

2.3.3 Summary

The theoretical background is divided into three dimensions which explain the rationales of public-private partnerships, and strengthening the trend of outsourcing supportive activities in public organizations (see Figure 13). The dimensions are the strategic value of activity, the relative performance of the activity and transaction cost economics. The strategic value of activity can be defined through the activity's potential to increase the distinctiveness of products or services from the customer's point of the view, its influence on budgetary control and financial performance, and its interconnection to other activities. Performance describes the actual operational performance level of the firm and the firm's capability to adjust its offering to changing demands in relation to its competitors and suppliers. Transaction cost economics explains potential limits to applying market-based governance modes to the activities that are included in the portfolio of the firm. The transaction costs are consequences of market uncertainties, dependence and power asymmetries between the client and supplier, and complexities regarding the formation of complete contracts.

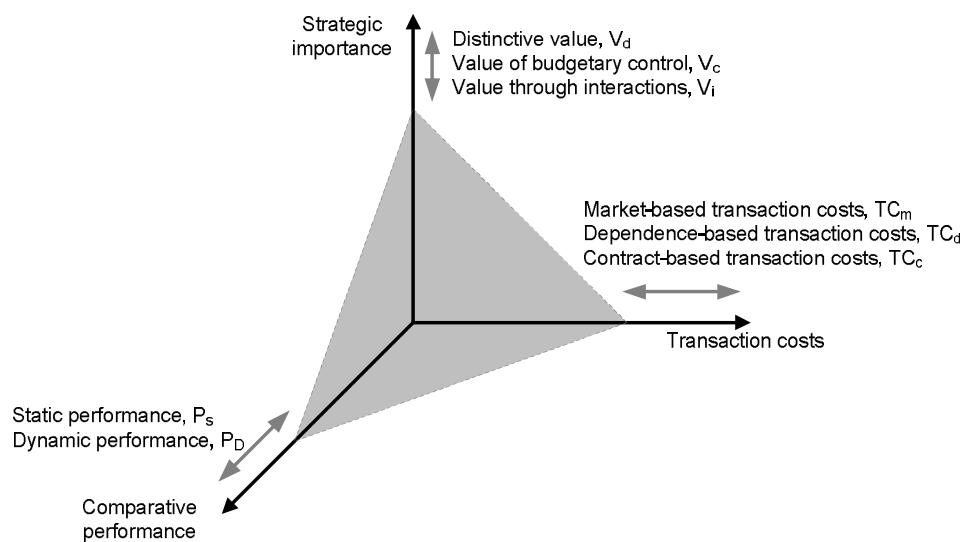


Figure 13 Key determinants of portfolio management

Each dimension of the theoretical model represents distinct elements which influence the value creating strategies and value network architectures of firms. The

view of strategic importance aims to explain how activities contribute to value creating strategies and the value delivered to customers, and focuses on external factors of value creation. The view of performance evaluates a firm's position in its value networks. This dimension enables the analysis of investment strategies and focusing the portfolio to support future businesses. The last view, transaction cost economics, concentrates on the analysis of the implementation of the selected strategies, paying special attention to contracting processes. By analyzing these dimensions from the management's point of the view, several generalizations could be made. The dimensions of strategic importance and relative performance enable estimating which activities could potentially be outsourced, and which part of the portfolios would provide opportunities for new market creation. However, the decision would include some practical limitations which require a detailed analysis of transaction costs, which links the third dimension to this discussion.

3 RESEARCH DESIGN

3.1 Critical realist approach in management research

Every research has assumptions on acceptable methods to gather data, analyze empirical observations, and formulate conclusions from the evidence (i.e. reasoning). Principally, two opposite philosophies traditionally applied to management research are positivism and phenomenology (Modell 2009; Modell 2010; Olkkonen 1993; Easterby-Smith, Thorpe and Lowe 1991) (see Figure 14). By dividing the research on this basis, we focus on the methods of generalization in research. The positivist view on research relies on hypothetico-deductive reasoning from large congruent data sets, whilst phenomenology begins from the subjective interpretation and understanding of the studied phenomenon, and generalizations from rich data sets. Recently, discourse about the position of *abductive* reasoning and mixed method approaches in management research has gained attention among management scholars because of its potential to provide more credible results through interpretive approaches, and the opportunity for more multifilament theoretical reasoning in positivist approaches.

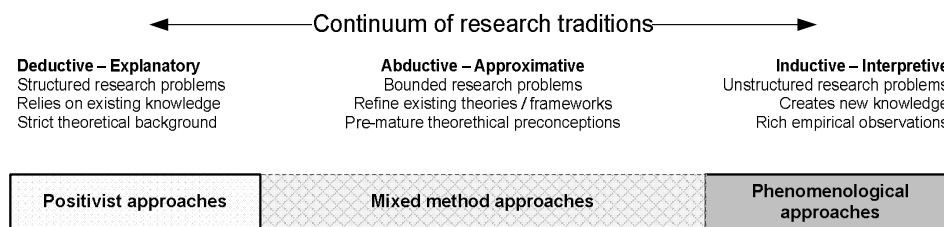


Figure 14 Parallel research traditions in management research (Dubois and Gadde 2002; Modell 2010; Dubois and Araujo 2007)

Mixed method research focuses on understanding discourse in a range of paradigms, providing an advantage in the quality aspects of the research through self-criticism, enabling a rich theoretical background, and helping in the search of novel aspects to the alternative research questions (Modell 2010; Malmi 2010; Lukka and Modell 2010). This research is grounded in the interpretive (i.e. phenomenological) research tradition, but does not rely on subjectivist methodology in producing contributions. Some theoretical preconceptions were prepared using emergent theoretical

frameworks for evaluating the empirical materials. Thus, the research represents the mixed method approach legitimizing abduction as a method of reasoning (Modell 2009).

The research traditions are also called *paradigms*. The discourse on research topics that potentially provide scientific contributions is defined by the paradigms, which helps the researcher to select academically relevant ones (Malmi 2010). Therefore, the researcher must consider the relevancy of the research objects, questions and approaches within the selected paradigm for producing acceptable outcomes. The ways to produce theoretical outcomes in management research (i.e. contributions) are to replicate known studies with one or two variables changed (industry or country), or to analyze practical problems from two or more theoretical perspectives. The latter case refers to *reflection* as a method in which an existing idea, technique or theory is re-examined in a new context (Easterby-Smith, Thorpe and Lowe 1991). Reflection best describes this research, in which public-private partnerships are analyzed using multiple theoretical frameworks. The method enables the further development of theoretical assumptions on public procurement, and adapting existing frameworks to the context of public service provision where operating principles differentiate from the industrial organizations.

Calling the research an abductive, mixed-method research or case study is not an adequate definition for any research. The categorization of the research approaches in management research can be based on two dimensions of research approaches, ontological and epistemological assumptions. Consideration of the ontological and epistemological dimensions of the research provides arguments to show that an applied method is acceptable in the paradigm and to report research results in an appropriate form which fit the premises of the research. In this setting, the case studies are a group of research approaches and methods in management sciences which can be divided into two main categories, the *critical realist* and *moderate constructionist* approaches (see Figure 15) (Järvensivu and Tömroos 2010; Easton 2010; Easton 2002). The critical realist approach originates from positivism, which is an objectivistic approach that distinguishes the world (i.e. objects) and the

researcher (i.e. observer) from each other (Modell 2009). The moderate constructionist approach grounds its philosophy of science on phenomenology, which emphasizes subjective views and the role of individual experiences in the creation of knowledge (Järvensivu and Törnroos 2010).

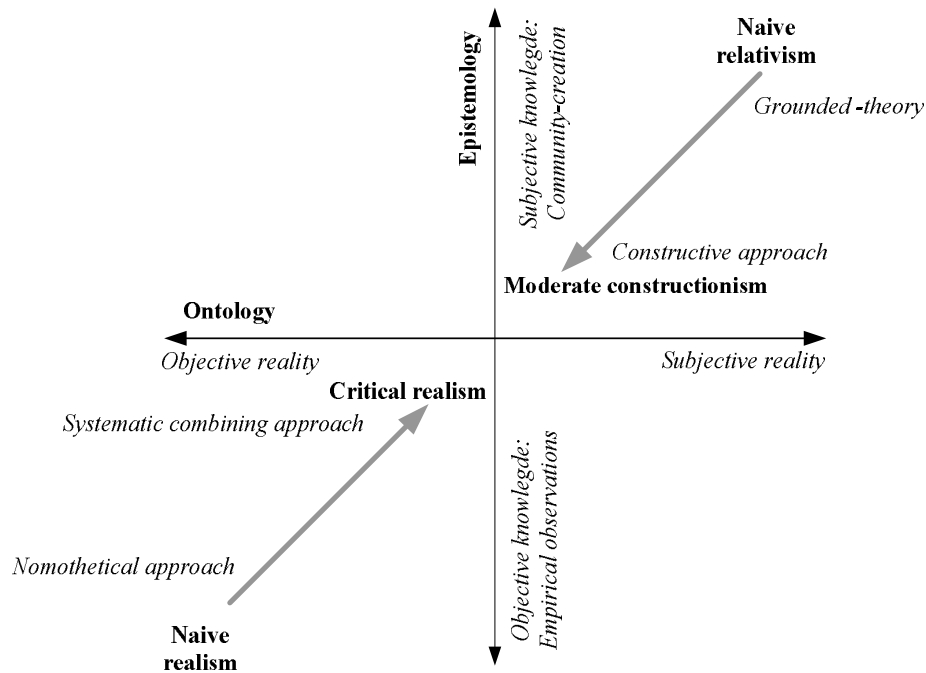


Figure 15 Ontological and epistemological dimensions of research approaches (Järvensivu and Törnroos 2010)

However, the critical realist and moderate constructionist approaches move closer to each other regarding the following ontological and epistemological claims: i) an objective world and truth may exist ii) prior objective knowledge is potential and iii) knowledge is not only descriptive and may include subjective understanding (Järvensivu and Törnroos 2010; Easton 2010). Regardless of the similarities, the approaches can be distinguished from each other considering some consequences of epistemological claims. A critical realist aims to produce descriptive results which explain the structure of causalities of the studied phenomena through the examination of evidence and criticism. In contrast, a moderate constructionist focuses on creating normative results which represent decision models or which are

practically relevant and result in a consensus in communities. Finally, the validation process of the research may be the most distinctive feature of the discussed approaches. The results of constructionist studies are validated through their success amongst the community that is part of the research context (Järvensivu and Törnroos 2010; Kasanen, Lukka and Siitonen 1993; Kasanen, Lukka and Siitonen 1991). The critical realist approach grounds the validation of results on the triangulation of evidence, community-based critique and method triangulation which promotes debate on rival explanations and saturation of understanding (Dubois and Gadde 2002; Modell 2009; Modell 2010; Dubois and Araujo 2007; Kekale 2001).

The research is premised on critical realism, which considers the role of prior knowledge, the quality of the results and the justification of the research. First, re-examining the frameworks manifests the acceptance of the prior knowledge and distinguishes the research objects and knowledge from each other. Consequently, the study applies theories on disintegration, value creating resources and inter-firm relationships, which bound the analyzed phenomenon and steer the selection of methodology. Second, the research aims rather to explain PPPs than to build normative models, which requires the systematic criticism of the results. The results of the research deal with organizational responses of public actors to customer requirements from multiple viewpoints which provide explanations to causalities between the environment and the structure of value networks. Third, the results of the research are justified through the criticism and triangulation of evidence and methods. Therefore, the justification of the study is based on academic debate on meaningful findings, not on the practical relevance of the results, as the moderate constructionist approach assumes.

3.2 Critical realist case method

The aim of critical realist research is to observe causal relationships in the studied phenomena and interpret the interconnection of the analyzed processes to the external environment (Easton 2010). The case method is well suited to research in which causalities in phenomena are explained because research questions are then formulated as “*how*” or “*why*” (Stuart et al. 2002; Yin 2008). Yin (2008) points out

that a *case study* and *archival analysis* are potential research methods if the analysis does not require control over behavioral events. Particularly, a case study would be beneficial if the research focuses on contemporary phenomena or on a phenomenon that cannot be isolated from the real-life context (Yin 2008; Eisenhardt and Graebner 2007). In this research, the case study method is selected because the empirical evidence gathered relates to partially historical and partially ongoing events in public utilities and the public health care system in Finland. Furthermore, the evidence provided in this study is based on three sources which emphasize research approaches that allow a rich methodological basis. The sources of evidence are interviews with practitioners, archival analysis on research reports and firm specific documents, and materials generated using the Delphi method.

In interpretive research, the case represents a rich, real-world context in which the studied phenomena occur (Eisenhardt and Graebner 2007). The analyzed cases should be relevant for the particular theoretical purpose, informative enough to explain all relevant dimensions of the phenomena, and simple enough to enable the analytical interpretation of the findings (Dubois and Araujo 2007; Yin 2008). In other words, "*the case*" is an *illustrative pattern of empirical evidence that includes an appropriate description of real-life events to explain the studied phenomena*. The previous definition refers to focused-sampling of evidence in interpretive research (Eisenhardt and Graebner 2007; Eisenhardt 1989). Two sectors, energy distribution networks and elderly care, are analyzed in the research in order to gather evidence on the impacts of customer requirements in public service provision networks. Both sectors are analyzed independently, as individual cases, which is more appropriate for achieving a deep understanding of the variables, and for explaining complex structures or processes from multiple perspectives (Dubois and Gadde 2002). The *actors, interactions, and time* of the cases should be clearly defined because they represent data sets that provide evidence for the theoretical preconceptions (Dubois and Araujo 2007). The definitions for the cases vary because of the different purposes of the cases. The case that illustrates decision making processes in the energy sector is defined by actors and time. The case of public elderly care illustrates the impact of changing customer needs in value networks of public

service provision, which were defined by the number of actors and the number of studied interconnections. The analyzed features in the case of elderly care were end-customers and value chains in which the focal firms were analyzed. The interconnections between the firms and the environment were built through customer requirements.

3.3 Systematic combining process in case studies

The lack of valid research processes has commonly been recognized as the most important weakness of interpretive research, to which the critical realist approach also belongs (Modell 2010; Malmi 2010; Lukka and Modell 2010). Recently, abductive processes have been considered well-suited for case-based studies because building explanations is fundamentally an iterative process (Dubois and Gadde 2002; Dubois and Araujo 2007; Easton 2010). Iterations in the case studies practically mean evolving patterns of theoretical frameworks, empirical evidence, and methods for data collection during the research which are selected based on their potential to reveal new features from the researched phenomenon (Dubois and Gadde 2002). The systematic combining of the evidence and theory provides an abductive method for implementing this case-based research in which current frameworks are refined for explaining drivers for PPPs more systematically (Dubois and Gadde 2002; Dubois and Araujo 2007). The systematic combining process in case studies begins from theoretical assumptions, evaluates empirical findings through the selected frameworks, and returns to theory providing realignments and contributions to existing frameworks (see Figure 16). Thus, theory *development* is the keyword because the research process aims to refine the original frameworks rather than discover new ones. The four main elements of systematic combining are the empirical world, the case, the theoretical background, and the theoretical framework, of which this research also consists (Dubois and Gadde 2002).

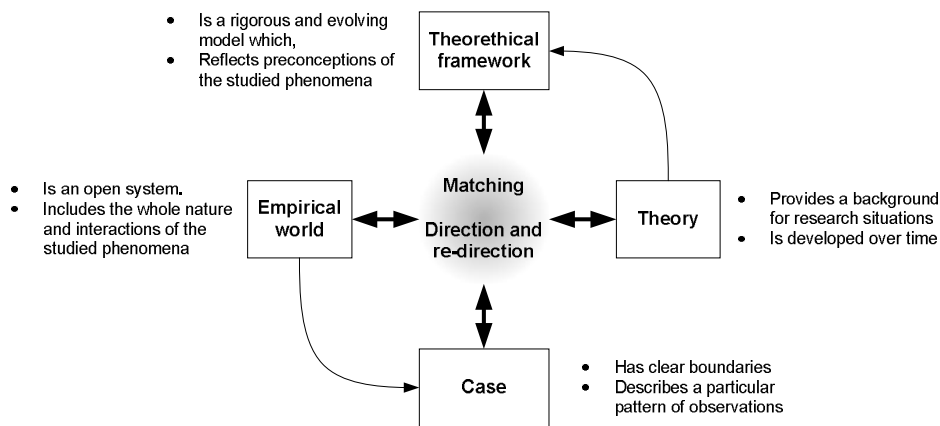


Figure 16 Systematic combining process of theory and empirical findings in case studies (Dubois and Gadde 2002)

The *empirical world* includes problems that are practically relevant and probably provide interesting phenomena for research. The *theory* depicts the current level of knowledge regarding the phenomena of the empirical world. Theoretical knowledge cannot be complete but it can be amended through research. Building connections between the empirical world and theory, and determining the explanation of theory to empirical problems define the research potential of a particular research setting. The *framework* is a limited set of theoretical preconceptions which provides eyeglasses for the researcher to analyze the problem. The *case* refers to a limited set of empirical evidence to be evaluated during the research process. The cases are not randomly selected data sets (i.e. descriptions or events), but clearly bounded and justifiably selected descriptions of real-life events which enable the researcher to reach an in-depth understanding and increase the validity of the research regarding its theoretical preconceptions (Eisenhardt 1989).

Matching, direction and re-direction represent different phases of the iterative research process. Matching is moving between the data and framework, resulting in theory development through refined frameworks. Direction is the first phase of the research during which the initial views on the research problem and the main research approaches are defined. Re-direction targets finding new dimensions to the analyzed case and re-directing research to provide evidence from multiple viewpoints for the analyzed areas (i.e. triangulation). The publications of the

dissertation present single iterations during the research, leading to a complete description which explains the management of public-private partnerships.

3.4 Improving the validity of the case research

Tests to validate the case study aim to evaluate the construct validity, internal validity and external validity of the research (Yin 2008). Internal validity targets test conditions in which the observed causal relationships are valid in explanatory studies, but the test is not applicable to interpretive research. Construct validity aims to establish correct operational measures for the concepts being studied. Construct validity can be increased through the triangulation of evidence, data triangulation and investigator triangulation (Dubois and Araujo 2007; Modell 2005). In recent methodological discussions, scholars have made more efforts to analyze the possibilities of triangulation as a method to validate mixed method approaches. The primary drivers for such development are both the lack of conventional and commonly legitimized positivist methods to provide explanations for inconsistencies observed in the evidence, and the lack clear steps to validate the results of interpretive research (Dubois and Araujo 2007; Malmi 2010; Lukka and Modell 2010; Modell 2005). The domain in which the results are valid should be carefully evaluated regardless the quality of internal measures of the case study, and replicating the findings outside the particular setting would provide credibility for the research (external validity). Finally, the reliability of the processes should be demonstrated by offering descriptions of repeatability, and minimizing errors and biases. (Yin 2008)

Method triangulation and triangulation on a theoretical basis in the direction and re-direction phases of the research increase the validity of the results. Method triangulation combines different methods to provide complementary insights into the research problem (Modell 2009). Triangulation on a theoretical basis targets to search competing explanations to the research problem from multiple theoretical angles when interpreting the empirical evidence (Modell 2009; Modell 2005). Theory triangulation especially provides opportunities for enhancing the researcher's understanding of the interpretations emerging from the analyzed data

set (Modell 2005). Finally, Dubois and Araujo (2007) have stated that “*parsimony is the hall mark for quality of a case study*”. It demonstrates the researcher’s ability to evaluate findings from rich data sets, and to explain practical implications of ideas to audience.

3.5 Material collection

Material has been collected during research projects at the Technology Business Research Center of Lappeenranta University of Technology. The material collection includes three different methods: themed interviews, expert workshops, and archival analysis. The archival analysis deals with project reports, documents and firms’ web sites. The most important projects from the perspective of the research were Wellfarecity – Imatra, MultiUtility and Älykop, during which the materials were collected. The full names of the projects are in Table 1 below, including brief descriptions and connections to the publications.

Table 1 **Related projects**

Project name	Duration	Objective	Related publication(s)
<i>Wellfarecity – Imatra:</i> Opportunities to improve processes in elderly care by applying new technologies	2004 – 2006*	Map potential of ICT as enabler for more sensible working environment, improved customer satisfaction, higher performance processes and quality of healthcare related services.	Publication 1 Publication 2
<i>MultiUtility:</i> Challenges in infrastructure management business: Creating competitive advantage in emerging infrastructure network services market	2006 – 2008	Analyzing transformation of electricity distribution network industry in order to find out business opportunities for service providers.	Publication 2 Publication 4 Publication 5
<i>Älykop :</i> New health care products and services by means of forest industry expertise	2009 –	Recognizing new products and business concepts for the support of living at home and drug logistics	Publication 1 Publication 2 Publication 3

*) Author’s involvement from Nov. 2005

The Wellfarecity and the Älykop projects describe the upcoming changes and emerging issues in Finnish public health care. The MultiUtility project targets to explain the industry transformation of electricity distribution. Whilst idea generation and innovation workshops provide the main methodological basis for the projects related to health care, the research on energy industries applies interviews and archival analysis for the analytical re-development of theory. Thus, generalizations based on evidence from the electricity distribution industry are rather objective, while subjective views of the researcher have a more substantial role in the case of health care. Overall, the publications of this dissertation represent research results in which knowledge has been accumulated during the research process, leading to overlaps between the results presented in the publications.

Each publication presents limited cases which link the results of the research projects to the research questions of this dissertation. The selected cases can be divided into two groups: 1) smart home business models, and 2) management of PPPs. Smart home business models have been analyzed by expert groups to which literature review has been combined to validate the subjective analysis. Management frameworks of PPPs have been explored through interviews. Detailed descriptions of the publications' objectives, target cases, data collection, analysis tools and theory connections are presented in Table 2.

Table 2 Material collection and theory connection of the publications

	Objective	Case	Data collection	Theory connection	Applied frameworks ¹
Publication 1	Illustration of customer value assessment.	Intelligent packaging in medical care	Expert panel	RBV	Service system; Business mapping framework
Publication 2	Depicts connections between competitive change and value network structure.	Smart energy metering service	Expert panel; Literature review on project reports	RBV TCE	Service innovation process;
Publication 3	Demonstrates value network evaluation through offerings.	Smart home business concepts	Scenario analysis Company web sites; Literature review on project reports	RBV	Customer needs assessment; Customer value model
Publication 4	Depicts mechanism which drives market governance in public service offering.	Opening of service markets in network in energy distribution	In-depth interviews	TCE Comparative performance of the firm	Market emergence framework
Publication 5	Summarizes discussion about market creation and supply policies in public service provision.	Customer-supplier relationships in energy distribution industry	In-depth interviews; Literature review on project reports	RBV TCE Comparative performance of the firm	Supply portfolio models

¹) Theory-based tools which are applied to explain the studied phenomena

4 REVIEW OF THE RESULTS

4.1 Positioning publications to research questions

Each publication presents sub-constructions which connect research projects and articles to the research questions, providing a chain for reasoning based on the results (see Figure 17). In this chapter, the position of each publication is explained in relation to the research questions. The sub-questions were the following: 1) How do customer requirements and business strategies drive the formation of business networks and public-private partnerships? 2) How does regulation impact the willingness of public organizations to exploit external business networks to improve their performance? 3) How can public monopolies form their co-operative strategies if the activities are procured from emerging markets?

Activities of the organization, customer needs and their relation to the organization strategy are at the focal point of the first sub-question. *Publication 1* provides an illustrative example of the dependence between the offering and the activity and/or resource portfolio for implementing competitive strategies. *Publication 2* presents an overview of the influence of alternative strategies on public monopolies at the value network level. The presented value network structures are result of the organization's attempts to adjust its operation to regulatory changes. The answers to the sub-question 1 shed light on potential methods to evaluate the importance of activities for the competitive strategies of an organization. The second sub-question directs the research to observe the interconnections of competitive strategies, requisite capabilities, and the role of supply management during industry transformation. *Publication 3* provides a major contribution to this field by illustrating a possible business network for a smart home in which customer needs are the major determinant for participating firms. *Publications 2* and *4* complement the discussion about the changing supply management strategies in the public sector. *Publication 2* describes how new business areas would emerge driven by changing customer requirements, whilst *Publication 4* describes the mechanism by which market creation through the capability difference between firms can be explained. Answering sub-questions 1 and 2 provides theoretical conceptions for the

explanatory models. Sub-question 3 requires returning from theoretical discussion to practical discussion in which supply management frameworks are defined. *Publication 5* concludes the discussion, summarizing the evaluated theoretical dimensions and describing two activity portfolio models for building supply management strategies for organizations.

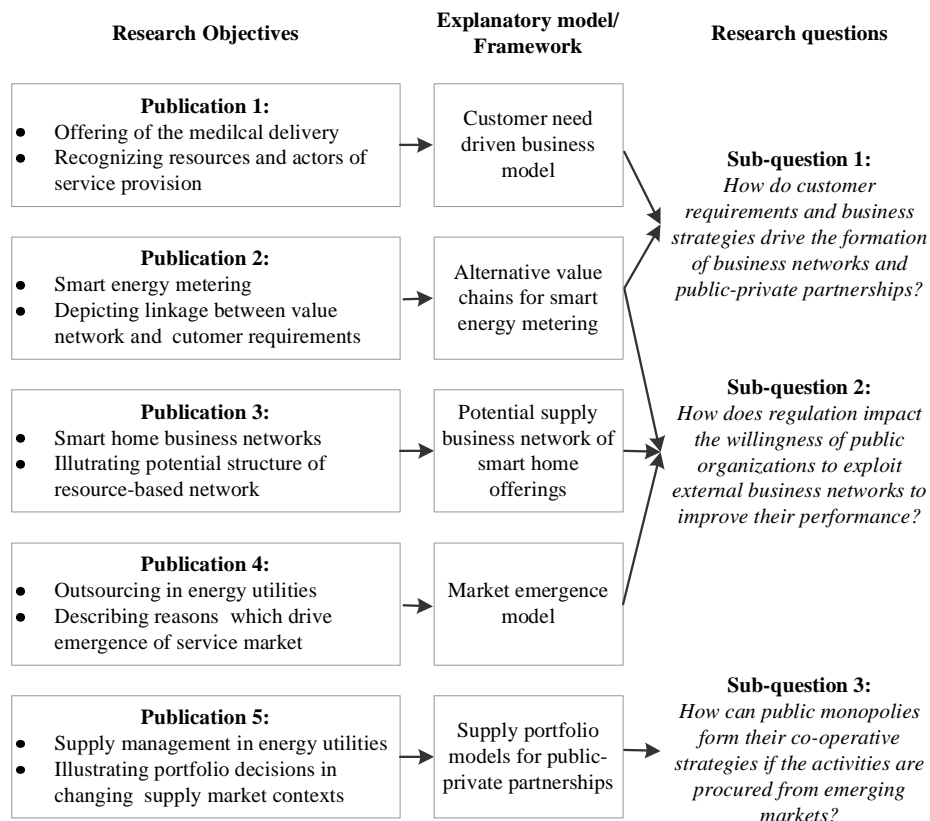


Figure 17 Structure of the research

4.2 Summary of publications

Publication 1 - Strategic Management of Forest Industry Transformation

Objective of the publication

The publication presents results concerning new health care products and services created with the capabilities of the forest cluster. The Finnish health care sector was analyzed from the aspect of home care services in order to recognize potential sources for cost savings through the efficiency of medical delivery. The paper

focuses on the concept of intelligent medical management in the home care environment, which is based on the intelligent package concept. The publication addresses the industry transformation from the mass production of bulk products to service based markets from the forest industry perspective, and proposes potential changes in the behavior of customer industries.

Theory connections

Generally, service innovations require developing a service concept, service system, and service processes by which organizations should build their structure. Business models have become common tools in describing an organization (governance structure) and its linkages to the value network. The elements of a business model are the customer interface, core strategy, strategic resources and value network. Following this definition, the business model actually describes the value network from the firm's perspective which is aligned to meet the customer value preferences. The value network system is a system of companies. At the conceptual level, the value network can be described with business models that are connected to other business models and customers.

Contribution to research

The publication describes a method to evaluate offerings that are attractive to the customer, and links activities and resource to customers' requirements. The scope of analysis covers new offerings which require multi-actor networks as resources. The novel products-service systems drive the change of public procurement because a wide spectrum of capabilities will be applied in the service provision system. Procurement models should change because numerous attributes are involved in the offering, and implementation unavoidably impacts the operation processes in the long term. From the client's point of view, the purchasing decision regarding intelligent packaging concepts has a remarkably higher importance than the decision to procure traditional products. The main reasons for the particular shifts driven by novel concepts are the higher potential for performance improvements, wide-ranging interactions with existing systems, the need to harmonize multi-actor

networks, and the information intensity and long planning horizon of the procurement decisions.

Findings regarding the research questions

In the new situation, the customer requirements are focused on offerings which include far more functionalities than traditional product sales or service provision that are focused on a single activity. The findings in this publication depict the change of customers' needs from product oriented to service oriented, the structure of service networks, and the shifts in supplier-client relationships. The requirements for wide offerings have two implications on the formation of business networks. Procurement management should be aware on the service provision network which includes numerous heterogeneous actors which differ in terms of resources basis, size and cultures. Therefore, the novel service concepts require responsible coordinators to verify the correspondence between the structure of the service offering and customer requirements. Such development tends to lead to increasing responsibility of the prime contractors, which increases the contribution of suppliers to the client's strategy and mutual dependency between actors. Therefore, communication considering the actual needs of the end-user is a critical task in business relationships. The requirement for communication indicates a growing trend in the co-operative management models in procurement management in the private and public sectors.

In conclusion, the findings suggest that the following attributes of the theoretical dimensions are worth analysis when the network formation of public service provision is considered regarding novel offerings. The value for the customer might be a significant factor when novel concepts are procured. The value of concepts in the analyzed case is, however, not a result of any function but rather of the results of rigorously defined offerings which contribute to fulfilling perceivable or latent end-user demands. The emphasis of offerings instead of single products in the novel concept causes coordination issues for management, aiming to harmonize activities amongst the service provision network. According to the findings, the value through the interactions of activities becomes the other remarkable factor in determining the

structure of the service provision network. The findings suggest that concept analysis should be targeted to recognize pooled interconnected and reciprocally interconnected activities in the network for several reasons. The pooled interconnected activities reflect resource and capability segments within the network which could provide emergent market areas for specialized suppliers. The orientation of customer demand toward offerings highlights the importance of the organization's awareness of reciprocally interconnected activities which require the coordination and standardization of outputs between independent activities.

Publication 2 - Mapping future services: a case on emerging smart energy metering business

Objective of the publication

The paper aims to explain the impact of transforming customer needs to business networks in energy distribution which were driven by the measures taken by national authorities. The particular emphasis is on the analysis of the evolution of energy conservation services markets in order to reduce demand. The paper presents a case of energy metering services that is analyzed in two scenarios of the future business environment. The scenarios are utilized in characterizing the potential impacts of the business environment on applied technologies, services and customer behavior. The paper presents some research results from a case study in which the objective was to find out rising opportunities for service providers in the field of infrastructure network services.

Theory connections

New business models can change prevailing practices if a specialized entrant offers a novel way to combine capabilities and to increase the competitive and financial performance of the firm. Furthermore, entrant service providers can compete by shaping the market framework to their advantage by improving transaction procedures. Such new innovative products or processes require, however, rethinking the business structures because the entrant introduces new practices to an established field or it is a substitute for incumbent actors.

Contribution to research

The influence of energy metering on the industry architecture in energy distribution depends on the characteristics of the requisite service system. Novel requirements for product or service features may lead to structural changes through the emergence of new business markets within the established industry if new entrants provide highly relevant capabilities to value networks. Indeed, such changes have potential to bring traditionally distant industries together. In the analyzed case, energy metering has an impact on the functions of other home systems, and therefore, smart metering should be investigated as part of those systems rather than independent devices for a special purpose. Therefore, bundling engineering and roadmaps into intelligent home control systems should take into account the range of customer needs.

By the findings, following implications can be derived regarding the role of public actors in the market emergence stage. Public sector organizations and authorities have an impact on the diffusion of solutions and functionality of services in the long term. National authorities have to pay attention to the structure of the markets, because it has impacts on service platforms, consumer behavior and information content provided about energy conservation. Moreover, the comparison of different incentive schemes shows that new services are likely to replace existing monopolies in an environment where the market framework defines clear and strict targets for operations efficiency and the requisite functions of the offering.

Findings regarding the research questions

The findings that provide explanations to sub-question 1 illustrate the role and influence of national regulation on the structures of monopolies in the energy supply industry. The regulation reflects the demand of end-users to which monopolies should adjust their service offering or operations efficiency. Based on the findings, the strategic change that leads to the restructuring of monopolies tends to occur in the setting where regulation unambiguously determines performance requirements and the expected functionalities of service offering. Consequently, the value for the

customer that is presented in the theoretical model seems to have more weight in structural decisions if it is clearly stated. However, its influence on financial performance is understood. One powerful driver of structural change in the industry of the analyzed case may be the emergence of customer requirements, which provides business opportunities over conventional industry borderlines. The cross-industry effects reveal valuable emergent interconnections which are not visible in the traditional product or activity oriented operations logics. Home control systems and related business models are an example of the result of the above-mentioned demand change.

Explaining the reasons for structural changes answers sub-question 2. Demand changes pressure public monopolies to choose a strategy to rebuild their service provision network because of obvious limitations to exploiting the full potential of the platforms. Developing services and enabling technologies requires investments in which third party service providers have more potential to reach adequate financial performance. The service providers are able to be competitive because their markets are unrestricted and they have the liberty to choose the offered services. Furthermore, the service oriented logics provides a reasoning for public-private partnerships because public monopolies are typically assigned to carry specific tasks in the society, which may be more appropriately complemented by private service provision than by increasing the responsibilities of public organizations.

Publication 3 - Future of living: Assessment of a general smart home concept

Objective of the publication

The publication discusses topical issues of the Finnish elderly care system, in which supporting longer home care periods is in the focus. Shifts between institutional care, assisted living facilities and home care are analyzed because care structures are changing at the moment due to attempts to cut the expenses of elderly care. Prevailing politics, however, creates problems regarding the security of clients and the management of the care processes. Applying new smart technologies would

provide a platform for solutions to the related problems. At this point, it is important to point out that technology alone does not dispose of problems, but rather the question is how technologies can be applied efficiently to improve performance by creating a new service offering. The paper outlines the value preferences of home care organizations and ordinary aging people living at home, through which the market offering for home care for the elderly can be determined. The service offering for elderly care enables assessing the resource and business network and markets related to the smart home concept.

Theory connections

Generally, service innovations require the development of the service offering and service provision processes. Service innovations can be seen as new or improved business models which are created among actors from actual business or co-operating with entrants from potentially intersecting industries. The multi-stakeholder environment requires particular steps to be taken for argumentation of customer needs over network for assuring appropriate outcomes of activities.

Contribution to research

The smart home concept helps to recognize linkages between conventionally distant business areas which are connected by functionalities, technologies, and physical structures. The analysis also revealed emerging gaps in procurement management in the public sector, which would hinder the development of the service market. Actual public procurement policies are leading to the fragmentation and inadequate competition of supply industries. Therefore, procurement policies for smart home concepts require paying attention to integration in contrast to actual practices, which emphasizes purchasing specific solutions at a low price without considering the spill-over effects into supplying industries. The expedients to foster the competitiveness of the service and solution markets are the commitment to longer partnerships with service providers for the creation of key suppliers, the translation of user needs into service and product specifications, and the appropriate standardization of technologies. Indeed, the national funding of technology

development should be refocused from the development of specific technologies onto integrated platforms, which support the diffusion of both home systems and related service businesses.

Findings regarding the research questions

The findings in the article provide arguments regarding sub-questions 2 and 3, explaining the impact of demand changes in the public elderly care. The most remarkable change is the transformation of the elderly care structure to emphasize the treatment of outpatients, which means increasing demand for assisted living services for the elderly at their homes. The shift requires the development of resources, processes and services to support information sharing over a wide service provision network in which public organizations need the capabilities of private partners. Indeed, the new solutions provide business opportunities outside elderly care related service which indicates potential for private businesses at the field.

Existing supply networks for services delivered to the home and service platforms have numerous deficiencies, which public monopolies can influence with procurement decisions. The primary issue is the fragmentation of supply industries, especially in the home service sector, which leads to control issues regarding both the quality and accessibility of services. Additionally, the home system still lacks established platforms which enable the emergence of integrated solutions. Coping with market-based risks which may cause significant transactions costs if procurement policies are poorly planned requires the public sector to take the following steps in its procurement policies. First, clear specifications and standards for services should be established for building understandable market interfaces to which suppliers can adjust their offerings. Second, because markets are at the emergent phase, public organizations should make an effort to create key suppliers, which requires commitment to long-term partnerships to support both internal learning about effective procurement policies and transparent co-operation between the client and emergent suppliers. The commitment may, however, lead to increasing dependence-based transaction costs if transparent partnerships cannot be created or competition in the supplying industry does not attain the expected level.

**Publication 4 - Emergence of New Services through Competitive Change:
Evidence from a Finnish Electricity Utility**

Objective of the publication

The publication describes the impacts of increasing environmental dynamism on the value network architecture in public service provision and emerging service businesses. The case study explains the emergence of service innovations from the aspect of the decision-making process to which the framework of market emergence through specialization is applied. The publication depicts a longitudinal analysis of events at the beginning of the 2000s when DNOs were widely pressurized to rearrange their activities. The major challenge of the DNOs was to ensure that firms' operations were in accordance with the regulations in the new deregulated environment.

Theory connections

The market emergence mechanism links the study to recent research through discussion regarding the influence of performance attributes on value network structures. The theoretical framework outlines the connection between the capability differences of firms and the rules for market opening. The model provides a simplified description of how distinctive capabilities in different parts of value chains and the path dependence of a firm's performance steer outsourcing decisions. Thus, the publication contributes to the original framework by explaining the factors behind the market emergence processes.

Contribution to research

The publication presents that regulation steers architectural changes in an industry if the actions are focused on the competitive basis of the industry, resulting in distinctive capability requirements between functions in value networks. The competitive changes create distinguishing development targets within the activity portfolio. One activity could face only incremental changes (e.g. asset management of distribution networks), whilst another function is threatened by technology substitutes and radical process renewals (e.g. maintenance and construction of

distribution networks). In particular, competitive forces shift the performance balance of maintenance and construction from static to dynamic management performance requirements, which create pressures to gather requisite capabilities from external actors. In this particular case, the new service models of emergent suppliers resolved the management issues by offering superior operations efficiency and an effective performance monitoring framework for supportive activities.

Findings regarding the research questions

The findings of the article explain the objectives of the partnerships, answering sub-question 2. The architectural changes in the public utilities aimed to solve the performance weaknesses which were caused by the regulation of markets that shifts the balance between dynamic and static performance requirements in the short term. The demand for a more dynamic operation model created a significant obstacle for the public energy utilities to develop their performance because of two main reasons: (i) the organization culture was formed in a monopoly situation which does not require responsiveness, and (ii) the utilities operate in a capital intensive business in which short-term redirection of strategies cannot be implemented. From the viewpoint of the activity portfolio, the demand change due to regulation created inconsistencies in the network of activities in which static and renewing activity segments were distinguished. The static activities were core activities of the energy utilities, which did not create incentives to develop new capabilities. Thus, partnerships with service providers were natural solutions to the emergent performance issue.

Explaining the role of the market framework in the analyzed case sheds light on sub-question 3. The market framework was created during a long process which led to partnerships and opening markets for the privatized services. The key factor for the creation of the framework was to recognize the internal cost structure and requisite offering, which increases awareness of pricing and of the requisite capabilities of service provider. Overall, the portfolio strategies should avoid significant inconsistencies which could lead to issues in operations management. Hence, cooperative actions should be taken after the consideration of the potential risks of

emergent markets and their comparison to the expected gains from privatized services.

Publication 5 - Supplier relationships in regulated industries: longitudinal study on energy distribution

Objective of the publication

The publication depicts the dynamics of supplier relationships of electricity distribution network operators (DNOs) in circumstances of changing end-user needs, supply markets and power balances between the client and suppliers. The article demonstrates how competitive changes, market evolution and supply strategy decisions are interlinked. The analysis focuses on supply management decisions during the reform of the electricity distribution network industry.

Theory connections

A cross-disciplinary approach is applied to integrate the viewpoint of customer value into performance and transaction cost economics. In this paper, the aim is to identify the applicability of (i) the strategic value of functions, (ii) transaction risks and (iii) performance as dimensions for an activity portfolio and supply strategies.

Contribution to research

The publication describes supply management in DNOs through the three phases of the maintenance and construction service markets, which are (1) market emergence, (2) standardized services and (3) the renewal of the service offering and connections between activities. The case analysis shows that supply management becomes a strategic concern for DNOs as regulation becomes more demanding, which creates a need to acquire specialized capabilities. The most important elements of the regulation model were standard compensations to the customer and an accepted level of returns which obligates DNOs to improve their efficiency in maintenance and construction. Supply management tends to change relationship or value network management when the strategic value, comparative performance or transaction costs of activities reach a critical value.

Findings regarding the research questions

The article concludes the discussion about the issues regarding the privatization of activities of public organizations, which leads to public-private partnerships, and occasionally, the emergence of new market areas for private service providers. The findings in this publication answer sub-question 3, illustrating the appropriate procurement strategies in different phases of the service market. The discussion presents how different governance policies of the supportive activities were applied to service provision in DNOs. The most important changes in the portfolio attributes (value, performance and transaction costs) during the analyzed period were the increasing contribution of supportive activities to long term success, decreasing transaction costs during market evolution, and emergence of capable suppliers.

The experiences from the case suggest that risks in the emergent markets are manageable using joint venture or subsidiary arrangements because they provide effective frameworks for internal learning and transparent co-operation between a public organization and private supplier. Indeed, the controllable governance of the activity provides tool to influence the dynamics of the emergent supply industry. In the mature phase of markets, formal co-operation seems to provide the most advantageous supply strategy regarding the service offerings. Transaction based governance might be too simple, and joint ventures may limit the opportunities of daughter companies to develop their business in the long term. Furthermore, market emergence seems to be an irreversible process for two main reasons. First, competitive markets have potential to provide ultimate performance which cannot be replicated by local monopolies, and second, the resources and capabilities developed become rapidly path dependent, which restricts copying them by client organizations.

In conclusion, public sector management should pay attention to the long-term influences of supplier relationships if the activity has made a strong contribution to the produced public value, if the service cannot be directly procured from private firms without a considerable learning period, or if transaction costs reach the critical value. In the analyzed case market, the risk was the primary obstacle in the early

phases of the service market. Dependency and contact based transaction costs became considerable factors in the analyzed case because the procured activities included rather complex service offerings and the harmonization of the information system was driving the supplier and client into a more in-depth relationship. Overall, the analysis of supplier relationships would provide unexpected gains for the client, as the procurement of services requires appropriately defined interactions and functionalities over a large network. Finally, focusing the analysis on the connections over a network of activities provides an approach for business management and public authorities to analyze the dynamics of the emerging fields the industries.

4.3 Summary of the results

A summary of the findings and contributions of each publication is presented in Table 3. The publications can be divided into two categories according to the aspects that they analyze. Publications 1, 2 and 3 focus on the analysis of offerings considering two areas that combine customer needs to the analysis of activities and service provision networks. Publications 4 and 5 examine the internal processes of the organizations regarding activities which are available to be procured from emergign markets. Furthermore, the first three publications provide methodological contributions to the analysis of service business models, whilst the latter publications contribute to the theories of supply portfolio management. The findings of the independent articles provide insights into managerial issues of defining portfolio strategies in a transforming operations environment.

The objective of the first and second publication was to analyze the linkage between customer needs, service offerings and value networks which are sources of value creating activities. The findings of the first article highlight the importance of appropriately defined platforms of service delivery when procurement decisions regarding complex products are made. Procurement of services which requires awareness of management on technologies and requisite functionalities of products and services delivered. The second publication continues the analysis of the value networks by including industry trends into the analysis. In this publication, the

scenario method is applied to the analysis in order to depict the dynamics of the requisite functionalities of offering, and its influence on value chain architectures in the energy distribution industry. The third publication illustrates the industry analysis of emergent service markets, including a process to combine segmentation, concept analysis, and estimates for industry structures. Publications 4 and 5 examine public-private partnerships from micro economic perspective focusing on the analysis of managerial decision making processes in a public organization. The study presented in the fourth publication describes market creation processes in the electricity distribution industry which were triggered by regulatory measures by the Finnish Energy Market Authority. The study contributes to theory by providing an analysis regarding the roles of external agents, the path dependence of capabilities and influence of feasible of market interfaces to willingness of organizations to outsource functions. The fifth publication concludes and summarizes the theoretical debate by presenting two portfolio models for the optimization of the activity portfolio management of a firm. The publication discusses measurement issues regarding strategic value, the relative performance of a firm, and transaction costs of complex product systems.

Table 3 Summary of the findings and contributions of the publications

	Findings		Theoretical contribution	Methodological contribution	Managerial implications
Publication 1	<p>Large platforms enable gains in medical delivery, not specific physical products.</p> <p>Novel concepts are collections of resources which are bundled into an offering.</p>	<p>The article describes the transformation from the product-dominant to the service-dominant logic of production.</p>	<p>Presents a systematic method for analyzing service offerings.</p>	<p>Intelligent solutions require awareness of the technologies and functionalities of offering from the purchasing organization.</p> <p>Novel concepts highlight the importance of portfolio management.</p>	
Publication 2	<p>Public authorities have an important role in guiding demand based-services by regulation, standards and subsidies.</p> <p>Market-based services replace public service provision in environments where clear rules for efficiency targets and offerings exist.</p>	<p>The paper depicts interlinks between regulation and markets emergence.</p> <p>The evolution of industry structures was analyzed in relation to customer preference.</p>	<p>The paper presents a method to apply scenario models to the analysis of the dynamics of service offerings and market structures.</p>	<p>Cross-industry evaluations are required when smart home concepts are implemented.</p> <p>Including customer needs in the cross-industry technology roadmaps may reveal attractive markets for emergent service providers.</p>	
Publication 3	<p>Actual public procurement policies in which price are the most important factor lead to the fragmentation of supplying industries.</p> <p>Smart home technologies should be standardized to support the emergence of system suppliers.</p>	<p>Analyzing value networks through customer driven offerings reveals new links between industries.</p> <p>Service models include a heterogeneous set of actors.</p>	<p>The paper presents a process to combine demand based segmentation, concept analysis and value network analysis.</p>	<p>The public sector (health care, authorities) should implement procurement policies and regulation that enable the consolidation of supply markets.</p> <p>The consolidation of supply markets requires long-term commitment to partnerships.</p>	
Publication 4	<p>Regulation created a demand for functions that increase diseconomies of scope in the organization.</p> <p>Outsourcing was driven by potential capability gains through the specialized service provider.</p>	<p>The study shows that the activity portfolio of a firm should be built on a constant capability basis.</p> <p>External agents can trigger the market emergence process.</p>	<p>The emergence of new service businesses can be supported by influencing the value expectations of public owners or providing operations frameworks that enable the unbiased comparison of suppliers.</p>	<p>The emergence of new service businesses can be supported by influencing the value expectations of public owners or providing operations frameworks that enable the unbiased comparison of suppliers.</p>	
Publication 5	<p>Complex and high value products emphasize relationship and networks management.</p> <p>Market emergence is an irreversible process due to increasing asymmetry between the client and suppliers.</p> <p>The evaluation of partnerships requires analysis of multiple theoretical disciplines.</p>	<p>The interconnection of activities provides a method to analyze industry evolution.</p> <p>TCE/RBV and Performance/RBV models provide frameworks for portfolio management in dynamic environments.</p>	<p>The customer perspective, the network dimension and the governance of activities should be included in supply management strategies.</p>	<p>The customer perspective, the network dimension and the governance of activities should be included in supply management strategies.</p>	

5 DISCUSSION

This chapter discusses the features of the service offerings, the structure of organizations and service markets which answer *the research question* “How can public organizations re-organize their internal and external architecture to create a service provision structure which corresponds to customer requirements?” Service provision is discussed from the perspectives of public service provision, service procurement, the technology management, converging provision networks and the analysis of the theoretical dimensions of the study through cross-case analysis. The cross-case analysis of the findings presented in the publications provides an insight into the most important features of the theoretical model which includes three dimensions of activities: a contribution to strategy, performance, and transaction costs. In general, managing service provision requires awareness of the technologies and functionalities of offering from the client as well as from the service provider because procured items are typically complex structures including both physical products and service activities. Service provision is rarely limited to the interactions of two contracting partners, which highlights the importance of the orientation of network management. Indeed, the provision of services is always tied to time and place, as services cannot be stored as physical goods, which distinguishes them from traditional industrial production.

Procurement process policies in the public sector were recognized to focus on a narrow scope analysis in which the purchasing price has a remarkable role. However, simple methods that focus on the purchasing price are no longer appropriate because demand is turning to service offerings. The existing evaluation methods of procurement and lacking knowledge about alternatives have led to poor experiences regarding public-private partnerships. Analyzing issues in existing procurement models and experience from partnerships provide answers to *sub-question 1* “How do customer requirements and business strategies drive the formation of business networks and public-private partnerships?”, which directs attention to customer requirements amongst end-users and public organizations. The findings suggest that the public sector has to build clear technology strategies and

focus on the management of activity portfolios, which it currently lacks. At present, public sector management is finding shortcuts to performance improvement through product testing, from which strategic consequences and long-term platform development are excluded. Supplying markets suffer from similar issues. The products and services offered are either strongly technologically oriented or focus on a single functionality. The service providers should also be more aware of offerings to which their products are integrated in the future. This requires involving the customer in the product development processes as well as co-operating with surrounding organizations in order to increase the interconnectivity of products.

From the theoretical standpoint, the research suggests the following regarding the procurement of services. The strategic value of an activity depends on its contribution to the value provided for an end-user, its significance in the cost structure, and the interconnections of the activity to the external network. The value for a customer in the case of public service provision means product attributes (marketing VC) perceived by the customer and the use value of services derived through experiences (derived VC). In practice, the authorities in both the energy and the health care sectors have an important role in guiding demand based services by regulation, standards and subsidies in order to create appropriate offerings.

The value for a customer mainly relies on value attributes determined *ex ante* in the energy sector because of the technical nature of the services. Thus, the recognized net value and perceived value for the customer of the services determine the customer's intentions. Further regulatory actions and standards should determine the technical features and contents of services which are provided by DNOs or third party service providers. The objectives and expedients differ from the previous in the health care sector in which the value for customers means derived value in most cases. The value for a customer thus depends on the overall impression of the service provision and *ex post* experiences regarding the delivered service, not on a single technical attribute or functionality. The value attributes that define the customer's expectations, such as availability, appropriateness and effectiveness, are more common in the health care sector. Therefore, the steering of service provision

networks to fit customer demand in the future requires the active involvement of public actors in the network development. The actions taken by public actors mean not only creating rules for service provision, but also influencing the emergence of new service models which enable more comprehensive service offerings for the end-customer.

The results highlight the importance of considering services as offerings which are provided through networks in the future. Such development can be recognized in the energy distribution sector in the construction and maintenance of cable networks, and in the health care sector in smart home concepts. Both of the examples indicate the growing importance of interconnections between activities which enable functional service offerings. Traditional value chain analysis focuses on understanding sequential connections in order to optimize the production chain. In service provision, sequential activities are not the key issue. Instead, it is more important for a manager to be conscious of problems related with resource based interconnections (i.e. pooled interconnections) and indirect interconnections via offerings (i.e. reciprocal interconnections). Especially resource interconnections through databases play a remarkable role because service provision requires the management of information within a network of actors. The prime tasks regarding information management in this context are collecting, storing, processing and sharing to enable an efficient and appropriately designed service provision structure. The indirect interconnections between activities mean requirements for consistent offerings which are formulated in order to respond better to end-user demands. The consistency of the planned offering can be improved by defining standards for outputs and interfaces between actors to which public sector management is able to contribute significantly. In summary, services cannot be procured on a wide scale without understanding the interconnections between activities in order to avoid unexpected influences on the organization's value creation capability.

Answering *sub-question 2*, "How does regulation impact the willingness of public organizations to exploit external business networks to improve their performance?", reveals the rationale of public sector management in implementing new service

procurement models. The value of an activity through its importance in the cost structure does not have a significant direct influence on procurement decisions in the analyzed cases. However, the static performance of the organization links service procurement to the financial performance of the organization. The health care sector has faced increasing public pressure to improve its efficiency by improving the ratio between outputs and tax-funded expenses. Novel intelligent concepts to support elderly individuals living at home reduce personnel expenses in health care in relation to the growing demand for services. This provides a rationale for exploring novel service structures. In the energy distribution sector, the challenges were different. The regulatory model sets limits for acceptable operations efficiency, which forced DNOs to search for solutions to manage the risk of profit loss resulting from quality compensations for customers and limits for acceptable returns. Overall, the health care and energy distribution sectors faced opposite capacity issues which had, however, the same source – both operate in a local monopoly position. Health care systems will globally be facing significant capacity issues in the future because of a rapidly growing need for elderly care and the continuously tightening finance of states and municipalities (Chung, McLarney and Gillen 2008; Virpi Timonen and 2008; Abraham, Nishihara and Akiyama 2011). In contrast, distribution network operators had over-capacity issues regarding supportive activities especially in network maintenance, as regulation had set higher standards for performance. At the same time, however, the monopoly position remarkably limits the opportunities to optimize the amount of personnel. Furthermore, both sectors have historically been dominated by public monopolies assigned with specific tasks which have led to a low rate of innovations regarding the operation models and the rigidity to improve organizations. Thus, public-private partnerships have the potential to improve the dynamic performance if the organization culture is improved, new innovations are expected to provide significant efficiency to the operation model, or the market area of service provision sets limits for process optimization.

An analysis of the features of service markets, expedients to increase the value of partnerships with emergent suppliers and transaction costs related with service procurement answers *sub-question 3*, ” How can public monopolies form their co-

operative strategies if the activities are procured from emerging markets?” From the view of market structures, the inoperability and fragmentation of the service market limited service procurement in both analyzed sectors. In such a situation, management is expected to employ governance that enables transparent co-operation with partners. The experiences from the energy sector suggest that joint ventures would be an efficient way to control the development of emergent supply industries and avoid the costs of opportunism. Regarding the development of intelligent living concepts, it would be beneficial if the public sector were involved in platform development through partnerships with equity ties because regulation does not solve all issues of public service provision markets. Public sector management has an important position locally when competitive markets are created. In the Finnish system, distribution network operators and public health care, which are both local monopolies, determine independently the local demand conditions for private service markets. Therefore, local procurement policies and locally defined standards finally either enable or disable the consolidation of supply markets.

The demand for wide service offerings seems to increase both contract and dependency based transaction costs in both sectors. Intelligent home concepts and the maintenance of cable networks require bundling multiple activities, user rights and physical products into the same integrated offering. Bundling multiple items into one offering increases the complexity of the contracting process because of multiple contracting parties, multiple contracts, alliances between parties, IT security issues and ambiguous quality aspects. Public elderly care had avoided significant dependency risks in service procurement by focusing on single activities which were simple to define in contracts concluded with small firms. When procurement management is evaluated in forthcoming demand conditions, risk management has an important role in the decision process. In practice, procuring a large service platform may lead to a lock-in situation with one supplier if only one main contractor exists. It creates a twofold dilemma for public authorities. First, procuring complex systems in parts from a fragmented market is time consuming and requires a strong orientation towards integrative capabilities which are

contradictory to the main task of monopolies. Second, service and product markets stay fragmented and services undeveloped as long as procurement policies emphasize short-term price policies. Thus, it is obvious that public management has to strive towards market development in order to create responsible integrators to deliver novel service concepts, but simultaneously foster market competition using parallel partners for the same functions. The study presents two potential methods to support the emergence of new service businesses locally: i) influencing the value expectation of public owners or ii) providing market frameworks that enable the unbiased comparison of suppliers.

A deeper look into the smart home concepts reveals potential influences of wide offerings on the evolution of supplying industries which are likely to change their internal structure, but are also potential areas of industry convergence. Overall, the smart home concepts seem to be an important link for many service platforms which are dependent on standardized technologies, appropriately defined service structures, and competitive supply markets. The smart home constructs for health care applications are closely related with smart energy metering and consumption control systems which are required in the energy distribution sector. Numerous overlaps regarding the functionalities of smart homes have been recognized between health care driven and energy business driven solutions. Therefore, demand driven convergence may occur regarding both technology infrastructures of smart home systems and service provision. Consequently, cross-industry evaluations are required when smart home concepts are implemented, if building competitive markets is the goal of public authorities.

As a *theoretical finding*, observations suggest that the dimensions of portfolio models are not completely distinguished from each other, as presented in the contextual evaluation. There are several important overlaps between theories linking the value of interconnection with dependency based transaction costs, performance attributes with transaction costs, and operational performance with the economic value of activities. The analyses of service models suggest that the value of activities in integrated offering is higher than the overall value of independent activities,

which indicates the existence of systemic value in the network (Mikkonen 2011). The systemic value for the customer is enabled through platforms in which functions within and outside the boundaries of the firm are standardized for the easy availability of services (Pynnönen, Ritala and Hallikas 2011). As a consequence, the existence of the systemic value indicates the increasing importance of the interconnection of activities in operations management, which, however, leads to a situation of increasing dependence on suppliers if service provision is externalized. The procurement of services as an operation model tends to lead to complexities in changing suppliers and higher switching costs because offerings must be adapted to actual operations. Furthermore, forming complete contracts for the procured services might be impossible because of numerous activities and physical goods involved in supplier relationships leading to remarkable expenses during the negotiation process. Distinguishing the performance attributes of activities from transaction cost attributes is not unequivocal because the net influence of the dimensions depends on the gap between the performance of the supplier and that of the client. The observed transaction costs are the net sum of gains from externalizing and the recognized risks of partnerships. The logic leads to the conclusion that performance attributes have a significant impact on the total transaction costs which limit the overall development of business networks. However, it is worth reminding that performance in this research is determined as a relative attribute to the perceived customer value, which is a reason for the expected gains from the specialization of the service providers. The linkages between the performance dimension and the strategic value of activities can be recognized regarding both static and dynamic performance. Economic value and operation performance have a reciprocal influence if the activity has a remarkable share in the cost structure. In consequence, the profit making capability depends on the effective management of individual activities. In the service oriented logic, dynamic attributes have a more important role because the success of a public organization or a firm is dependent on its external value, which is judged by the end-customer. In this view, the capability to orchestrate wide activity networks over the boundaries of firms is expected to characterize best the dynamic performance. The effective orchestration of activities

increases the perceived systemic value of offerings, which leads to the conclusion that the interconnections of activities and dynamic performance attributes have obvious linkages in the service based economy.

The discussion of the findings relies on the premises of the research which tend toward the direct interpretation of case researches. The three most important assumptions were active role of local public management, stable position of public actors and initiative role of regulatory actions. The change of service offering originates from actions of local public actors which are search performance improvements and novel ways to generate customer value. The research setting does not consider the probable initiative role of private actors. The public sector is expected to retain a key role in the service provision structure to which new complementary businesses activities are adapted. Furthermore, regulation is supposed to be the primary driver for change, which also strongly directs market-based approaches in public service provision.

Some rival explanations, however, emerge if the premises of the study are changed. The change of public service provision toward open structures is not dependent only on local management because the social politics of states and municipalities have a remarkable influence on the content of service provision networks. Also development of public sector opposite to that described in this research has been witnessed. Some regions in Finland have strengthened public service provision by merging a number of municipal health and elderly care providers, which has created powerful local public monopolies. These monopolies tend to create a closed sector into which it is difficult to integrate external private services. In these circumstances, the efficiency of processes seems to be a more important factor compared to value provided to the end-customer. Thus, the change of public service provision might have more intrinsic and political reasons than extrinsic, customer driven rationales which are distinct from the presumptions of the research.

Regulation that steers public monopolies is assumed to reflect customer needs in this study, which is the primary aim of the legislator. However, the regulatory models

are not driven purely by customer requirements for two reasons. Industrial actors have the power to steer legislation for their own benefit through political systems, and powerful local service provision monopolies are able to create offerings on the basis of supply, not demand. Moreover, public procurement laws should be harmonized to support the networked structure because they restrict the appropriate platform development in home delivered service at the moment. The potential for the spontaneous emergence of customer driven offerings and market frameworks which enable streamlined public-private co-operation can be expected to be challenging at present in the Finnish context. The main reasons for the rigidities are confusion about the objectives of public actors and uncompetitive private markets which have provided varying experiences regarding the benefits of privatization in public service provision. Therefore, it is essential to determine specific public and private responsibilities and the appropriate funding of services prior to releasing new public service provision models to which customer driven elements can later be intergraded.

6 CONCLUSIONS

The research contributes to the current research stream of cross-disciplinary studies which explain the rationales for procurement management and public-private partnerships. The emphasis on recognizing theoretical arguments regarding portfolio models distinguishes this research from recently reported ones, which have commonly been empirically oriented. External and internal views of decision making have been combined into the study in which the most distinctive element was including customer demand in the considerations. Furthermore, the selected context of public service provision and focusing on service offerings provides new insight into recent theoretical debate regarding the methods of portfolio strategies. The selected approach enabled contributing to recent research which considers relationships between customer demand and appropriate value provision networks.

The main question of the research was: “How can public organizations re-organize their internal and external architecture to create a service provision structure which corresponds to customer requirements?” The research targets to characterize the transformation from product-dominant to service-dominant logic in order to explain the factors behind the main question. However, the ongoing debate about service oriented business models lacks an empirically based illustration about what the service-dominant logic practically means. The study augments theoretical understanding about the service business, depicting the interaction between customer demand, service offering and requisite activity networks. The results emphasize supplier relationships and supply network management when complex and high value products are procured. The main question was divided into three sub-questions, which steers the researcher to evaluate the findings from the appropriate view regarding expected contributions. The sub-questions were: (i) “How do customer requirements and business strategies drive the formation of business networks and public-private partnerships?”, (ii) “How does regulation impact the willingness of public organizations to exploit external business networks to improve their performance ?” and (iii) “How can public monopolies form their co-operative strategies if the activities are procured from emerging markets?”.

6.1 Contribution to literature

The research contributes to recent literature by providing argumentation to supply and technology management regarding the impacts of customer requirements in the electricity distribution industry and public health care.

The offering analysis shows that a common feature between the analyzed industries was the change of customer requirements to prefer large platforms in which multiple functionalities were bundled into single service products (Davies, Brady and Hobday 2007; Cova and Salle 2008). The new approaches to plan services are worth further examination because it enables obtaining the most performance gains in public service provision. Consequently, systemic elements of the products and joint value creation between actors were recognized as the key sources of value for the customer over the traditional product or function centric view (Vargo, Maglio and Akaka 2008; Vargo and Lusch 2008). The findings highlight the importance of portfolio management when intelligent solutions and product-service offerings are implemented in public service provision. Portfolio management is important because novel concepts are typically collections of resources from multiple suppliers which are bundled as an offering. Overall, the service provision networks that are defined through offering analysis include a heterogeneous set of actors from manufacturers to service integrators, which has an impact on the complexity of management. Emergent networks, however, are not functional and competitive if they lack clear leaders which have direct access to customer interfaces, have power to steer supply networks and are capable of building consolidated offerings for the customer.

Including customer needs analysis into the assessment of public-private partnerships is advantageous because it increases awareness on requisite functionalities and the appropriate capability and resource basis of the network (Ancarani 2009). Analyzing value networks through customer driven offerings reveals new links between industries in two ways. First, focusing attention on the offering may reveal overlapping needs between customer segments, which increases awareness of the full potential of the observed platform. Second, the mapping of offerings tends to

reveal functionalities that should be included in an offering which requires bundling resources and capabilities over conventionally defined industry boundaries.

Public-private partnerships are not only internally driven processes, as external agents (e.g. authorities and suppliers) may catalyze the market creation but also trigger market emergence processes influencing the requisite capabilities of service provision networks (Jacobides 2005; Jacobides 2008). Gaps in the activity portfolios may force public management to procure performance from external specialized service providers, which lead to market openings in the analyzed case. The performance impacts of externalized activities can be explained by the following reasons. An external service provider has the liberty to choose the market area (geographical) and market segments to which services are delivered. In contrast to the public sector, external service providers can optimize their operations capacity and gain economies of scale through product adaptations to multiple customer segments. A service oriented organization culture, the path dependence of capabilities to integrate multiple activities and learning from experiences from various customers were recognized as the most important indicators for the dynamic performance of a service oriented organization. Furthermore, the research supports the argument that the activity portfolios of a firm should be built on consistent capabilities in order to enable effective management processes over organizations and thus avoid diseconomies of scale.

Public-private partnerships provide satisfactory outcomes for public service provision, if the specialized service provider can be appropriately integrated into the service provision network. This requires (i) awareness of the internal cost structure and pricing of services, and (ii) rigorous analysis of the value creating activities in the market interface (Janssen, Joha and Zuurmond 2009; Janssen and Joha 2006). The results include several findings regarding the applicability of recent frameworks to describe the management mechanisms of public service provision networks. The evaluated theoretical frameworks are appropriate in mature industries in which competition is intense, offerings are established and operations are product oriented. Emerging markets and service offerings require, however, paying special attention

to the transparency of transactions and controlling the network (Walker, Knight and Harland 2006; Caldwell et al. 2005). Thus, the governance of activities should be carefully examined to avoid structures which transfer bargain power to the supplier in the short term. The planning horizon is an important feature in public-private partnerships because of the increasing mutual dependency between the client and suppliers at a number of levels. Public-private partnerships provide a market base for new services which are procured from emergent markets. On the other hand, both services and technologies create complex relationships between transacting parties, which provides gains for the customer after the learning process. Finally, market emergence is an irreversible process due to the increasing asymmetry between the client and suppliers. This may reduce the likelihood of the termination of partnerships in the short term.

To understand the dynamics of public-private partnerships, they should be evaluated from multiple theoretical standpoints regardless of the fact that cross-disciplinary analysis tends to be confusing. It can be stated that portfolio strategies should be evaluated using TCE/Value (Watjatrakul 2005; Kraljic 1983; Olsen and Ellram 1997) and Performance/Value (McIvor 2008) arrays to gain appropriate information about the options for co-operation and choosing the appropriate governance mode for each activity. What, then, distinguishes the portfolio models from one another? TCE/Value arrays provide information about short-term structural decisions, which directs attention to analysis optimization in operations management. However, decision makers lack valuable information about future opportunities if they only focus on structural decisions. Therefore, the Performance/Value array enhances the validity of the portfolio analysis because it refocuses attention to value gains from partnerships and actions to promote the competitiveness of supply markets. In the latter case, the firm is no longer a passive government structure of activities, but takes an active role in value networks in which a group of firms co-operates to gain value for the customer.

6.2 Methodological contribution

The following methodological contributions were made during the research. The study demonstrates a systematic method for analyzing service offerings, which links customer demands to activities and resources using value flow mapping. The analysis process provides an approach to evaluate the scope of resources, capabilities and interconnections in the service offering. A value network analysis process which combines demand based segmentation, concept analysis and value network analysis is presented in this study. The analysis of existing networks using demand-based segmentation provides information about potential sources of resources and provides intelligence on potentially overlapping parts of separate industries. The dynamics of emergent value networks was evaluated using a scenario models in which optional service offerings were applied as a determinant for industry structures.

6.3 Managerial implications

To promote market-based services in public service provision, authorities should shape the operation environment in a way where clear rules for efficiency targets and offerings exist. This could be done by producing appropriately defined standards, subsidies, obligations, and increasing the awareness of decision makers and consumers about opportunities.

The study provides methods and demonstrations for public authorities regarding the impacts of regulation and standards on the dynamics of service provision networks. Understanding factors that potentially steer both public sector management and private service providers enables appropriately designed regulations and incentive schemes. Public sector management involved in procurement decisions regarding intelligent solutions benefits from the study through increased awareness about the decision factors that should be included in the preparation of public-private partnerships. The processes and frameworks presented enable building more clearly structured portfolio strategies and directs decision makers to evaluate potential gains and risks of outsourcing. The study helps service providers that are developing

novel solutions to build more valuable offerings and to recognize potential co-operation opportunities amongst actor networks. The portfolio analysis also provides information to suppliers regarding potentially attractive markets which are not too close to the customer's strategic core.

6.4 Limitations

The presented research setting was explorative in both the theoretical frameworks and the applied methodology. The explorative studies are justifiable because the studied phenomenon of PPPs is emergent and, therefore, extensive empirical research has not been released yet. Indeed, the premises of the study suggest that there was a knowledge gap in appropriate theories to explain the intrinsic and extrinsic mechanisms behind the formation of PPPs. Three basic theoretical frames – RBV, TCE and the performance view – were applied during the research to gain understanding from multiple points of view. The cross-discipline approach of the research requires applying a number of rich methodologies, which, however, demands sensitivity to the limitations of the study. The observed limitations of the research are discussed from theoretical, methodological and generalization angles.

Theoretical limitations emerge from the scope of the research setting, which was defined to cover the topic of PPPs widely. At this point, it can be asked whether all of the necessary elements of the theory have been considered and whether they sufficiently cover the research topic. The research explored PPPs through firm level analysis, which includes supply networks as an enabler for alternative re-organization options. The selection between the in-depth analysis of a single theory and wider multi-disciplinary studies is a trade-off between the verification of singular theories and understanding various connections included in the phenomenon. Therefore, the results and conclusions of the research have been presented at a rather general level, which, however, is enough to reveal connections between distinct theoretical frameworks. The presented theories do not cover all possible mechanisms that have the potential to influence PPPs, but the research still provides foundations for more specific research in the field of public service provision.

The methodological limitations of the research are related to issues on the subjective focus of the analysis in which suppositions of both the researcher and the sources of evidence potentially influence the results. One clear limitation is related to the use of an expert panel. The rather small number and the homogenous background of the participants steer the results. Furthermore, the subjective emphasis of the research approach tends to influence the interpretation of the interviews. Individual biases were, however, recognized during the research, and the process was designed to reduce the effects of individual opinions. Still, the use of expert panels especially in future-oriented studies can provide interesting viewpoints in special focused cases. In the future, especially the quality of the data should be assessed, and direct empirical evidence must be gathered for the analysis. One can see that the survey methods pay off when supply management strategies are studied in the context of public-private co-operation. The particular issue in methodology concerns network analysis, which was accomplished only at conceptual level. Overall, this research does provide only weak empirical evidence on emerging networks. Thus, future studies should incorporate concrete network items into the analysis to link the research directly to the studied context and to verify the mechanisms of supply management. Indeed, more analytical methods are required for the network analysis which could be based on the research methodology of social networks. Regardless of the limitations to replicate research on this methodological basis, analyzing and comparing similar cases in the European context would provide new views to the studied phenomena. Moreover, this research can be completed by changing the order of cases in order to analyze the organization specific factors in the context of elderly care and incorporating in-depth network analysis using energy utilities as a case.

Finally, the obvious *limitations with regard to generalizations and the validity of the results* must be considered. The findings presented concern one country in a particular time period. The interviews and archival analysis of the cases provided the narrow scope of the data set, which limits the applicability of the results outside the study context. The firms and organizations in the studied fields are typically natural monopolies, and therefore, the regulator has a strong role in the renewal

processes. Thus, adaptations are needed if the results are to be applied to explain present events. Distinctive features between the behavior of public and private ownership should be noticed when the results are applied to private companies. Moreover, outsourcing and public-private partnerships are always a strategy related to actions that are taken after careful analysis of the environment, opening strategic options, and the organization's actual structure. Generally, because of the heterogeneity of firms and individuals, two equal cases for comparison are difficult to find.

6.5 Suggestions for further research

Future research should address the customer value aspects of the innovated services. Research should more profoundly address customer values and their connection to the resources of the offering. Also, the benefits of the actors of the network should be analyzed. The service concepts should be placed in wider surroundings, for example the smart home concept could be attractive from the managerial standpoint and is worth further academic research, as well. Moreover, further research is needed to develop explicit methods for analyzing the impact of industry evolution on the performance of firms. Initiatives that aim to describe the influencing mechanism of public demand and regulation on the evolution of supplying networks of services are needed. We suggest that comparative studies to reveal analogies between nations and sectors would provide an important contribution to open questions.

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