Tiina Apilo

A model for corporate renewal

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Abstract

The main object of this study is to increase the understanding of continuous corporate renewal. In this study, renewal refers to the process of companies aiming to reach a competitive edge through innovation. A broad definition of innovation includes product and service innovation as well as business model, management and organisational innovations.

The study deals with innovation management, strategic renewal, organisational learning and organisational change and adaptation. It aims to provide an integrated view of these four distinct approaches related to corporate renewal. An ambidextrous corporate renewal model is then built on the basis of a theoretical framework where it is considered both possible and necessary to implement exploitation and exploration simultaneously and in the same organisation.

The study was conducted as participatory action research simultaneously with a theoretical conceptual analysis during the research process. The empirical data were collected in the innovation management system and innovation strategy process development projects of the case study company. Furthermore, the innovation management system of the case study company was compared with the systems of four other companies in a multiple case study.

Based on the theoretical framework and empirical requirement specifications, a new model of continuous corporate renewal was built. In this model, the exploitation and exploration approaches form the core of the front end of the innovation process. Both approaches share the same implementation stage. The model also features a continuously created shared understanding of vision and leveraging of the knowledge and resources of the organisation and its innovation network.

Tiivistelmä

Tutkimuksen tavoitteena on lisätä ymmärrystä yritysten jatkuvasta uusiutumisesta. Uusiutuminen käsitetään tässä kilpailuedun tavoitteluksi yrityksessä innovaatioiden avulla. Laaja innovaatiomääritelmä kattaa tuote- ja palveluinnovaatioiden lisäksi esimerkiksi liiketoimintamalli-, johtamis- ja organisaatioinnovaatiot.

Tutkimuksen teoriataustan muodostavat toisiaan sivuavat innovaatiojohtamisen, strategisen uusiutumisen sekä organisaation oppimisen ja muutoksen keskustelut. Tutkimuksessa pyritään integroimaan näitä osin samaa uusiutumisen ilmiötä käsitteleviä ja varsin fragmentoituneita tutkimussuuntia. Teoreettinen viitekehys muodostuu yrityksen kaksikätisestä uusiutumisen mallista, jossa yrityksen olemassa olevan tietämyksen tehokas hyödyntäminen ja uutta luova uusiutuminen katsotaan mahdolliseksi ja tarpeelliseksi toteuttaa yhtä aikaa ja samassa organisaatiossa.

Osallistava toimintatutkimus ja teoreettinen käsitteiden tarkastelu toteutettiin rinnakkaisina tutkimusprosessin aikana. Tutkimusaineisto koottiin tapausyrityksen innovaatiojohtamisen järjestelmän ja innovaatiostrategiaprosessin kehittämisen hankkeissa. Tapausyrityksen innovaatiojohtamisen järjestelmää verrattiin lisäksi monitapaustutkimuksessa neljän muun yrityksen vastaavaan järjestelmään.

Tutkimuksen tuloksena syntyi teoreettisen viitekehyksen ja empiirisen aineistosta nousseiden vaatimusmäärittelyjen pohjalta yrityksen jatkuvan uusiutumisen malli. Mallissa olemassa olevaa tehokkaasti hyödyntävä ja uutta luova lähestymistapa muodostavat uusiutumisen ytimen innovaatioprosessin alkupäässä. Innovaatioprosessin toteutusvaihe jatkuu näillä molemmilla yhteisenä. Lisäksi mallissa keskeisessä osassa ovat organisaation jatkuvan yhteisen ymmärryksen muodostaminen tavoitetilasta sekä organisaation ja innovaatioverkoston osaaminen ja resurssit.

Academic dissertation

Preface

A major project is coming to an end. It is time to extend my thanks to all the people who have helped it come true.

Firstly I would like to thank my supervisor, Professor Tuomo Kässi, who had faith in the completion of this work despite it dragging on and has supported me throughout the process. I would also like to thank my reviewers, Professor Saku Mäkinen and Professor Harri Haapasalo for their valuable comments.

I would like to extend special thanks to all those participants in corporate development projects who over the years have helped me understand the practical challenges involved in corporate development. I have been fortunate to become acquainted with the challenges of several industries and company types and to participate in some of their successes. At the beginning of my researcher career I dealt with new factories, assembly lines and product generations, but more recently my challenges have involved the development of business models and innovation management.

I found my research community in CiNet (the Continuous Innovation Network), and the theoretical foundation for my innovation research came from a CiNet methodology course held in 2003. Professors Harry Boer and Franz Gertsen of the University of Aalborg in particular were vivid in their descriptions of the field and challenges of innovation research. The work we do and the projects

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1. Introduction

The focus of this study is *internal corporate renewal*, specifically from the perspective of innovation management. Here, *renewal* is understood as a corporate effort to gain competitive advantage through innovation in a rapidly changing global operating environment. Innovation research is a broad field, and the particular theoretical reference for this study is a broad-based view of innovation in the corporate context. In this study, *innovation* is defined very broadly as any new, useful and successful way of solving either an articulated or a previously unknown internal or external customer need, developed and implemented by a company and/or an innovation network. Innovations are considered to include not only product and service innovations but also business, organisation and management innovations, among others (see e.g. Tidd et al.*,* 2005; Sawhney et al.*,* 2006). In addition to innovation research, writings on corporate renewal in strategy literature are referred to as background. Moreover, the corporate organisation is examined from the perspectives of change and learning.

The analysis unit in the study is a company, or a business unit in a company, with a specific corporate culture, objectives and operating practices. The company is considered as an organisation that forms networks with other companies and organisations. The main focus of the study, however, is the perspective of a single company. Nevertheless, in the models developed, the company is described so as to render its interfaces and processes compatible with those of other members of the relevant networks. The approach for corporate renewal is normative management science research. The company is also seen as an organisation from the perspectives of organisational change and learning theories.

Individual-level innovation research (e.g. Bharadwaj & Menon, 2000; Amabile, 1996) is excluded from this study. It is closely akin to creativity research (Osborn, 1957; Parnes, 1967; de Bono, 1967) and may be confusing for the construing of the concept of innovation in a corporate context. Moreover,

discussion at the level of individuals is linked to innovation roles in the interpretation of corporate innovations (e.g. Schön, 1963; Maidique, 1980). The purpose of not emphasising individual creativity (e.g. Barron & Harrington, 1981) and leadership is to help identify solutions that focus on the potential of the organisation as a whole to contribute to corporate innovation. The literature on technology innovations, for instance, has traditionally focused on technology and inventions (e.g. Mansfield, 1968; Gruber & Marquis, 1969; Rothwell et al.*,* 1974) and thereby the role of the inventor. On the other hand, classic strategy literature tends to underline the role of senior management above all else (Mintzberg et al.*,* 1998; Mantere & Vaara, 2008).

By contrast, literature on organisational learning (e.g. Huber, 1991; Crossan et al.*,* 1999) focuses on the organisation as a whole instead of its individual members. Further, the focus in practically oriented innovation research has shifted increasingly towards examining entire companies from the perspective of innovation management (e.g. Miller & Morris, 1999; Tidd et al.*,* 2005; Davila et al.*,* 2005) as opposed to earlier product development studies (e.g. Cooper, 1983; Wheelwright & Clark, 1992; Ulrich & Eppinger, 1995), diffusion-adaptation process studies (Rogers, 1962; 2003) or administrative innovation perspectives in organisation studies (e.g. Daft & Becker, 1978; Damanpour & Evan, 1984).

At the corporate and organisation level, the focus of the study is particularly on the opportunities encountered by well-established companies. Doz and Kosonen (2008) describe how new business opportunities and corporate innovation may be neglected if the company focuses only on its core business. The purpose of the study is to find means with which existing organisations could be made more innovative. Well-established companies form an interesting domain because they already have development resources, expertise in multiple fields, practices for collecting customer data and foresight data, a variety of funding sources, and established teams and processes (see e.g. Quinn, 1985). They already have in place the infrastructure and operating models that a startup company must establish in parallel with its first innovation process.

The focus of the study is on corporate renewal through internal development, principally without corporate acquisition or ownership changes. Alliances and corporate acquisitions are therefore excluded from the scope of the study.

1.1 Motivations and assumptions

Motivation factors underlying the study include the bringing together of discussion in a wide range of academic and business literature with issues and solutions discovered in practical development projects in companies. All of the four themes explored in the study – innovation, strategic renewal, organisational learning and change – have been frequently studied in the literature from a number of perspectives. Besides, theoretical discussions have to some extent identified needs for combining research from different approaches and traditions to arrive at models that could better explain the complex nature of innovation (Tidd, 1997) and to discover ways in which companies could, through continuous innovation, ensure their efficiency and strategic flexibility (Boer & Gertsen, 2003). As early as in 1986, van de Ven emphasised that understanding innovation management is about identifying how closely related technological innovation (products, services, new technologies) and administrative innovation (new practices and organisational forms, etc.) actually are.

Challenges encountered during the practical development projects introduced an appropriate measure of tension into the study. The need for qualitative research is occurred by the observation that not all quantitative issues seem relevant from the practical corporate point of view. Through alternation of qualitative and quantitative research, a balance may be found between theory development and theory testing (see e.g. Eisenhardt, 1989). The present study, being a qualitative study, serves to bring out phenomena and to introduce practical corporate needs into theoretical discussion through means of constructive research.

The study is not limited to a single approach; instead, answers to issues raised in corporate development projects have been sought with an open mind in the course of the study. The aim in combining and selecting answers from various research approaches was on the one hand to introduce theoretical knowledge into consultative corporate development and on the other hand, reciprocally, to introduce challenges and insights from practical corporate experience into theoretical discussion. The aim of this approach was to seek benefits and an outline in the field of research into corporate renewal in such a way that, if successful, it could help other researchers to better piece together the complex field of innovation and corporate renewal.

A researcher practicing hermeneutic research cannot achieve full objectivity in the course of a study. This is particularly apparent in constructive action research such as in the present study, where the researcher not only observes but also

participates in the development and to some extent steers it too. Because of this, the background assumptions of the researcher are detailed below so that the reader may, in examining the research evidence, determine how far they have influenced decisions taken in the course of the research and the findings of that research.

The researcher has accumulated these assumptions over a research career spanning more than 16 years, principally in developing operating business processes at dozens of industrial companies. The conception of work organisation in companies could be described as a background assumption derived from such activities. Companies perform well in work for which processes and projects are well defined. An exception to this is project-based process development, which competes for resources with delivery projects and product development projects. Unlike in other development projects, in product development and to some extent service development (the latter apparently not so fully organised in companies) resources tend to be found for quick resolution of emerging obstacles and hindrances. In particular, the stage-gate cross-functional product development process (e.g. Cooper, 1983) seems to be a well-established and smoothly running practice in the manufacturing industry. Nevertheless, in many cases development efforts seem to consist of learning by doing and experimentation rather than the application of existing solutions. Therefore well-established companies *do have the required potential for corporate renewal and the capacity for tackling creative challenges*.

The above explains in part why understanding an innovation as the implementation of a single idea does not fully illustrate how innovation emerges in a company. Innovations are made up of ideas, counter-ideas and combinations of ideas presented at various stages in the innovation process. Furthermore, an innovation is never the product of a single person; instead, an *organisation generates innovations through its innovation network.* Indeed, it may be more difficult to identify those individuals and functions that do *not* participate in the generating of innovations.

A third background assumption to be addressed is the view of equality in the workplace in Finland, and more generally in the Nordic countries. This simply means that some business literature, for instance in Japan (e.g. Imai, 1986; Nonaka & Takeuchi, 1995), points out practices of participation and knowledge sharing that are already a self-evident part of the Nordic corporate culture. In our part of the world, for an employee on the shop floor to have influence on solutions pertaining to his or her own work or that of his or her team is already exist-

ing practice and does not need to be recorded as a development goal. A similar dissolution of hierarchy is already in place in middle-management decision-making. But then, this informal troubleshooting practice can be detrimental to organisational learning, since new solutions are not recorded and institutional-ised (see e.g. Imai, 1986).

The fourth and final background assumption to be declared is the researcher's view of development and innovation activities and their impact. Individuals in companies are willing to improve their own work and the operations of the company if given the opportunity and time to do so. Moreover, companies with more experience of development activities are quicker and better at development than those whose normal operations do not include a developmental aspect.

1.2 Research objectives and questions

The main purpose of the study is to analyse *the management of corporate renewal through innovation*. Research in this field has fragmented into several approaches, each with their own premises. The theoretical discussion in this field and the discussion on these topics in business literature are parallel and partly overlapping.

The research questions for the study were shaped so as to seek a replacement for *innovation* as a word and partly as a concept, since in everyday language innovation is often confused with idea, or with invention in the technological sense. Nevertheless, despite this problem of definition and the rather loose use of the word innovation in everyday speech, there is an extensive tradition of innovation research. Moreover, concepts tangential to innovation such as renewal are also not unambiguous. Regardless of these challenges, the study employs both the terms innovation and renewal.

As is typical for hermeneutical research, the research questions emerged in the course of the study. In spite of that, the dissertation does not cover the research questions of the early stage of the study, where the focus was alternately on identifying similarities between innovation processes, on portfolio management and on organisational learning during the innovation process. In the interests of clarity, the research questions are here given in their final form. The first two questions seek to explore innovation management and innovation strategy generally. The third research question concerns a model to analyse corporate renewal.

The case study part of the study was conducted in an action research project in which the development objective of the case-study company prompted a need for analysing the wide-ranging field of innovation management. The development objective of case study company A to become a more innovative company translated into the first research question for exploring the principal factors contributing to corporate innovation management:

— *What are the principal factors that a company must take into account in innovation management?*

In the course of the action research, innovation strategy emerged as a principal area of innovation management in case study company A. The need to analyse and formulate an innovation strategy in a corporate context contributed to the second research question. The aim here was to establish whether a corporate-level innovation strategy is useful and whether it is something that can be systematically developed, something that evolves of its own accord, or a combination of both. The second research question was eventually formulated thus:

— *What should be included in an innovation strategy framework?*

For the first question, there was a pre-existing preliminary construction concerning the elements of innovation management (Apilo & Taskinen, 2006), which is verified in the Case A 1st development project. For the second question, a construction for analysing innovation strategy emerged in the course of the case study (Case A 1st development project) and is verified empirically in the Case A 2nd development project. Further, innovation strategy analysis was explored in the light of the increased understanding yielded by the theoretical framework in connection with the principal contribution of the study, i.e. the formulation of a model for corporate renewal.

The third research question crystallised in the course of the study, with increased understanding of both the theoretical and empirical sides of the issue. The theoretical background and the empirical findings of the case study led to the principal research question being outlined thus:

— *What kind of renewal model is needed in order to analyse requirements for innovation management?*

The purpose of the study is to employ these research questions for outlining innovation management in a company through company-oriented action research and a theoretical discussion of concepts. Out of the wide-ranging field of innova-

tion management, a closer look is given to corporate innovation strategy. Thus, the main objective was to construct a new model with a practical and a theoretical basis to complement existing knowledge, describing corporate renewal – ambidextrous corporate renewal, to be precise. *Ambidexterity* (e.g. Duncan, 1976; O'Reilly & Tushman, 2004) here refers to corporate renewal that both employs existing knowledge and generates new knowledge (this is discussed in chapter 4).

In addition to the goals involved in answering the above research questions, the study also seeks to increase understanding of ambidextrous corporate renewal through four approaches in the research tradition. The aim of integrating research into innovation, strategy, organisational learning and organisational change is to create a theoretical framework for the various forms of ambidextrous corporate renewal. Additionally, the action research was intended to generate data describing the process of corporate change in the area of innovation management.

1.3 Structure of the dissertation

The following is a brief outline of the content and structure of the dissertation. There are seven chapters that constitute five sections (Figure 1) Introduction, Theory, Action research, Construction and Contribution.
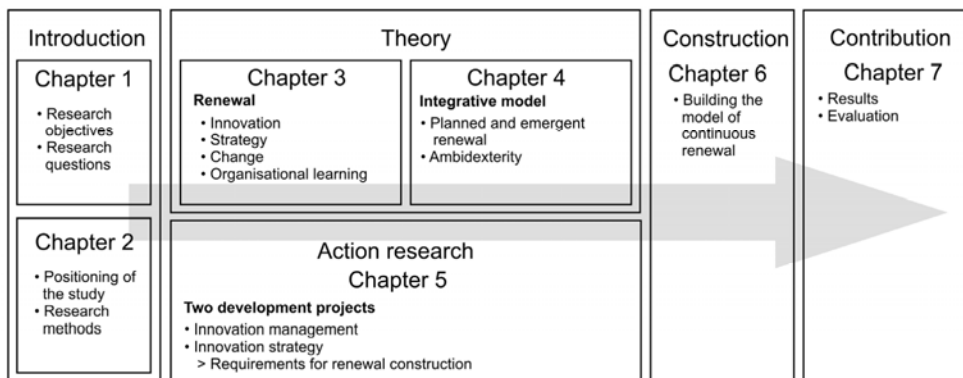
Figure 1. Outline of the study (in logical stage order).

Chapter 1 outlines the goal-setting and the research questions. This and chapter 2, which is about the research approach and methods, constitute the introduction to the study proper.

Chapters 3 and 4 describe the theoretical framework of the study. Chapter 3 focuses on research approaches related to corporate renewal – innovation, strategy, change and organisational learning – while chapter 4 identifies the need for integrating these approaches and focuses on ambidextrous corporate renewal as a research object. Finally, the dual ambidextrous corporate renewal model is delineated as the in-depth research topic and theoretical framework.

Chapter 5 reports on two case studies carried out in action research projects and one multiple-case study yielding requirements for the principal product of the study, a corporate renewal construction. Chapter 6 brings together the requirement specifications emerging from practical development in action research and the theory of ambidextrous change using a constructive paradigm. The final chapter provides answers to the research questions and explores and evaluates the study and its findings from the perspectives of theoretical and practical contributions.

2. Research strategy and methodology

The following section explains the strategy and methodological choices of the research, giving a view of the positioning of the study, the research approach, the research data, the research process and the evaluation of research.

2.1 Positioning of the study

On the one hand, the study falls within the domain of industrial economy and business research; and as Olkkonen (1994, p. 15) states, these fields are young and highly applied and thus would benefit from experiences from related fields. Indeed, the study makes use of the applicability of findings in related fields. Niiniluoto (1999) casts industrial economy in a behaviouralist model, whereby theoretical findings translate into operating recommendations for practical decision-making. Thus, practical usability and applicability are closely connected with research in the field. In this study, accordingly, questions are posed based on a practical corporate challenge that helps generate research novelty. Because industrial economy is such a young field of science, there are no well-established restrictive research traditions; instead, research methods may be selected as the situation requires, and innovation may be exploited so that the methods used support the emergence of useful and applicable research findings in the best possible way.

On the other hand, the study belongs to the sphere of hermeneutic, understanding research. Therefore no attempt was made to attain perfect objectivity as required for positivist scientific verification (e.g. Niiniluoto 1999); instead, the researcher was actively involved in the development of the research objects. Still, another important scientific principle – publicity – is attained even in this hermeneutical study.

According to a classification presented by Tainio (Olkkonen, 1994, p. 45), the study is a normative one: it seeks to serve decision-making for instance by developing instructions and methods for improving operations and performance. Under Tainio's classification, the study is not only normative but also shows some features of exploratory research, as it seeks to outline innovation as a phenomenon and to lay a foundation for further research.

The study was inspired by the work of Brown and Eisenhardt (1997) concerning continuous change required in rapidly changing industries, in terms of both content and research method. Furthermore, Boer and Gertsen (2003), researchers in the CiNET network[1] who proposed the concept of dual ambidexterity, identified the corporate challenge for continuous change and innovation for which an answer is sought in the study. In addition to the above, the view of Tidd et al. (2005) concerning broad-based innovation and innovation management as one of the starting points of the study.

2.2 Research approach

Olkkonen (1994, p. 42) explains that research relies on the doctrine of its particular field of science, consisting of theories, hypotheses, description systems and individual items of data. The doctrine and its gaps provide both a starting point for research and a receptacle for its findings. As noted above, this study is not closely affiliated with any doctrine; it is more generally oriented towards the research tradition in industrial management, engineering and technology management and related fields.

Research methods for the study were selected on the basis of the three criteria listed by Olkkonen (1994): the research method is suitable for solving the problem (enabling an answer to be found to the question posed); the research method is consistent with the character of the problem; and the research method is consistent with the tradition of the type of research carried out, so that the researcher and the research team in the research environment can draw on earlier experiences in employing that particular research method. The last of these three – the

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[1] CiNET – the Continuous Innovation Network, http://www.continuous-innovation.net.

tradition of research in the research team and in the discipline in question – proved to be the most relevant. The research problem emerged in the course of the practical research and development, and familiar methods were suitable for addressing this problem.

The study, typically for qualitative research, aims to understand and point out research questions to identify phenomena that may be studied using more traditional quantitative and positivist research methods in further studies. The study is also inductive (see e.g. Olkkonen, 1994), making generalisations based on observations made, unlike theoretical or computational research.
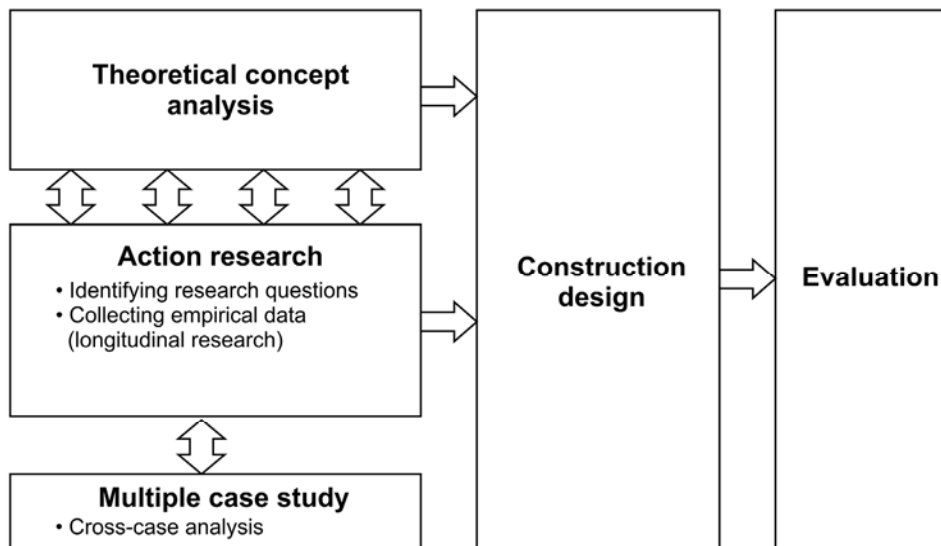
Figure 2. Implementation of the study from the point of view of the research strategy.

Figure 2 illustrates an overview of how various research approaches and methods were used at different stages of the study. A number of methods were employed, as determined by their applicability and usefulness (see e.g. Olkkonen, 1994). One of the main methods in the study was constructive research; another was the case study. The third approach was participatory action research, which played a significant role in data collecting in the field. Participatory action research and the building of a theoretical framework thus progressed in parallel.

Dubois and Gadde (2002, p. 559) describe this abductive[2] research process as a systematic combinatory method where a practical case study yields new viewpoints that reorient the research in a direction different from the original design. This is exactly what happened in the present study: the research questions emerged in the course of the action research. To resolve these, constructions were built making use of the findings of the action research and the theoretical review. Finally, the findings were evaluated from an action-oriented and a constructive perspective.

The action research was implemented here in the form of two development projects in a single company, and as such it can be considered a longitudinal[3] study, lasting almost three years. Comparative data were generated in a multiple case study involving four companies. The following sections contain a more detailed discussion of the background and suitability of the research methods used.

2.2.1 Case study

The following is a discussion of the justifications for a qualitative approach in the form of a case study. Firstly, a case study is appropriate in situations where the aim is to generate theories, seek descriptions or test theories without preconceived expectations (Eisenhardt, 1989, p. 535; Voss et al., 2002, p. 195). Secondly, a case study is particularly suited for the exploration of new research topics or in areas where extant theory seems inadequate (Eisenhardt, 1989, p. 548). Voss et al. (2002, pp. 197–198) list the following as areas of application for case study research: 1) exploring research ideas and questions, particularly in doctoral dissertations; 2) theory building; 3) theory testing; and 4) theory expansion or refinement. Again, Yin (2003, p. 3) stresses that case study research is suitable for all three approaches: the exploratory, the descriptive and the explanatory.

Yin (2003, p. 13) further explains the use of case study research from a technical point of view. This is an appropriate research strategy for examining simultaneous phenomena in real life that are difficult to isolate from their environ-

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[2] Abduction is a concept proposed by philosopher Charles S. Peirce (1839–1914): a third, weak form of reasoning alongside inductive and deductive reasoning. (Paavola, 2006).

[3] Longitudinal study enables the observation, description or classification of phenomena in an organisation using a variety of methods and techniques so that the process may be identified and empirically documented (Miller & Friesen, 1982).

ment. Case studies are also appropriate in situations where all logic planning, data collecting and data analysis methods must be available.

Eisenhardt (1989, p. 548) notes that theory developed from case research is likely to have important strengths like novelty, testability and empirical validity. Furthermore, theory building from case study research is particularly appropriate because theory building from case studies does not rely on previous literature or prior empirical evidence. At the same time, Eisenhardt remarks that case study research does not in itself ensure novelty; its result may be a nondescript model that replicates existing data or theories. Eisenhardt also says (p. 539) that case studies typically involve a large number of data and that because of this magnitude no one else besides the researcher usually goes through all of the data. Therefore, the research reporting presents the key elements of the data in the form of various conclusions so that the reader may understand how the findings have been arrived at.

Yin (2003, p. 58) evaluates the applicability of case study research from the researcher's point of view, i.e. considering what qualities are required of a case study researcher. He lists as such qualities a good ability to pose questions or interpret answers, an ability to listen, flexibility and adaptability, corporate orientation and an unprejudiced attitude. He also notes that a case study researcher must not be lazy or incompetent/inexperienced, even though according to Yin the collecting of case study data is not necessarily a massive or time-consuming task and can be conducted at a desk without going out into the field.

The present study has involved going out into the field, the data for the case study having mainly been collected using action research methods in company-specific development projects. The progress of both development projects was observed but also influenced. The two projects lasted for a total of almost three years monitoring change in the case study company. The analysis of the two projects described in the study was influenced by experience and understanding of the operations of various companies acquired in similar development projects and by the findings on innovation management practices in four companies in the multiple case study described in the study.

Voss et al. (2002, p. 195) also list as challenges for case study research its time-consuming nature, the need for skilled interviewers, the care required to draw conclusions from limited data, and the ensuring of diligence in research. Even so, they admit that case study research is a good method for generating new theories that also have practical validity.

Although the data collected for the study were largely derived from two action research projects in the same case study company A, their longitudinal research data are complemented by the multiple case comparative data from four other case studies (B, C, D, E). The research design thus largely resembles the situation in the study by Leonard-Barton (1990), where longitudinal study and multiple case study combine to improve the internal and external validity of the research.

To sum up, the applicability of case study research can, with reference to the above, be justified by the search for a new, integrating perspective without prejudice. Case study research is also justified by the fact that the object of the research, a renewing company, is a complex entity that is difficult to isolate from its environment.

2.2.2 Action research

Action research played a significant role in understanding the research problem of this study and in collecting the empirical data. Kasanen et al. (1993, p. 257) state that in constructive research the focus is on building the construction, whereas in action research the focus is on empirical research. Nevertheless, they admit that successful action research may produce an object that fulfils the definition of a construction.

Action research simultaneously seeks *scientific findings and solutions to practical problems* (Dickens & Watkins, 1999, p. 132). Participants in the study are not considered just objects of research but also, to some extent, co-researchers. Action research also typically proceeds as a process, with observations made during the development process steering the further progress of the research (Toikko & Rantanen, 2009).

Action research is attributed to Kurt Lewin, who in the 1940s developed a research method combining research and expertise in social sciences with decision-making processes and participation. Lewin developed a three-level model for cyclical progress in contemplating a problem: the individual level, the organisation level and the systemic level (Dickens & Watkins, 1999, p. 128).

Coghlan (2003, p. 453) divides action research into two schools, the mechanistic and the organistic. Mechanistic action research focuses on change management or on troubleshooting based on a predetermined question. Organistic action research, by contrast, is more of an action science where the research process has intrinsic value. Organistic action research is related to organisational

learning, focusing on identifying learning, evaluating the potential of the research process and, for instance, fine-tuning working practices. Under Coghlan's classification, the present study is closer to mechanistic action research.

Apart from the aforementioned distinctions between schools, action research may also be evaluated based on its degree of participation, dividing it into action research and participatory action research. Whether the researcher is 'inside' or 'outside' the organisation being studied is one basis for classification: under this, the study is participatory action research. On the other hand, the approach used by the research group is described as research-assisted development when the principal aim is organisational development and the development efforts also yield conceptual and generally applicable information (Alasoini, 2005; Hyötyläinen, 2007). But as noted above, this study like many others conducted by the same research team is based on both action research and constructive research approaches (see e.g. Hyötyläinen, 2005).

The challenge in action research is to balance between and combine research and action (e.g. Dickens & Watkins 1999). The researcher must simultaneously conduct good academic research and find good practical solutions for current problems in companies (Westlander, 2006; Hyötyläinen, 2007). Besides, a research object in a state of continuous change may change substantially before any results from iterative research are obtained. A third weakness that may be ascribed to action research is low academic productivity: it is time-consuming and does not generate as many articles as quantitative studies (Svensson & Nielsen, 2006, p. 16).

The study sought to take the challenges of the research approach into account, and the evaluation of its findings seeks to find out how well this has been managed.

2.2.3 Constructive research

Constructive research was another approach used in the study for trying to understand more about corporate renewal. It was applied after the empirical data were collected in the action research projects (Case study company A first and second development project) and in the multiple-case study. Constructive research was used for compiling data generated in various sub-studies, the aim being to constitute an overall view of corporate renewal phenomena.

Constructive research, a sub-species of case study research (see e.g. Lukka, 2006), evolved out of the need to create a research approach suitable for busi-

ness economics and for corporate-based degree theses (Kasanen et al., 1991). Constructive research is thus closely related to scientific problem-solving and consultation. There are also similarities and differences between constructive research and basic research, technology, analytical model building, scientific problem-solving and consulting (Kasanen et al., 1993).

Kasanen et al. (1993, p. 244) define a construction as an entity producing a solution to an explicit problem. Constructions have been established as valuable in increasing theoretical knowledge. The purpose of constructive research is to build new, functional solutions or constructions and to link them to existing knowledge. Constructive research is normative by nature. Lukka (2006, p. 112) stresses that the concept of a construction is interpreted broadly in constructive research: it may be any man-made artefact, from schematics to plans or from strategies to information system models. What is essential in the constructive approach is to create something new by developing something differing from existing solutions, thereby creating a new reality. Furthermore, constructive research seeks to find a solution to a particular type of a problem, not to an individual case as in a design project (Olkkonen, 1994, p. 77).
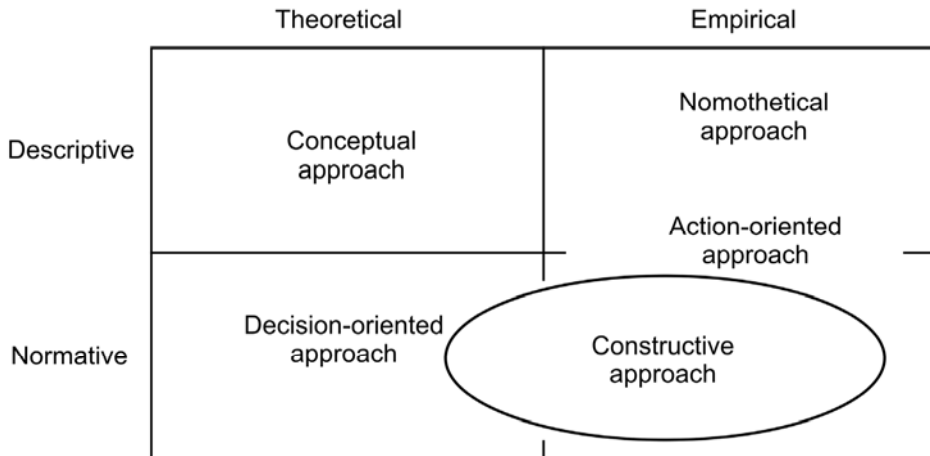
Figure 3. The constructive approach in relation to other research approaches in business economics (Kasanen et al., 1993, p. 257).

As Figure 3 shows, the constructive approach is closely related to the action-oriented approach. Both typically focus on individual cases. Olkkonen (1994) differentiates between these two research approaches by noting that the con-

structive approach seeks to verify findings through practical application, whereas the action-oriented approach primarily seeks to understand phenomena and possibly to develop a theory. What distinguishes the constructive approach according to Kasanen et al. (1993, p. 257) is that the key element in constructive research is the building of the construction itself. Nevertheless, this research also has goals typical of action-oriented research, such as that of increasing the understanding of corporate renewal through innovation.

The scientific value of constructive research is measured by how much it contributes to general knowledge and the theory of solving that particular type of problem (Olkkonen, 1994). Constructive research can also fail if the construction is not adopted. However, Lukka (2006, p. 120) remarks that even if the construction were to fail on a practical level, it may yield valuable theoretical information.

2.3 Research data

According to Olkkonen (1994, p. 107), the cases in a case study should be: a) justifiably typical of the domain; b) representative of typical cases as defined in the conceptual analysis and type classification; or c) exceptional cases that may yield features interesting and useful for the research.

Voss et al. (2002, p. 201) consider what would be a suitable number of cases: for a single case, a longitudinal study is usually used, but limiting the research to one case makes the findings less applicable generally and increases the risk of faulty estimation and exaggeration. Increasing the number of cases, on the other hand, detracts from the depth of the study and requires more research resources, but on the other hand it reinforces the external validity of the study. Eisenhardt (1989, p. 545) considers that there is no ideal number of cases, but that a number between 4 and 10 cases usually works well. She explains this by saying that with fewer than 4 cases it is often difficult to generate theory, and with more than 10 cases it quickly becomes difficult to cope with the complexity and volume of the data. Yin (2003, p. 47) stresses that in multiple case research the selection of each additional case must be evaluated according to the added value it would bring.

The present researcher working mainly in consultative research often has the opportunity to observe interesting cases at first hand. For the present study, however, only two cases in one company were selected, as they best represented the problem area where new theoretical information was sought. The time-

consuming nature of the research method (nearly three years) limited the inclusion of other cases of a similar scope in the research data.

Large numbers of data were collected, as is usual in case studies. The data were collected using various methods, some overlapping – such as field notes and comments by the researcher and her colleagues – to create comprehensive source data for the cases. Eisenhardt (1989, p. 539) encourages researchers to write down all impressions in the course of the study, because it is often difficult to know what will and will not be useful in the future. She also encourages the researcher to ask himself or herself: "What am I learning?" Tools for collecting data (such as interview or questionnaire questions) may be improved in the course of the study, or the number of interviewees or cases increased. The researcher may thus react to findings accumulated during the study, as the point is not to summarise the findings but to regard each case as a unique individual.

In the present study, the data mainly come from two development projects implemented almost back to back in case study company A and of the planning stage preceding them. The research data describe the development of the company from the point of view of innovation management over a period of nearly three years. These longitudinal study data from a single company are augmented with comparative data obtained from other companies in an interview study (see e.g. Leonard-Barton, 1990). Table 1 below shows how the data were accumulated at various stages in the case study. It also explains the researcher's role and participation at each stage.

Table 1. Accumulation of the research data.

Case described in the data	Time	Data content	Researcher's role
Case A, planning stage	03/06– 10/06	Slide shows on project objectives, versions of the project plan, interview notes and summaries, meeting memos, product process instructions, presentations on innovation, development and research. 55 e-mails (between researchers and members of the company's core team).	Participation in interview design, implementation (except for one interview) and analysis. Participation in creation of meeting memos and target state slides. Participation in company project planning team preparation work.
Case A, development project I	11/06– 05/07	Theme establishment slide shows, meeting memos, strategy and roadmap slides, workshop group work memos, innovation process descriptions, development project progress questionnaires, innovation management element checklists and their results. 93 e-mails (between researchers and members of the company's core team).	Participation in development project facilitation, structural and content planning, and taking of field notes. Analysing the case project.
Case A, development project II	10/07– 11/08	Theme establishment slide shows, meeting memos, strategy and roadmap slides, market and technology reviews, workshop group work memos, development project progress questionnaires, mind maps on future opportunities, threats and trends. 79 e-mails (between researchers and members of the company's core team).	Participation in development project facilitation, structural and content planning, and taking of field notes. Analysing the case project.
Cases B, C, D, E	01/05– 03/05	Interview study transcriptions and interviewers' notes. 2 to 4 per company. Supplementary data.	Analysing the cases. (Researcher did not participate in planning or conducting the interview.)

Focusing on one extensive case alone renders the findings less generally applicable but allows an in-depth study of the special features of this case. The impor-

tance of diligence is emphasised to avoid the risk of exaggeration or misestimation involved in a single-case study. In spite of that, the study does not aim at complete objectivity, which is generally the case in participatory action research. It is typical for the research design that the researcher may, in the course of an extended period of research, sacrifice objectivity in assuming personal responsibility for the problems and aims of the company being developed (see e.g. Leonard-Barton, 1990). For assessing objectivity, the preconceptions and background assumptions of the researcher are discussed in the section on motivation and assumptions.

At all stages during the study at case study company A, the researcher worked together with researcher colleagues and the corporate development project core team in designing and implementing the development projects described in the study. In addition to observation, the researcher also participated in steering, facilitation and content sparring in the development project. Typically of action research, the researcher acted as a change agent in the case study company (e.g. Westlander, 2006). Table 1 shows the researcher's participation and role in various cases. In cases B to E, the researcher did not participate in the collecting of the data, only in their analysis.

In all five cases, secondary data such as materials accumulated in earlier development projects with these companies or available in public sources were used. Several data collection methods and sources were used (data triangulation) to ensure the reliability of the study and to augment the description of innovation management systems in cases B to E which principally rely on interviews.

Other corporate case studies in which the researcher has been involved also influenced the study. These were implemented both before and in parallel with the study. They have been reported in a variety of ways: in conference papers, in management books, and in research reports. These other cases were excluded from the data of the study in order to make this a clearly and explicitly defined piece of research. The data delimitation also served to avoid going through the entire learning history of the researcher. Cases excluded from this study are referred to where they can augment or provide a comparison to the viewpoints explored here.

2.4 Research process

The present study progressed in an alternation of theoretical and empirical research stages, typical for constructive research (Lukka, 2006; Kaplan, 1998).

The case study data were principally generated in the action research. The research did not begin with a research design and predetermined research question; instead, the research questions emerged in the course of the action research, as noted above in the section on research methods.

The hermeneutical progress in time of the research is illustrated with a cyclical model (Figure 4). The cyclical model takes into account time dimension and detailed view alike, as compared to the progress of the research is illustrated from a logical perspective in Figure 1 and from the perspective of the research strategy used in Figure 2. Hence, all of these aforementioned figures illustrate the same study from their own perspective.

The cyclic model of research progress consists of three learning cycles. The first and the second cycle include both an empirical part (Case A first development project and Case A the second development project) and a theoretical part. The third cycle involves mainly theoretical work (but also includes a multiple-case study comparing the innovation management systems of companies A, B, C, D, E and F). The model thus illustrates examination of the interaction spiral between action research and the building of the theoretical framework.

The starting point of the study, also shown in the aforementioned cycle model, is the innovation process development method and the list of elements in the innovation management system (Appendix C), which at the time of beginning the present study had just been reported on in the findings of the previous study (Apilo & Taskinen, 2006). This reporting helped define concepts[4]; ambiguity of concepts is typical of innovation research. Thus, theoretical exploration of the innovation process and the various areas of innovation management, practical experience of development of the innovation process and the preliminary constructions built on the basis of this and tested in the present study by both theoretical and empirical means were already in place. Question-setting in the study was shaped through a practical case study in spring 2006 and further specified in autumn 2006.

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[4] A concept is an abstract, generalised and concise description of a phenomenon (Olkkonen, 1994, p. 100).
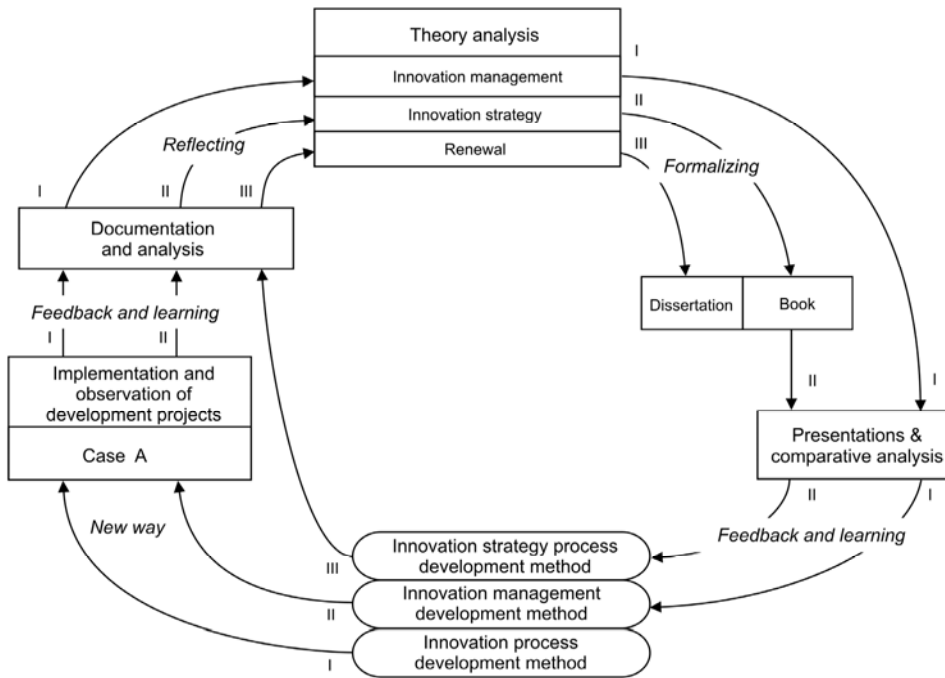
Figure 4. Research stages in time and areas in a cycle model.

The first development project in case study company A is shown in the cycle model as a stage the feedback from which helped document and analyse the data gained in the development project. This first development project involved the testing of the applicability of five elements of innovation management (Appendix C) to innovation management evaluation and the identification of development points. The experiences of the first action research project in the case study company A relating development of innovation management system were reflected against the theory of innovation management, and the case study data were augmented for a variety of presentations. The second round started with an innovation management method also further developed in the second action research project relating innovation strategy development process and framework in case study company A.

The second learning round progressed through documentation and feedback to another theory round. The purpose of the theory discussion was to help with an overall understanding and analysis of the innovation strategy. At this point, a conception of the key importance of the innovation strategy in managing corpo-

rate renewal was generated. The aforementioned empirical cases and learning process led to the publication of a practical manual of innovation management (Apilo at al., 2007).

The description of the innovation strategy process formed the basis for the third round. On the third round of the hermeneutical development cycle, since 2008, the focus has been on analysing the research data, analysing the research itself, positioning it in relation to other literature and writing up the findings in a doctoral dissertation.

The case study research described above through a hermeneutical process may also be analysed by stages as shown by Eisenhardt (1989) (Table 2). In the present study, scope was left for theoretical flexibility at the opening instead of committing to one specific theory or hypothesis.

Eisenhardt (1989, p. 539) notes that analysing data is the heart of building theory from case studies, while Olkkonen (1994, p. 31) observes that analysis mainly consists of induction. Nevertheless, the kind of cross-case analysis advocated by Eisenhardt could not be performed on the case research data in the present study, as no similar data were available. Instead, a certain amount of cross-case analysis was performed against studies reported previously and, as regards innovation management practices, against cases B to E.

The study also illustrates rather clearly the stages of constructive research as described by Lukka (2000, 2006). Lukka's model consists of seven stages. The first is to identify a significant practical problem that also incorporates a theoretical contribution. In the present study, the theoretical problem emerged through earlier research stages. The second stage in Lukka's model is to establish long-term research cooperation with the target organisation. In the study, cooperation on the implementation and steering of the development project was agreed. Lukka says that the third stage is to gain in-depth practical and theoretical knowledge of the research topic, and the fourth stage is to come up with an innovative solution and a construction that solves the problem and also features a theoretical contribution. Fifthly, Lukka says to implement the solution and to test whether it works. The two final stages involve considering the applicability of the solution and identifying and analysing the theoretical contribution. Kasanen et al. (1991, p. 306; 1993, p. 246) identify the exact same stages in constructive research except for the second stage.

Table 2. Stages of case study research (Eisenhardt, 1998, p. 533).

Step	Activity	Reason
Getting started	Definition of research question	Focuses efforts
	Possible a priori construction	Providing better grounding of construction measures
	Neither theory nor hypothesis	Retains theoretical flexibility
Selecting cases	Specified population	Constrains extraneous variation and sharpens external validity
	Theoretical, not random, sampling	Focuses efforts on theoretically useful cases – i.e., those that replicate or extend theory by filling conceptual categories
Crafting instruments and protocols	Multiple data collection methods	Strengthens grounding of theory by triangulation of evidence
	Qualitative and quantitative data combined	Synergistic view of evidence
	Multiple investigators	Fosters divergent perspectives and strengthens grounding
Entering the field	Overlap data collection and analysis, including field notes	Speeds analyses and reveals helpful adjustments to data collection
	Flexible and opportunistic data collection methods	Allows investigators to take advantage of emergent themes and unique case features
Analysing data	Within-case analysis	Gains familiarity with data and preliminary theory generation
	Cross-case pattern search using divergent techniques	Forces investigators to look beyond initial impressions and see evidence through multiple lenses
Shaping hypothesis	Iterative tabulation of evidence for each construction	Sharpens construction definition, validity, and measurability
	Replication, not sampling, logic across cases	Confirms, extends, and sharpen theory
	Search evidence for 'why' behind relationship	Builds internal validity
Enfolding literature	Comparison with conflicting literature	Builds internal validity, raises theoretical level, and sharpens construction definitions
	Comparison with similar literature	Sharpens generalisability, improves construction definition, and raises theoretical level
Reaching closure	Theoretical saturation when possible	Ends process when marginal improvement becomes small

The study also included other features typical of action research, as mentioned earlier. Dickens and Watkins (1999) describe the progress of action research thus: process analysis, data collection, conceptualisation, planning, implementation and further data collection or evaluation, and the cyclical repetition of the process. In the study, still, the implementation stage was not reached.

The study data collected in the action research were analysed as follows. First, all written material (see Table 1) was collected into a narrative in a single document. The core of the narrative was formed by the e-mail correspondence between the researchers and the company development project core team in chronological order. Next, the memos from workshops and planning meetings were appended to the core narrative. Finally, all the presentation materials, tables, questionnaires and their responses, and other notes were appended. Presentations and other visual materials had an important role to play in the data. The images evolved in the course of the project and helped the development project core team clarify its shared understanding of innovation management, innovation strategy and the innovation strategy process.

Next, the compiled narrative was used to generate a development log (Appendix A). The log was a stage-by-stage description of events, event goals, content, participants and challenges encountered. This summary was used for analysing the development project especially with a view to its goal-setting. Another analysis perspective was on the learning process of the people participating in the development projects. Analysis also focused on the evolution of innovation management practices in the course of the research and comparisons to innovation management practices in other companies.

2.5 Evaluation of findings as part of the research

At the conclusion stage, research findings are compared to existing research. As Eisenhardt (1989) recommends in the case of case study research, an extensive literature survey in the study was not conducted until the conclusion stage, even though it is principally reported in the context of the theoretical framework of the study. Dubois and Gadde (2002, p. 559) (and also Strauss & Corbin, 1990) state that it is not even possible to review all the relevant theory at the beginning of a research project, because to some extent the theoretical needs will only emerge as the research process progresses.

Attempts were also made to follow the instructions of Eisenhardt (1989, p. 544) regarding the importance of studying literature that conflicts with the new

findings. Eisenhardt submits that there are two reasons why examining literature which conflicts with the emergent theory is important. Firstly, if researchers ignore conflicting findings, then confidence in the findings is reduced. For example, readers may assume that the results are incorrect. Secondly, conflicting literature forces researchers into a more creative, frame-breaking mode of thinking. Following Eisenhardt, conflicting literature was sought out in the present study to sharpen the approach, while literature corroborating the findings was surveyed to gain internal validity and a broader general applicability while also improving the conceptual quality of the work.

Olkkonen (1994, p. 111) charges researchers with the responsibility of contemplating their own work from a neutral perspective, critically and appraising whether the research findings actually answer the question posed or whether the research goals have otherwise been attained. He also encourages consideration of limitations and expansions to the applicability area of the findings achieved. Olkkonen further adds that the research contribution should be examined from other perspectives than that of the research postulate. Research contributions may include an improved theoretical background, the introduction of a new method, etc. The appraisal should also consider whether the methods and research approach used were successful and appropriate. Moreover, the researcher should consider how a better result could have been achieved.

For the evaluation of findings, Olkkonen (1994, p. 21) identifies the following three criteria for approval that apply in all fields of science: 1) The research must contain a postulate and a contribution – it creates new knowledge; 2) The research method must be justified, acceptable and comprehensive; 3) The research must pose an important question, problem or hypothesis, and the work done must be original and result in an explanation of a phenomenon, a solution to a problem or further corroboration of existing knowledge. Olkkonen also emphasises that the purpose of scientific research is not only to gain and organise information but also to verify, to provide incontrovertible evidence and to exercise creativity.

The value-free nature of positivist science is in applied sciences mainly limited to truth-seeking. In the study, as in all applied science, the utility criteria include values related to economy, efficiency, ecology and justice. Kasanen et al. (1993, p. 253) propose that the findings of constructive research are evaluated like the findings of applied research generally, from the perspective of practical usefulness using criteria such as relevance, simplicity and ease of operation (see e.g. Lukka, 2006, p. 122). Olkkonen (1994) also presents similar acceptabil-

ity criteria for qualitative and normative research: certainty of benefit, permanence (circumstances, environment, technological development, organisation form, etc.) and general applicability (in the industry, in a geographical area, etc.). Olkkonen (1994, p. 54) further notes that presenting evidence (verifying research findings in hermeneutics) consists of the comprehensibility of research findings i.e. of the researcher convincing the reader of the correctness of the research firstly by explaining his or her understanding of the research, secondly by showing that the research is justifiable, and thirdly by showing that the research is based on a relevant theory. Additionally, demonstration of evidence in design science, in normative research, includes demonstrating that the benefit aimed for has been achieved, the evidence showing that the new solution is better than earlier recommendations and conceptions.

Moreover, in hermeneutical research it is not possible to express reliability estimates in quantitative terms (Olkkonen, 1994, p. 38). Qualitative research is hard to evaluate with the traditional validity concept (e.g. Lincoln & Cuba, 1985; Denzin & Lincoln, 2000). Validity in quantitative research refers to how well the research manages to measure what it was intended to measure. Internal validity refers to how systematic the concepts used and choices made have been, while external validity refers to how well the conclusions correlate with the data.

Actually, there are three approaches to using reliability and validity criteria in evaluating of qualitative research. Some of researchers try to adopt these criteria as such. Others try to find new content for criteria (e.g. Yin, 2003); Dickens and Watkins (1999, p. 132) explain that the validation of action research is performed simply by asking whether the research will lead to development and change. In other words, such a study should both solve a practical problem and generate new information. The third approach, which is also used in this research, uses evaluation criteria which are from the start more usable in qualitative research; Lincoln and Cuba (1985) propose the following criteria for the evaluation of qualitative research: *dependability, confirmability, credibility and transferability*. (Eskola & Suoranta, 2000)

Dependability comes close to the concept of reliability showing that findings are consistent and could be repeated (Lincoln & Cuba, 1985). It evaluates issues such the researcher's position, the thoroughness of data documentation, and the logical progress of the research process. Confirmability is achieved by making the choices and interpretations involved in the research transparent to the scientific community (Toikko & Rantanen, 2009). Thus, confirmability evaluates the sufficiency of the research process and that research findings are supported by

the data collected. Credibility evaluates the truthfulness of the description of the research subjects. And finally, transferability evaluates the possibility of transferring the research findings to another context (Lincoln & Cuba, 1985). Transferability comes close to the concept of external validity (ibid*.)*

Furthermore, Kasanen et al. (1991, p. 306) present a two-stage market-based test for the validation of a construction research study in business economics. The weak market test is the question whether any manager responsible for the financial performance of his or her business unit has been willing to apply the construction in question in his or her actual decision-making. The strong market test consists of questions regarding whether the business units applying the construction systematically achieved a better financial performance than those not using the construction. Kasanen et al. added a third test in their 1993 paper (p. 253), a medium-strength question: whether the construction has been widely adopted in companies. The authors admit that even the weak test is relatively strict and that few tentative constructions pass it.

Researchers building new theories usually use several data collection methods in parallel; known as triangulation, this aims at generating a more robust body of evidence. Even researchers in the same research group may use different methods (Eisenhardt 1989, p. 538). Yin (2003, p. 98) lists types of triangulation used in case study research, following Patton (1987): data triangulation, investigator triangulation (several researchers), theory triangulation and methodological triangulation. In the study, all of the aforementioned types of diversity were used in some way or another. For example, at most stages in the study several researchers participated in it, enabling the exchange of views among colleagues; likewise, there was interaction with the company representatives in the development project core group.

To conclude, the evaluation criteria adopted for this research are summarised in Table 3.

Table 3. Summary of evaluation criteria.

Evaluation criteria	Part of the dissertation evaluated	Criteria
General evaluation criteria for research	The whole research	Research contribution (e.g. Olkkonen, 1994) - new knowledge (explanation of a phenomenon, solution to a problem, or verification of earlier knowledge) - other contribution - suitable research approach and methods - relevant research question - original work Research evidence (e.g. Olkkonen, 1994) - comprehensibility of the research - justifiability - being based on a relevant theory Practical usefulness and evidence (e.g. Olkkonen, 1994) - permanence (circumstances, development, organisation form) - general applicability (industry, geographical area) - solution improves on earlier recommendations
Evaluation criteria for qualitative research	The whole research	(Lincoln & Cuba, 1985; Denzin & Lincoln, 2000) - dependability - confirmability - credibility - transferability
Evaluation criteria for case study	The whole research, especially - Case A: development of innovation management system & innovation strategy process and framework - Multiple-case study A,B,C,D,E : comparison of innovation management systems	Evidence -use of triangulation (Yin, 2003, Eisenhardt, 1989) Good theory (e.g. Pfeffer, 1982; Eisenhardt, 1989) - parsimonious - testable - logically coherent
Evaluation criteria for action research (participatory)	Case A: 1st & 2nd development projects: development of innovation management system & innovation strategy process and framework	- will lead improvement and change (e.g. Dickens & Watkins, 1999)
Evaluation criteria for constructive research	Construction design: model of continuous renewal	(e.g. Kasanen et al., 1993; Lukka, 2006) - relevance - simplicity - ease of use - will lead improvement and change Validation of the construct (Kasanen et al., 1993): - Market-based test (weak, semi-strong, strong)

3. Corporate renewal research

Organisational renewal research is not based on a single research tradition, and there is no single generally accepted theory for it (Kianto, 2008). The present study considers that discussion in four research areas is closely linked to corporate renewal: 1. Change or changing is studied in organisational change research (e.g. Lewin, 1947; Kanter et al., 1992; Tushman & Romanelli, 1985; Brown & Eisenhardt, 1997; Weick, 2000). 2. In innovation research (e.g. Rogers, 2003; Rothwell et al., 1974; Utterback & Abernathy, 1975) and innovation management research (e.g. Miller & Morris, 1999; Boer & Gertsen, 2003; Tidd et al., 2005; Kim & Mauborgne, 2005), the focus is also on the process, depending on the point of view – the innovation process or the innovations produced by that process. 3. Organisational learning research (e.g. Argyris & Schön, 1978; Cohen & Levinthal, 1990; Huber, 1991; Nonaka & Takeuchi, 1995; Crossan et al., 1999) examines companies from a knowledge-based perspective (e.g. Grant, 1996; Kogut & Zander, 1996). 4. Discussion on corporate renewal is also going on in strategy research and strategy management research (e.g. Hamel & Prahalad, 1989; Chakravarthy & Doz, 1992; Mintzberg, 1994; Tushman & O'Reilly, 1996; Teece et al., 1997).

The four approaches mentioned above are based on different research traditions, but then they are so closely related that research in one of them could sometimes be defined as belonging to another. An example of this is the framework of knowledge creation in an organisation proposed by Nonaka and Takeuchi (1995), which is related to organisational learning yet could also be considered to belong to knowledge-based strategy research (see e.g. Mintzberg et al., 1998) and is often referred to in the innovation research discussion too (e.g. Tidd et al., 2005). On the other hand, the concept of strategic renewal for instance is approached both from the strategy process perspective (e.g. Floyd & Lane,

2000) and the organisational learning perspective (e.g. Crossan et al., 1999; Crossan & Bedrow, 2003).

At any rate, the links and direct causal relationships between the four research objects – change, innovation, organisational learning and strategic renewal – are not easily measurable, for instance regarding the question of how innovations affect strategic competitiveness. This is particularly true if innovations are considered in the broad and diverse sense instead of focusing on, say, technology-oriented product innovations.

The following sub-sections focus on these four research areas in more detail with reference to how discussion on them yields understanding of corporate renewal and helps lay a theoretical foundation for building a model of corporate renewal. Moreover, these sub-sections help define research concepts.

3.1 Innovation as a tool of corporate renewal

Innovation is a concept that is understood in many different ways, partly because innovation research is conducted within a number of research traditions (technological innovation, organisational research, strategic renewal, etc.) and partly because those defining the concept have sought to emphasise different factors. The following is an overview of some of these aspects. Definitions of innovation and the related discussions are here divided into three categories: innovation as result, innovation as process, and (most recently) innovation as strategic concept.

3.1.1 Concept of innovation

Innovation as result
Definitions of innovation typically address the degree of completeness of the idea (idea – invention – innovation). Some definitions regard innovation as a new idea (e.g. Rogers, 1962; 2003),[5] others regard it as an invention (e.g. Saren, 1984),[6] and an increasing number regard it as an idea that has already been utilised or adopted in some way (e.g. Badawy, 1988; Miller & Morris, 1999; Ble-

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[5] *"An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption."* (Rogers, 2003, p. 12).

[6] *"the process by which an invention is first transformed into a new commercial product, process or service. It can be distinguished from both invention – the discovery of a new technique, and diffusion – the innovation's adoption or imitation."* (Saren, 1984, p. 11).

dow et al., 2009),[7] utilised and based on a creative idea (e.g. Amabile et al., 1996),[8] or commercially successfully utilised (OECD 1991)[9].

Another aspect concerns the novelty of the end result (e.g. Tinnesand, 1973; Johannessen et al., 2001), raising the question of how new an innovation has to be, and new for whom, in order to qualify as an innovation. The invention-oriented aspect (e.g. Utterback, 1974; Galbraith, 1982) emphasises the novelty of the innovation for the world at large, while other definitions instead specify novelty for a particular market, and yet further ones assess novelty from the point of view of the company in question. Novelty may also arise from a new combination of existing elements, as in the definition presented by Boer and During (2001, p. 84): *"Innovation is the creation of a new product-market-technology-organisation combination."* A new idea in any of these dimensions can create an innovation.

Another important factor in definitions of innovations is whether they are in-cremental or radical (e.g. Ettlie et al., 1984; Dewar & Dutton, 1986; Nord & Tucker, 1987; Leifer et al., 2000). Henderson and Clark (1990) examine ap-proaches to *incremental and radical innovation* from the point of view of the implementing organisation, adding the two further dimensions of modular and architectural innovation, depending on whether the object of the innovation is a component or configuration knowledge. Radical is generally associated with novelty but also with technological advancement (Mansfield, 1968). Indeed, some consider technological inventions to be an essential part of innovation (e.g. Utterback & Abernathy, 1975), even though as early as in 1958 March and Simon asserted that at the organisational level innovations are more a question

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[7] *"creativity brings something new into being" .. "innovation brings something new into use"* (Badawy, 1988).

"the process of transforming an invention into something that is commercially useful and valuable" (Miller & Morris, 1999, p. 2).

"something new is done, produced, or serviced – new to the context in which the organi-zation has operated up to that point." (Bledow et al., 2009).

[8] *"successful implementation of creative ideas within an organization"* (Amabile et al., 1996, s. 25).

[9] *"Innovation is an iterative process initiated by the perception of a new market and/or new service opportunity for a technology-based invention which leads to development, production, and marketing tasks striving for the commercial success of the invention."* (OECD, 1991).

of borrowing than of inventing. How radical an innovation is may be assessed from the company's point of view according to whether the company will need to change its business model (*breakthrough innovation*) (e.g. Hargadon, 2003). One of the variations of the incremental vs. radical analysis is to consider whether the emergence of the innovation is in line with the company's earlier knowledge (*continuous innovation*) (Miller & Morris, 1999). The opposite of this is discontinuity, meaning that the emergence of the innovation required new expertise and knowledge. A similar opposition is found in the discussion of *routine* and *non-routine* innovations (Knight, 1967) or of *variation* and *reorientation* (Normann, 1971). Gatignon et al. (2002, p. 1104) combine the *locus* viewpoint of the innovation definition of Henderson and Clark (1990) with a determination of how radical the innovation is in order to recognise generational change and complexity in the evaluation of innovation success.

Some definitions consider the nature of the result of the innovation. Generally, when discussing *innovations as a tool for corporate renewal*, the importance of product innovations is emphasised in the literature. Product innovations are considered the primary tools (Dougherty, 1992), engines of renewal (Bowen et al.*,* 1994) and sources of competitive advantage (Brown & Eisenhardt, 1997, 1998). In organisation research, instead, innovation is primarily seen as a new practice embraced by an organisation (e.g. Damanpour, 1987). Now, however, broader definitions of innovation have started to re-emerge (see e.g. Thomson, 1965; van de Ven, 1980): for instance, Francis and Bessant (2005, p. 13) present a 'four P' model categorising innovations as *product, process, position and paradigm innovations.* The present study employs a broad conception of innovation similar to that featured in the 'four P' model. Similarly, OECD has broadened their earlier innovation definition[10] (2005) from technology-based view.

Innovation as process
A second major perspective on innovation is to consider it as a process. In the innovation debate, the innovation process is considered as an adaptation process (e.g. Damanpour, 1996; Daft & Becker, 1978, Damanpour & Evan, 1984; Rogers, 1962; 2003); as a technological advancement process, begun with an invention stage and ending with a diffusion stage (e.g. Gruber & Marquis, 1969);

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[10] *"the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations."*

as a gradually evolving process of change (Schroeder et al., 1986); or as one business process among many, as in product development literature (e.g. Wheelwright & Clark, 1992).

From the point of view of corporate R&D, the process is described as an R&D project, with emphasis on either functions (e.g. Robertson, 1974), tasks (Utterback, 1974; Rothwell & Robertson, 1973), roles of the participants (e.g. Schön, 1963; Allen, 1971; Chakrabarti, 1974; Frohman, 1978; Maidique, 1980; Galbraith, 1982, Howell et al., 2005; Gemünden et al., 2007), management challenges (e.g. Miller & Morris, 1999; Rosenau et al., 1996; Belliveau et al., 2002; Dodgson et al., 2008) or stages (Cooper, 1983; 1993; 1999). The continuous development model proposed by Imai (1986) may also be seen as a company-level innovation process aiming at incremental innovation.

The stages of a product innovation process in a company used to be divided into idea generation, project definition, design and development, and commercialisation (e.g. Rothwell & Robertson, 1973). Today, the emphasis is on the importance of the front end of the innovation process. It is often said in companies that the 'product development path', i.e. the implementation stage of innovation projects, works very well. In product development oriented literature, the innovation process is often described using a three-stage model: the front end, the product development project, and commercialisation (e.g. Koen et al., 2001). Research is currently focusing on the front end (e.g. Poskela, 2009; Koen et al., 2001, 2002; Cagan & Vogel, 2002), because it is considered that both companies and researchers have much to learn there. It is also debated whether the front end of the innovation process is built up and controlled as a process or whether it is fuzzy in nature (Reinertsen, 1985; 1999; Khurana & Rosenthal, 1998; Zhang & Doll, 2001; Kim & Wilemon, 2002).

For the most part, an innovation process is seen as an organisational effort required for the development and implementation of a specific innovation. Kao (2007) extends the concept of innovation from the implementer level and from a single series of events to a continuous striving by individuals, companies and nations to shape the future according to their wishes. In the study, the innovation process is considered as a process that can be managed (see e.g. Tidd et al., 2005, p. 67). It includes the front end, which consists of searching for opportunities, generating ideas, further processing of ideas and evaluation. The front end of the innovation process is not considered fuzzy for the purposes of the present study. The second stage of the innovation process is the implementation stage, which includes commercialisation functions. Commercialisation is thus not con-

sidered as a separate function following the two previous stages of the process; some commercialisation features are included in the implementation stage and some in the front end. The implementation stage of the innovation process is here seen as a series of projects through which the company and its innovation network put the innovation into practice.

Innovation as strategic concept

There is some innovation discussion in business management literature. Recently, models that could be described as strategic concepts have emerged in this discussion. Examples include innovation as disruptive strategy (Christensen, 1997; Kim & Mauborgne, 2005), innovation creation through dynamic competences[11] (Teece et al., 1997; Eisenhardt & Martin, 2000), the open innovation operating model (Chesbrough, 2003) and BoP innovation[12] (Prahalad, 2004).

In addition to the product, process and strategic definitions described above, innovations are also seen as a source of regional and national wellbeing. Innovation policy is beyond the scope of the present study, which focuses on innovation management at the corporate level.

3.1.2 Innovation management

The study considers innovation from the point of view of corporate innovation management. Innovation management can be considered an organisational learning process where the company's purpose is efficiently to seek out routines for coping with the challenges of the innovation process (Tidd et al., 2005, p. 503). Tidd et al. define *routines* as learned practices represented by structures and processes. These are proprietary and difficult to copy. Innovation management can also be considered as *organisational competence* (Lawson & Samson, 2001, p. 377). However, for the most part of discussion innovation management is

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[11] Dynamic competences reflect a company's ability to integrate, build and reshape, with resource-based intent, its capabilities in order to respond to the challenges of the changed operating environment (combined from the definitions in Helfat et al. 2007, p. 1; and Teece et al., 1997, p. 516).

[12] The key idea with BoP (bottom of the pyramid) innovations is that the markets in developing countries will in the future be markets for which it will be worthwhile to develop new simple and cheap solutions.

considered as management of *a process creating potential for the emergence of innovations* (e.g. Drejer, 2003; Boer & During, 2001).

Table 4 presents an overview of matters considered important from various aspects and in various debates in innovation literature when evaluating the innovative capacity and ability of companies. The core of the list consists of a series of studies focusing on successful and/or unsuccessful product development projects at companies, an approach very common in the 1970s and 1980s but continuing to this day.[13] Examples of such studies principally using survey techniques for identifying success factors, described by Brown and Eisenhardt (1995, p. 348) as rational product development design, include Marquis, 1969; Myers & Marquis, 1969; Rothwell, 1972; Rothwell et al.*,* 1974; Szakasits, 1974; Kulvik, 1977; Rothwell, 1977; Cooper, 1979; Cooper & Kleinschmidt, 1987; 1996; Zirger & Maidique, 1990; and Eisenhardt & Tabrizi, 1995. The main benefits of this discussion have been to place customer understanding on a par with technology at the front end of innovation and to identify the importance of cross-functional teams for the leveraging of the knowledge and competence of an organisation.

In addition to the above, the table includes factors from the discussions on organisational learning and strategic renewal that contribute to a company's capacity for generating innovations (e.g. Teece et al.*,* 1997; Cohen & Levinthal, 1990) and viewpoints broader than the perspective of a single company's product development on innovation and more recent innovation discussions (e.g. Christensen, 1997; Kim & Mauborgne, 2005; Chesbrough, 2003).

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[13] In compiling this table, product development project success factors were recognised with the aid of summaries presented by Zirger & Maidique (1990) and Brown & Eisenhardt (1995) in this area.

Table 4. Innovation generation factors in a company and in an innovation network.

Level	Discussion	Factor	References
Individual	Creativity	Creativity (individual & team)	Amabile 1988
	Entrepreneurship	Internal entrepreneurship	Drucker 1985; Burgelman & Sayles 1986
Team	Team structure	Innovation roles	Schon 1963; Allen 1971; Frohman 1978
	Communication	Internal communication	Marquis 1969; Rothwell 1972; Keller 1986; Dougherty 1992
		External, importance of gatekeepers[14]	Rothwell et al. 1974; Ancona & Caldwell 1992; Imai et al. 1985
	New Product Development, NPD	Cross-functional team[15]	Baldridge & Burnham 1975; Cooper 1979; Wheelwright & Clark 1992
		Strong team leadership	Clark & Fujimoto 1991
Project/ Process		Superior product	Cooper 1979
		Projected development by stages	Cooper 1983, 2008
		Importance of front end	Reinertsen 1985, 1999; Cooper & Kleinschmidt 1987; Koen et al. 2001, 2002
		Executive champion/ management support	Rothwell et al. 1974; Daft & Becker 1978; Damanpour 1987
	Organisational learning, OL	Learning from failures	Maidique & Zirger 1985
		Knowledge creation	Nonaka & Takeuchi 1995

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[14] Gatekeepers are individuals who obtain external knowledge and share it within the group (e.g. Brown & Eisenhardt, 1995, p. 354).

[15] A cross-functional team is a project group whose members represent more than one function within the company, e.g. design, manufacture and marketing (e.g. Brown & Eisenhardt, 1995, p. 367).

Organisation		Absorptive capacity[16]		Cohen & Levinthal 1990
		Sense making[17]		Weick 1995; Dougherty et al. 2000
	Source of innovation	Technology	Technology knowledge	Szakasits 1974; Rothwell et al. 1974; Dewar & Dutton 1986
		Market	Market knowledge	Marquis 1969; Rothwell 1972
			High need high growth & familiar market	Cooper 1979
			New value creation	Christensen 1997, Kim & Mauborgne 2005
		Customer	Customer need understanding	Rothwell 1972
			Product unique	Cooper 1979
			User-centricity	von Hippel 1976, 1986, 2005
	Strategy	Shared vision		Nonaka & Takeuchi 1995; Hamel 2000
		Dynamic capability		Teece et al. 1997; Teece 2000; Eisenhardt & Martin 2000; Zollo & Winter 2002
		Disruptive innovation		Christensen 1997; Kim & Mauborgne 2005
	Culture & structure	Flexibility & freedom		Burns & Stalker 1961
Network	Supplier involvement	Efficiency		Imai et al. 1985
	Networked innovation	Efficiency		Rothwell et al. 1974
		Innovativeness		Chesbrough 2003

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[16] Absorption capacity is the measure of a company's ability to recognise the value of external information, to adopt it and to commercialise it (Cohen & Levinthal, 1990).

[17] Sense making is a social process where an organisation develops a shared understanding by organising information, views and ideas (Dougherty *et al.*, 2000).

The purpose of the above table is to illustrate firstly how diverse the discussion on innovation management is and secondly what a diverse and many-dimensioned management challenge it represents. An added challenge is that a company should be able to turn these aspects and competences into an integrated whole instead of performing well in just one or a few of the areas involved (Tidd et al., 2005).

As noted above, the present study employs a very broad definition of innovation. An innovation is *a new, useful and successful way of meeting a customer need developed and implemented by a company and/or by an innovation network*. A customer need may be one that customers – or in the case of B-to-B customers, intermediate producers and end users – have not even been able to identify or articulate themselves. A customer may be located within the organisation (administrative innovations such as operating processes or customer orientation such as a new business model, etc.) or may be an existing customer (or customer segment) of the company or a new one (in the case of radical and breakthrough innovations). A solution may be a product, a service, a new operating practice, a new business model, etc., or a combination of any or all of these. Innovation management is defined as *the management of factors contributing to and supporting the generation of innovations in the company and in the innovation network.*

3.2 Corporate renewal in strategy research

The following gives overview of the basic frameworks in the literature related to strategy research focusing on corporate renewal. Dividing the strategy research pioneered by Ansoff (1965) roughly into two categories – strategic process research and content research – corporate renewal falls within the domain of strategic process research, which focuses for instance on strategy generation and implementation. Strategic process research progresses from the individual level to the group and organisation level both within the company and in its network. Strategic content research, instead, focuses on the relationship between the company and its environment (Chakravarthy & Doz, 1992).

Traditionally, a company can either examine its strategy from the outside-in perspective, i.e. using a market-oriented approach, or from the inside-out perspective, i.e. focusing on internal resources (de Wit & Mayer, 1998). In the market-oriented approach, the company aims to make strategic solutions to conform to the requirements of its environment, and its strategic moves involve external

positioning. In the resource-oriented approach, the company uses its existing resource base and core competences as its starting point (Prahalad & Hamel, 1990). The strategic purpose here is to aim at unique expertise and is more about conformity than adjustment.

The emergent strategy concept (e.g. Mintzberg, 1994), where *realised strategy* comes about as a combination of *deliberate* and emergent strategy, has largely replaced the planning-oriented and positioning-oriented strategy concept proposed by Ansoff and Porter in research discussions, yet companies continue mostly to execute planning-oriented strategies.

The importance of experimentation in strategy execution has been stressed for instance by Thomke (2003) and Brown & Eisenhardt (1997; 1998). Chesbrough (2010) also emphasises the importance of experimentation in the development of business models. Brown and Eisenhardt studied success stories in the IT industry to explore how a company can stay at the cutting edge of competition in a rapidly changing industry. They considered that successful companies use their competitive advantage for actively seeking new opportunities and not for maintaining their existing position. Additionally, such companies do not attempt to predict future developments in staking all their development resources on a single product strategy. Lester and Piore (2004) agree with this in noting that a company should not even attempt to guess at what customer needs might be; instead, a company should offer a variety of products and services in seeking its strategic orientation so that the market can decide which way the company should go and which aspects it should develop.

Tushman & O'Reilly (1996) and Christensen (1997) studied companies that, having grown and aged, can no longer cope using their existing practices and have thus fallen victim to successful company syndrome. They suffer from structural inertia, i.e. an inability to change their structures, systems and processes to conform to the needs of a larger company (Tushman & O'Reilly, 1996). Another form of inertia is cultural inertia, i.e. adhering to existing operating practices, values and standards ("We've always done things this way").

The knowledge-based strategy concept is largely similar to the resource-based strategy concept,[18] but focusing on the generation of new knowledge instead of

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[18] Resources (Barney, 1991, p. 101): physical (machinery, equipment, land), human (personnel, intellectual capital, experience, relationships) and organisational (reporting structures, planning routines, reputation, control and coordination).

the management of existing knowledge (Grant, 1996). The concept of dynamic competences has emerged to join the aforementioned strategy concepts (Teece et al., 1997; Eisenhardt & Martin, 2000; Teece, 2000; 2007). From the dynamic competence viewpoint, a company has existing knowledge but also dynamic competences through which it can generate new innovations and achieve sustainable competitive advantage by defining its own future (Teece et al., 1997). Dynamic competences could be described as meta-competences that can be used to create new competences (Teece, 2000). Eisenhardt and Martin (2000, p. 1106) list product development, alliances and strategic decision-making as examples of dynamic competences. The organisational learning process is driven by dynamic competencies, which in turn are based on the organisation's systematic practices for developing its routines and its expertise (Teece et al., 1997; Zollo & Winter, 2002).

Examining the strategic renewal discussion in more detail, Burgelman's (1991) view of strategic renewal comes across as successful change based on bottom-up learning and internal choices. This view is expanded on by Floyd & Lane (2002, p. 155), who define strategic renewal as "*an evolutionary process associated with promoting, accommodating and utilising new knowledge and innovative behaviour in order to bring about change in an organisation's core competences and/or a change in its product market domain.*" Under this definition, strategic renewal is not only about changes in core competences but also about changes in strategic positioning. Strategic renewal is therefore linked to the concept of *core competence*[19] (Prahalad & Hamel, 1990) and to the concept of *strategic positioning* (Porter, 1980). The above definition also emphasises the simultaneous utilisation of existing knowledge and creation of new knowledge in organisational learning (Levinthal & March, 1993).

Volberga et al. (2001), on the other hand, define strategic renewal as the activities a firm undertakes to alter its path dependence. They divide strategic renewal into four types depending on how its management is distributed among senior and middle management: *emergent*, where both are passive; *directed*, where senior management governs the balance between exploration and exploitation in business units (focus on business management literature); *facilitated*, where both levels of management seek to influence a balanced development,

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[19] Core competence is part of the company's social capital: knowledge and skills that form the basis of the organisation's ability to generate added value through products and services and to differentiate itself from its competitors.

with middle management challenging market wisdom; and *transformational,* where both levels of management participate through shared conceptualisation and seek to change the existing rules in their industry.

Floyd and Lane (2002, p. 156) divide strategic renewal into three sub-processes: In *competence deployment,* management seeks out suitable resources to implement change mainly through strategic planning and action plans, employing competences acquired through prior learning. In *competence modification,* management questions the existing strategy or competences and encourages and gives leeway for seeking change. In *competence definition*, management encourages the company to embrace new skills and to diversify into new markets. This process of diversification is typified by innovations, risk-taking and external corporate learning.

3.3 Change and change management

The following discussion seeks building blocks for a vision of corporate renewal in organisational change and change management research. The focus is on what kinds of change are discussed in the literature and how they relate to one another, and the result is a brief description of the concepts and special characteristics of continuous vs. punctuated change, incremental vs. radical change, and planned vs. emergent change. Some schools and approaches describe how the focus of research has shifted with time, for instance from incremental change to radical change or from planned change to emergent change. There is also discussion about whether the incremental and radical or the explorative and exploitative approaches should be viewed as mutually exclusive, used alternately as in the punctuated equilibrium model, or balanced qualitatively or quantitatively.

Incremental, radical and punctuated equilibrium
Incremental change research is considered to have been dominant until the end of the 1970s; thereafter, two new perspectives and models emerged, the punctuated equilibrium model and the continuous change model (e.g. Burnes, 2004). Gersick (1991) considers that the punctuated equilibrium model is derived from natural history, the incremental development concept being based on Darwin. The punctuated equilibrium model has been described for instance by Abernathy and Utterback (1978) from the radical and evolutionary innovation perspective and by Miller and Friesen (1984) and Tushman and Romanelli (1985) from the organisational change perspective. The punctuated equilibrium model

consists of relatively long periods of balance and short periods of radical, revolutionary change (within the industry) that in turn lay the foundation for a new, lengthier period of equilibrium (Romanelli & Tushman, 1994; Gersick, 1991).

Kanter et al. (1992) and Beer and Nohria (2000) distinguish between change happening abruptly on the one hand and incrementally on the other. Kanter et al. describe a swift, all-embracing change as a 'bold stroke', whereas Beer and Nohria call it 'theory E', giving as examples radical cost-cutting and downsizing implemented to curry favour with investors. Long-term incremental change is described by Kanter et al. (1992) as a 'long march', while Beer and Nohria (2000) call it 'theory O'. Beer and Nohria advocate using both types of change, first using the quicker 'theory E' and then smoothing over the trauma with the softer 'theory O' focusing on developing the organisation's culture and individual competences through organisational learning.

From planned to emergent change

A discussion of planned change generally begins with the three-step model proposed by Lewin (1947). A three-step change project as per Lewin consists of unfreezing, moving and refreezing. In the first step, the current equilibrium has to be broken, i.e. the organisation must 'unlearn' its current practices in order to embrace new ones (see e.g. the importance of simultaneous unlearning, Miller & Morris, 1999). After the second step involving the actual change, the third step, refreezing, seeks to reinforce the newly established equilibrium to avoid a post-change regression. The change itself in Lewin's model is based on field theory,[20] group dynamics and action research, and on the three steps named above.

In the early 1980s, some researchers began to regard Lewin's planned change model as too slow in cases where quick, radical change was required to ensure company survival (e.g. Burnes, 2004; Peters & Waterman, 1982; Kanter et al., 1992). Burnes (1992) and Peters & Waterman (1982) in their models emphasised the importance of the organisation's culture in a change situation. A flexible corporate culture encourages innovation and entrepreneurship and encourages continuous, collaborative bottom-up development (e.g. Kanter, 1983; Peters & Waterman, 1982). One of the best-known authors to have written about change with consultative instructions is Kotter (1996). His eight-step change

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[20] Field theory is an approach that seeks to understand group behaviour by charting the complexity of the 'field of life' comprehensively (Back, 1992).

model highlights creating urgency for change, drawing up a vision and a strategy, getting personnel committed to the change, and creating short-term wins.

Continuous change

Critics of planned change advocate continuous change (Brown & Eisenhardt, 1997) or emergent change (Weick, 2000). They point out that change is continuous, unpredictable and political in nature (Burnes, 2004), for instance as noted by Pettigrew & Whipp (1993) and Wilson (1992). Change happens gradually for instance through employees updating their everyday routines at work. Much emergent change thus occurs unnoticed (Weick, 2000).

Brown and Eisenhardt (1997, p. 1) criticise the punctuated equilibrium model specifically because while it is in the foreground of academic interest, it is in the background of the experience of many firms; many firms compete by changing continuously. Brown and Eisenhardt regard change particularly from the perspective of corporate product development, noting that product development is not simply the core competence of companies but a vital component of corporate culture; change is not something that happens occasionally but an omnipresent competitiveness factor. Continuous change is vital for survival in rapidly changing industries, as noted also for instance by d'Aveni (1994).

Ambidextrous change

The learning concepts 'exploitation' and 'exploration' proposed by March (1991) relate to the incremental vs. radical change discussion, but continuous change involves both efficiency in using existing knowledge and capacity for identifying new opportunities. Duncan (1976) introduced the concept of 'ambidexterity' to describe a change process with the ability to seek out new ideas and mechanically put them into practice as and when required. March (1991), instead, defended the need to distinguish between exploration and exploitation by noting that if implemented simultaneously they would compete for the same resources and create conflicting expectations in the organisation; therefore they need separate structures and strategies.

Ambidexterity has attracted both supporters and detractors. Tushman and O'Reilly (1996), for instance, considered the capacity to implement both evolutionary and revolutionary change as the hallmark of successful companies. Raisch and Birkinshaw (2008) stated in their review of literature on ambidexterity that whereas earlier studies largely saw ambidexterity as an insuperable ob-

stacle for organisations, it is now considered a rising paradigm in organisational research.

3.4 Organisational learning as a facilitator of corporate renewal

Innovations are based on learning (Nonaka & Takeuchi, 1995), and organisational learning is an important factor in innovation capacity. Another reason to discuss organisational learning in this context is that organisational learning is the principal source of strategic renewal in a company (Crossan et al., 1999; Crossan & Bedrow, 2003).

While in the resource-based organisational approach (e.g. Wernerfelt 1984; Barney 1991) strategy is based on the use of existing resources, in the knowledge-based approach the knowledge and competences of a company are its principal competition factors that enable both the exploitation of existing knowledge and the exploration of new knowledge (e.g. Grant, 1996).

Because the present study is oriented at the single-company level, discussion must first focus on what the learning required for innovation actually is in a company. Research in this area is divided into two partly overlapping approaches (see e.g. Argyris, 1999), organisational learning (Argyris & Schön, 1978; Huber, 1991; Crossan et al., 1999) and the learning organisation (Senge, 1990; Schein, 2004), the latter focusing on describing the target state, i.e. what an organisation that learns things looks like and how it behaves. The learning organisation approach is more favoured by practical consultants than by academic researchers. Nevertheless, the two approaches are not really very dissimilar (Tsang, 1997).

Organisational learning, whether involving a company or another kind of organisation, focuses on expanding theories of individual learning to describe how an organisation can continuously learn new things. The key ideas in organisational learning are multi-level learning models, i.e. the single- and double-loop learning described by Argyris and Schön (1978) and the spiral of knowledge described by Nonaka & Takeuchi (1995) to describe the generating of tacit and explicit knowledge[21] in an organisation.

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[21] Nonaka (1991) distinguishes between two types of knowledge: tacit (Polanyi 1966) and explicit. Choo (1998), for instance, adds a third one: cultural knowledge.

Nonaka et al. (2000, p. 5) used the Japanese concept of *ba* in describing a learning organisation. *Ba* refers to a specific place at a specific time, and it is a useful concept for describing things that facilitate learning and the generating and development of new ideas. *Ba* can manifest itself as three different kinds of spaces: firstly, a physical space such as an office, conference room or sauna; secondly, a virtual space such as an e-mail, a book or a video conference; and thirdly, a mental space such as shared goals and ideas. Enhancing *ba*, which facilitates increased innovation, can occur in specific circumstances. Freedom, creative chaos, indeterminacy, caring, confidence and commitment can influence innovation in an organisation or in a part thereof. It is difficult to quantify *ba.* Underlying *ba* is the notion that information does not translate into knowledge until it is associated with a specific context and until individuals interpret it through their own convictions and emotions (Nonaka et al.*,* 2000).

Crossan et al. (1999) remark that strategic renewals places further demands on the theory of organisational learning, i.e. that the knowledge processing approach (Huber 1991), product innovation (Nonaka & Takeuchi, 1995) or the cognitive limitations of managers in management learning (March & Olsen, 1975) are not sufficient to analyse it fully. They consider the opposition of exploitation and exploration identified by March (1991) to be the core issue of strategic renewal, especially at the corporate level (as opposed to the employee level or team level).

Crossan et al. (1999, p. 525) end up describing organisational learning at all three levels (individual, group, organisation) as a dynamic process involving four elements that they call the 'four I' organisational learning framework.[22] Briefly, the model describes how individuals collect and assimilate information and experiences that are then interpreted through discussion, idea generation and evaluation at the group level. New knowledge is adopted at the organisation level through combining shared views and with the help of interactive systems, and is established as permanent practice for instance through instructions and routines. The dynamic learning mechanism (Crossan et al.*,* 1999, p. 532) also includes feedback and feed forward as an essential factor between levels of

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[22] The 'four I' model: intuition, interpretation, integration, institutionalisation.

learning. The 'four I' model was subsequently expanded by Jones and Macpherson (2006) to apply to cross-organisational learning at the network level.[23]

Lampela (2009) mentions concepts linking learning and innovation in addition to the above: critical absorptive capacity (Cohen & Levinthal, 1990; Zahra & George, 2002; Easterby-Smith et al., 2008), organisational memory (Walsh & Ungson, 1991; Moorman & Miner, 1997), systemic thinking (Senge, 1990; Sterman, 2000; Argyris, 1999) and dynamic competences (Teece et al., 1997; Eisenhardt & Martin, 2000). Of these, dynamic competences were discussed above under strategic renewal. Absorptive capacity consists of a company's routines and processes for acquiring, adopting, transferring and exploiting knowledge (Zahra & George, 2002). A company can improve its absorptive capacity through experiential learning (Cohen & Levinthal, 1990). Organisational memory consists of organisational learning results that may be enshrined in files, rules, roles or operating instructions or in the form of tacit knowledge in competence, routines, values, attitudes and corporate culture (Walsh & Ungson, 1991; Weick & Roberts, 1993). The importance of systemic thinking derives from the increased complexity of companies' operating environments, as it enables a company to conceive of new mental models and to lay the groundwork for new innovations by perceiving connections and their implications at a more general level (Senge et al., 1994).

Organisational learning and the knowledge-based approach are sometimes criticised for their models being too conceptual, for not employing enough empirical research and for taking an unduly positive view of learning (e.g. Lähteenmäki et al., 2001). Furthermore, for all that there is a large body of organisational learning research, it is criticised for a lack of coherent terminology and cumulative theory (e.g. Weick, 1991; Akgün et al., 2003; Vera & Crossan, 2004).

There is a branch of organisational learning research that seeks to integrate organisational learning research and strategic renewal research, as in the 'four I' model of Crossan et al. (1999) described above (Vera & Crossan, 2004; Crossan & Bedrow, 2003). On the other hand, Eisenhardt and Santos (2002) concluded that the knowledge-based strategy is not yet a theory, although it does provide

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[23] The 'fifth I' is intertwining.

interesting theoretical views on how knowledge is collected, transferred and integrated within and between organisations.

3.5 Summary of the field of corporate renewal research

It was proposed at the beginning of this chapter that research into innovation, strategy, change and organisational learning is all connected to corporate renewal research. The preceding subsections discussed the field of corporate renewal from the perspectives of these four approaches. In summary, all four perspectives represent the same phenomenon: the invention or development of something new. All four also describe corporate renewal, albeit with slightly differing concepts, yet they also share certain concepts and theories. Connections between all four may be identified (Figure 5).
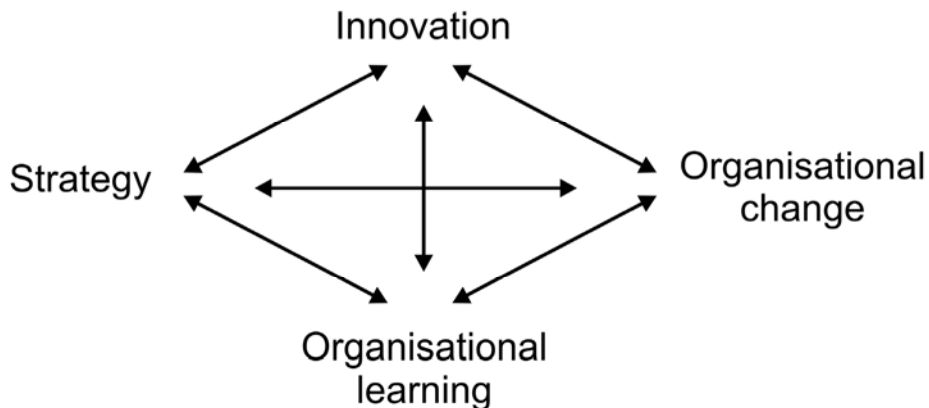
Figure 5. The four perspectives in the field of corporate renewal.

Limiting the discussion to the corporate context actually emphasises the similarities between the approaches. The following is a list of shared concepts and links discussed above:

- change, or development towards something that is new and by some measure better
- underlining both the process and its outcome
- the roles of individuals or teams in the process
- planned and emergent change

- creating new knowledge
- exploitation of existing knowledge and exploration of new knowledge.

Identifying interactions between the four approaches could also be described as looking at the other three while wearing an innovation management hat, so to speak. The conclusion presents itself that from the innovation management perspective the other three approaches support the management and steering of corporate innovation. In other words, innovation management must take the strategic perspective into account, keep a close eye on change and leverage learning in the organisation.

The following chapter takes this integrated foundation as a starting point for building a theoretical research framework. It also further delimits the scope of the research within these four approaches. The present chapter focused on corporate internal renewal. The following chapter focuses on one of the points in the above list: how companies can implement ambidextrous change by both exploiting existing knowledge and exploring new knowledge.

4. Integrated conception of corporate renewal

This chapter describes a theoretical framework used for the main purpose of the study, building a model of continuous corporate renewal while taking the observations made in the course of the action research into account. Hereinafter the observations from the case study are referred to as the construction requirements.

In the preceding theory chapter, corporate renewal was considered from the perspective of four approaches: innovation research, strategic renewal, organisational change and organisational learning. Here, the aim is to examine more closely the similarities between these research approaches and to assess the potential benefits of integrating them. Finally, a theoretical perspective known as *dual ambidexterity* is introduced; the dual aspect of this has not been widely discussed in theoretical literature. The dual aspect of ambidexterity may thus be identified as a theory gap the examination of which could constitute a contribution to theoretical discussion. Dual ambidexterity is also important in the corporate context, as will become apparent under case A in the action research section.

4.1 Planned and emergent corporate renewal

The process of integrating innovation research, strategic change, organisational learning and organisational change is begun by placing all four in a rough diagram of the innovation process (Figure 6). Placing different discussion approaches in the innovation process produces an analysis that encompasses both planned and emergent development. Theories describing emergent change can be found in all four research approaches, such as the innovation process in innovation literature (e.g. van de Ven, 1986; Schroeder et al., 1986), change processes describing change at various levels (industry, company, organisation) (e.g.

Gersick, 1991; Abernathy & Utterback, 1978; Tushman & Romanelli, 1985; Brown & Eisenhardt, 1997, 1998; Weick, 2000), the emergent strategy process (e.g. Mintzberg, 1994; Floyd & Lane, 2000, and organisational learning (e.g. Levinthal & March, 1993; Nonaka & Takeuchi, 1995; Crossan et al., 1999).
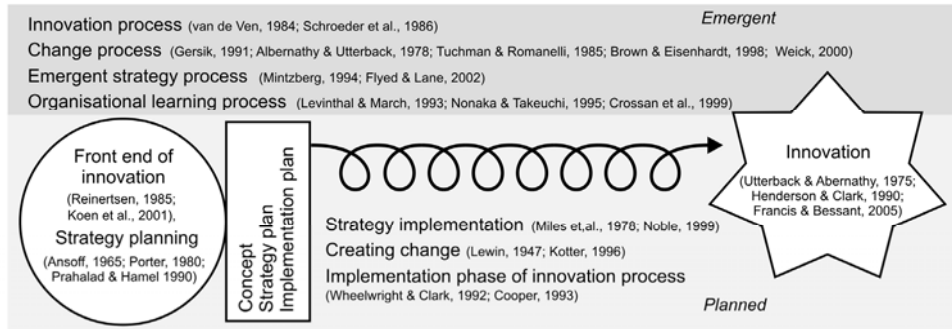
Figure 6. Planned and emergent renewal process.

Similarly, perspectives on planned change can be found in the various approaches. The literature on the front end of the innovation process (e.g. Reinertsen, 1985; 1999; Koen et al., 2001; 2002) and on strategic planning (e.g. Ansoff, 1965; Porter, 1980; Prahalad & Hamel, 1990) may be considered to refer to the same stage in the process. Similarly, the implementation stage can be interpreted as strategy implementation, planned change implementation (e.g. Lewin, 1947; Kotter, 1996) or the product development / product process stage of the innovation process (e.g. Wheelwright & Clark, 1992; Cooper, 1983; 2008). The strategic planning outcome described in strategy literature is comparable to the concept in the innovation process or the development plan in planned change. Under the broad definition of innovation, the outcomes of all these change, development and implementation processes may be described as innovations (e.g. Francis & Bessant, 2005).

Based on the above, all four research approaches seek, at least on some level, to describe the same phenomenon and secondly that their focus varies between planned and emergent development depending on the stage of the process of change or development considered.

Both the innovation literature and the strategy literature have a strong process viewpoint. The process viewpoint is particularly apparent in the practical business management literature. Both feature an idea stage, i.e. the front end of the innovation process, and a strategy planning stage, and at least according to the

view of the planning and positioning school (Mintzberg et al., (1998), the strategy process includes an implementation stage equated above with the implementation stage in the innovation process. Similarly, the planned change school separates planning and implementation in the change process.

By contrast, organisational change research and the innovation process approach (and also, partly, the emergent strategy approach) focus on the process of change itself, also called a learning process. Organisational learning models focus on the learning process, on the increase of knowledge and on distributing that knowledge in the organisation in the course of the learning process. They emphasises the importance of distributing and leveraging existing knowledge in the organisation on the one hand and the collecting and combining of new knowledge in new ways on the other (e.g. Huber, 1991; Nonaka & Takeuchi, 1995; Crossan et al., 1999). A strategy plan may be compared to the concept in an innovation process, which has to be implemented and utilised before it can be described an innovation.

The conclusion above that the aforementioned research approaches might be integrated prompted the question of what added value an integrated view of these research approaches would yield. Integration could be beneficial in the sense that each research approach could make use of research in the other approaches, and in fact they have already done so for instance in the fields of learning and innovation, as noted above in the theory discussion. Added value could also be generated by an increased coherence in terminology and concepts between the approaches through integration and a new perspective.

The following is a discussion of certain details to emerge from the notion of integration. Identifying weaknesses in the theoretical discussion is one possible benefit. Seeking a critical angle on comparing the theoretical focus in the discussion to actual corporate operations, integration of these four research approaches would balance their view of the participants of change and their roles.

Strategic literature lays too much weight on the role of senior management in change, relegating the rest of the organisation (see e.g. Mintzberg et al., 1998) to a secondary role or in some cases ignoring it completely. By contrast, organisational learning theories as a rule emphasise the role of the entire organisation in learning and change. Still, as Lähteenmäki et al. (2001) note, the organisational learning literature indirectly implies that it is the management who are behind organisational learning. The discussion on the learning organisation (e.g. Senge, 1990) also underlines the importance of management in learning. Classical innovation literature (e.g. Utterback, 1974; Utterback & Abernathy, 1975) naturally

emphasises the role of the inventor in the innovation process, but innovation process literature also highlights cross-functional teams (Cooper, 1979; 1983; Wheelwright & Clark, 1992) and multiple roles such as gatekeepers, champions and sponsors (e.g. Schön, 1963; Allen, 1971; Chakrabarti, 1974; Frohman, 1978; Maidique, 1980; Galbraith, 1982, Howell et al., 2005; Gemünden et al., 2007).

In addition to these multiple roles, integration of the four research approaches could yield more potential for understanding both planned and emergent change, which are shared by all four. The strategy discussion (e.g. Mintzberg et al., 1998) addresses emergent strategy and the continuous change perspective (e.g. Brown & Eisenhardt, 1997; 1998), organisational learning (Nonaka & Takeuchi, 1995) and at some level the innovation process (e.g. van de Ven, 1986; Schroeder et al., 1986). Fresh perspectives could be brought into the innovation discussion in particular by considering innovation not just as a mechanical processing of a single idea from invention to commercialisation (e.g. Wheelwright & Clark, 1992) but as a dynamic combination of ideas and solution modules. Chance, the participants, the competences in the network, resources and many other factors may have a crucial impact on the evolution of the innovation, depending on its nature. A greater emphasis on the overall process instead of the development of a single idea could serve to bring the innovation discussion closer to the actual everyday operations of companies.

Furthermore, considering innovation as an exclusively technological entity causes a bias, since even a product innovation generally involves, or can involve, a service, a business model and other elements. A more dynamic view of the innovation process may help broaden the rather narrow general interpretation of the concept of innovation, which in turn may help innovation to be seen as something involving the entire organisation and innovation network and not just the inventor and sponsor or a small team (see e.g. Miller & Morris, 1999; Tidd et al., 2005).

In addition, the models and practices emerging in the abundant discussion on the implementation stage of the innovation process (e.g. Cooper, 1993; 1999; 2008; Belliveau et al., 2002; Rosenau et al., 1996; Wheelwright & Clark, 1992) could be used in the systematic organising of the implementation of change, particularly strategic change. In fact, an ideal process suitable for implementing both new solutions (innovation process) and new strategies (strategy process) would be one that combines the systematic practices developed for innovation processes with dynamic elements so that the process would feature a continuing dialogue between planned and emergent solutions or strategies.

An integrated view could also serve to introduce a goal-oriented aspect to the discussion on organisational learning (e.g. Huber, 1991; Nonaka & Takeuchi, 1995) and in particular to the discussion on the learning organisation (Senge, 1990; Senge et al.*,* 1994) and the discussion describing organisational change (e.g. Gersick, 1991; Miller & Friesen, 1984; Tushman & Romanelli, 1985), specifying what exactly it is that is sought through learning and change. This would bring the discussion to a more concrete level in everyday corporate operations and could thus attract more interest from company management and at other levels of the organisation too. At present, organisational learning mechanisms and means in companies seem to be rather one-sided and often training-related, and not much attention seems to be paid to them otherwise.

The four research approaches featured describe very similar phenomena, change and development, highlighting novelty and utility (particularly in the corporate context). Moreover, even a cursory examination reveals points where the approaches could find support in each other's research. Closer observation also reveals that all four share a theoretical framework regarding ambidexterity: how companies can exploit existing knowledge and explore new knowledge. On the basis of the above, the ambidexterity angle is proposed as the core of the theoretical framework of the integration proposed in the study. This focuses the scope of the theoretical discussion on the perceived theory gap on the one hand and on answering the empirically derived research question on the other. In the following section, the ambidexterity issue is discussed from the perspective of each of the four research approaches.

4.2 Ambidexterity in corporate renewal – four perspectives

The brief theory review in the previous section described the backgrounds in four research approaches or traditions – innovation, strategy, organisational change, and organisational learning – from the point of view of corporate renewal in particular. Taking a closer look at the basic concepts and comparing them with one another and with the *'both-and'* perspective (see e.g. Brown & Eisenhardt, 1997; Apilo et al., 2007; Apilo et al., 2009), they all seem to address the same phenomenon, only using different names. It also seems that the four approaches share certain terms and concepts.

Developing this notion further, all four research approaches are concerned with the relationship, balance and synchronisation of, or differences between,

incremental and radical innovation; old and new knowledge; exploitation and exploration; or incremental and radical change. The process of aiming to balance these opposing factors is known in the literature as ambidexterity (Duncan, 1976; O'Reilly & Tushman, 2004; Bledow et al., 2009).

This dualism is described in learning theories as exploitation (use of existing knowledge) vs. exploration (generating of new knowledge) (March, 1991), in change research as continuous change vs. the punctuated equilibrium model (e.g. Gersick, 1991; Romanelli & Tushman, 1994), and in innovation research as incremental vs. radical innovation. Table 5 is a compilation of aspects of ambidexterity in relation to the tension between these opposites. In addition to the two opposites, there is a third column with concepts illustrating ambidexterity implemented alternately or simultaneously (separated in the organisation). The fourth column contains models where ambidexterity is implemented simultaneously.

Table 5. Duality in corporate renewal.

Research themes	'Either'	'Or'	'Alternately / simultaneously'	'Both-and'	References
Learning, knowledge management	Exploitation	Exploration	-	-	March 1991
	Single loop learning	Double loop learning	-	-	Argyris 1977
	Adaptive learning	Generative learning	-		Senge 1990
Innovation research, innovation management	Incremental innovation	Radical innovation	-	-	Abernathy & Utterback 1978
	Continuous innovation	Discontinuous innovation	-	-	Miller & Morris 1999
	Sustaining innovation	Disruptive innovation	-	-	Christensen 1997
	Operational effectiveness	Strategic flexibility	Continuous innovation		Sutcliffe et al. 2000, Boer & Gertsen 2003
			Binary model	Dual model	
	'Do better' innovation	'Do different' innovation	-	-	Francis & Bessant 2005
Organizational change	Evolutionary change	Revolutionary change	Ambidextrous	-	O'Reilly & Tushman 1996
	Equilibrium period	Metamorphic change /revolution	Punctuated equilibrium	-	Gersick 1991, Romanelli & Tushman 1994
	Long march, theory O	Bold stroke, theory E	Theory E+O	-	Beer & Nohria 2000, Kanter et al. 1992
Strategic research, strategic management	Rationalist strategy	Incremental strategy	-	-	Whittington 1994 (Ansoff 1965, Mintzberg 1987)
	-	-	-	Continuous change	Brown & Eisenhardt 1997
	-	-	-	Fast strategy	Doz & Kosonen 2008

Exploitation of existing knowledge, operational efficiency and incremental innovation belong to a static and selective world view derived from a resource-based strategy conception and evolutionary theory. Exploration, by contrast, is a dynamic search for new knowledge and competence and is derived from a knowledge-based conception of business and dynamic competences. It involves seeking out variations, taking risks, experimentation, flexibility and innovations (March, 1991).

In compiling theoretical concepts related to ambidexterity it becomes apparent that there are not very many cases where the components of ambidexterity occur simultaneously. A research gap might be found in this particular area. This prompts the question of whether the need for continuous innovation identified in case A, i.e. the need both to leverage existing competence and to generate new competence, is actually a practical example of exactly this kind of dual ambidexterity. These two points – the potential need for further theoretical research and the practical development need – call for a closer look at this dual perspective on corporate renewal.

4.3 Dual perspective on corporate renewal

The theory portion of the present study concludes with a summary of the theoretical framework based on the integration of the aforementioned four research approaches, first discussing the ambidexterity concept featured in all of them and then focusing further on a single aspect: *dual corporate renewal*. In Table 5 in the previous section, not many examples were identified of a dual corporate renewal process, occurring on the 'both-and' principle, at the same time and in the same place. The following is a discussion of these concepts, the aim being to identify a theoretical framework or model for a construction for corporate renewal.

Instead of simply balancing between the exploration of new competence and solutions on the one hand and the exploitation of existing competence on the other, the aim here is to seek out models and concepts where both approaches are implemented in the same organisation simultaneously. In particular, the alternatives sought are those that could help analyse a change process where both principles are applied in tandem.

The dual progress concept proposed by Boer and Gertsen (2003, p. 811) and known as the continuous innovation model is very closely related to ambidexterity occurring in the same place at the same time. Figure 7 shows two types of

ambidexterity: binary ('either-or') and dual ('both-and'). In the binary model, one of the options (exploration or exploitation) is dominant and the share of the other varies. In the binary ambidextrous model, however, both options are used, and their emphases vary by time or place. Boer and Gertsen (2003) found examples for the binary model in the punctuated equilibrium model (Romanelli & Tushman, 1994), in the exploitation of venture organisations (see e.g. Galbraith, 1982; Burgelman, 1983; Leifer et al.*,* 2000) and in continuous improvement (Imai, 1986).
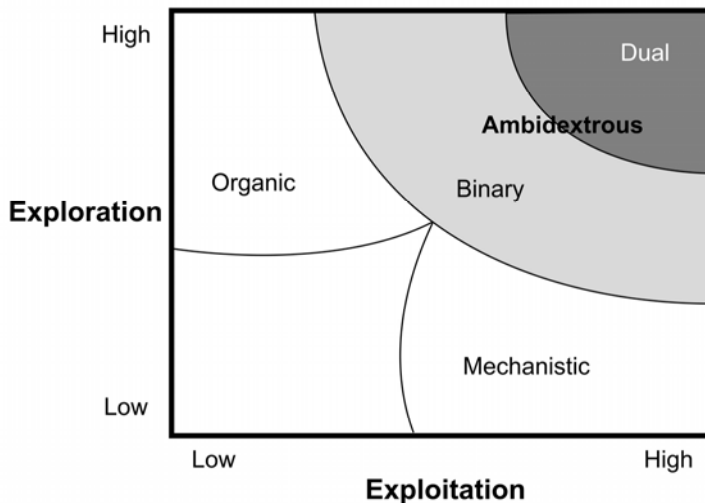
Figure 7. The dual ambidextrous approach. Based on Sutcliffe et al., 2000.

In the dual version, an organisation makes use of both exploitation and exploration with high intensity. For this dual corporate renewal process, Boer and Gertsen (2003, p. 811) also did not find very many useful theories. Even the three that they did find they considered very conceptual and noted that more knowledge would be needed. The three concepts they named were the innovative company (Bolwijn & Kumpe, 1998), the learning organisation (Senge, 1990) and strategically flexible production (Spina et al.*,* 1996).

Additionally, the 'fast strategy' proposed by Doz and Kosonen (2008) can be in some way regarded as a dual concept. The continuous change model proposed by Brown and Eisenhardt (1997) analyses dual continuous two-level change from the product development perspective. The Brown-Eisenhardt model, which can be regarded as a strategic model, only focuses on the chaining of products

and product development and does not as such fulfil the requirement for a generic, broad-based innovation analysis.

In addition to the aforementioned concepts, Westerman et al. (2006) and Bledow et al. (2009) consider the dual concept suitable specifically for the utilisation of resources in an organisation. Bledow et al. (2009) consider the change process outlined by Weick and Quinn (1999) – thesis, antithesis, synthesis – suitable for describing the innovation process more generally, since innovation is always born out of questioning something old. Bledow et al. believe that a continuous need for innovation (for the renewal cycle) is fuelled by an omnipresent conflict: synthesis creates new problems and thereby new antitheses. They contend that innovation is not identical to the original state; rather, it seeks to resolve the conflict between the original state and the new idea.

There are some mentions in the literature as to which factors help and which factors hinder the simultaneous implementation of both renewal strategies in the same organisation. Helping factors include a shared vision (Bledow et al., 2009), genuinely cross-functional teams (Boer & Gertsen, 2003), and incorporating change into the system and casting change as a reflection of the system (Boer & Gertsen, 2003). Challenges to implementing change using both approaches simultaneously in the same place may be posed by integration of knowledge creation within the organisation (Volberga et al., 2001), the suitability of individuals for creative ideas generation or their implementation (Bledow et al., 2009), and, for instance, the harmonisation of creative freedom and efficiency and collisions of top-down and bottom-up strategy concepts.

Notwithstanding the above, a large number of researchers and experts believe that any organisation may at any given time only have either an exploitation strategy or an exploration strategy in place (e.g. Abernathy & Utterback, 1978; Miller & Friesen, 1984; Tushman & Romanelli, 1985; Burnes, 2004). Positioning-oriented strategy discussion as led by Porter (1980) also warns of the dangers of getting 'stuck in the middle', presenting as alternatives differentiation, cost management and focusing.

In addition to outright denouncing of ambidexterity in the literature, there are also calls for flexibility regarding the simultaneity requirement in ambidexterity models in keeping with the punctuated equilibrium model (e.g. Miller & Friesen, 1984; Tushman & Romanelli, 1985) or the shared organisation structure. For instance, the ambidextrous model of Bledow et al. (2009) is not truly dualist at the individual level; instead, it applies the interpretation of ambidexterity proposed by O'Reilly and Tushman (2004) whereby the scenarios are separate at

lower levels of the organisation and integrated at higher levels, or else integrated at the team level, with individual employees being oriented towards one or the other.

In conclusion to the theory part of the present study, the dual ambidexterity scenario forms the theoretical basis for the empirical case study described next. No clear and tested models are to be found in the literature; there are only concepts in development, and therefore the theoretical framework is in itself only a model. Consequently, this is a fruitful situation regarding the potential research contribution, since there is a 'niche' for the study; in other words, there is a gap in the theoretical background and it would seem that there is a practical need for filling that gap. This is therefore identified here as a new theoretical angle requiring further research to which the present study may contribute.

5. Case study – identifying the requirements of the construction

In this chapter, answers to the research questions are sought through a case study. The research questions in their final form were formulated during the case study, conducted on action research principles (see e.g. Eisenhardt, 1989, p. 536) but have been reported in the study only in their final form, as shown above in the Introduction. The present chapter draws on the theory framework outline in the previous chapter, a combination of two strategies of corporate renewal implemented at the same time and in the same place.

The purpose of using this data is to identify internal and external demands related to corporate change that should be taken into account when building a corporate renewal construction. First, points to be considered in determining the requirements for the construction are compiled based on goal-setting in case study company A. Secondly, attempts are made to identify non-articulated needs and requirements by examining the achievement of a shared understanding during the company's development projects and the learning process. Some of the requirements were thus obtained directly from goal-setting in the development projects, while others are points whose discovery was enabled by the development project, the operations of the company and the operating environment. The aforementioned requirements are also examined with a consideration to whether these points have been found relevant in other companies. Evaluation of the findings aims to establish to what extent the needs and requirements identified are derived from the special characteristics of the specific project and to what extent they can be generalised to apply to other companies too.

Discussion of the data begins with a presentation of the implementation of the first development project in the case study company, developing an innovation management system. In the second development project, focusing on the piloting

of the innovation strategy process, the focus is mainly on the long-term corporate renewal angle.

5.1 Case study company A

Before continuing with the determination of the requirements for corporate renewal, a brief introduction is in order for the case study company referred to herein as A. This company develops and manufactures engineering machinery. It operates in an industry where technological advancement has hitherto been the principal competition factor. Until recent years, the global competition situation in the industry was stable. There were only a few serious players in the field, so the company was able to keep a close lookout for competitors' progress. However, as in many other technology-intensive industries, the importance of other markets, particularly Asia, has increased. The competition situation can no longer be assumed to remain stable; company A has begun to prepare for competition both from developed markets and from potential new competitors created through corporate acquisition. The importance of foresight is increasing not only as regards competition but also as regards environmental matters and legislation. The company, which has been accustomed to a stable operating environment, must in the future at the very least be able to react quickly to changes on the market and in the operating environment, and preferably be proactive in creating needs for change for itself.

So far, the company has sought competition advantage in technical excellence, emphasising the quality and reliability of its products as has been typical in its industry. Another competition advantage has been sought in flexibility through an efficient order-delivery process, which has enabled the company to provide better customised products than its competitors. By contrast, there is a measure of inertia in the company: functions and responsibilities have become dispersed in its organisation. The making of actual business decisions has been taken far away from those who are familiar with the markets, the operating environment and the competition situation. A fourth characteristic, which may be said to be typical of all modern companies, is that the job descriptions of employees have become fragmented, focusing only on the limited jobs at hand; in other words, resources for improving future operating capacity basically only exist in speeches given by management. The company cannot or does not know how to provide adequate resources for development.

5.2 Defining the goals of development projects

5.2.1 Goal-setting at the development project planning stage

The following is a description of how the development goals of case study company A were shaped during the development projects. The purpose of analysing these goals is to gain a better understanding of how change objectives have evolved. The development project proper at company A was preceded by an extensive planning period, during which the company sought a suitable desired state and target state for project implementation. The planning of the actual content of the project did not take nearly as long.

The planning stage began in March 2006 and ended in October 2006. Four planning meetings were held during the planning stage, and initial interviews with key employees were held on two days (a more detailed log of activities in the planning stage is given in Appendix A). Even at this early stage, most of the communication outside the meetings was done using e-mail.

During the planning stage, the innovation development project goals were further specified to some extent. Table 6 is an overview of this specification process for the project performance goals and for the development project means and methods. There seemed to be no attempt to distinguish between the development project performance goals and the future vision. The goals and/or target state seemed to indicate a general direction in which the development project was expected to take the matter at hand rather than concrete, identified targets expected to be attained in the course of the project.

Table 6. Development project implementation and performance goal-setting.

Stage	Vision / target state	Means and methods desired
March 2006	Develop innovations and strategies.	Benchmarking, group work, compiling existing ideas and processing them into innovations.
June 2006	Raise innovation management to a new level to ensure global competitiveness through an international network.	1.5 year stepwise innovation and strategy process development project.
August 2006	Create new innovations more frequently and more quickly through systematic improvement.	Networking, creating an innovation infrastructure, developing innovation management, using Group resources, using customer processes as a source of innovation, combining technology roadmaps with the technology strategy.
September 2006	Lots of people who can produce new solutions.	Best practices workshop, benchmarking, technology strategy cases, different approaches and tools.

During the planning stage, the target state was narrowed down from a general development of innovation and strategy matters to a comprehensive development of innovation management, and the company representatives in the core group eventually translated the goal into concrete terms at the end of the planning stage: to increase the number of people who can produce new solutions.

5.2.2 Focusing the goals as the development projects progressed

Focusing the goals of the development projects did not stop with the planning stage; indeed, the core group and its members went on shaping both the general target state and the performance goals of the development project and the means and methods to be used later on in the first development project. The goals were even further specified during the second development project, which focused on the development and piloting of the innovation strategy process. Table 7 illustrates the development of the target state in the course of the development projects.

Table 7. Evolution of the target state in the course of the projects.

Stage	Vision / target state	Means and methods desired
November 2006	From ideas to solutions. Balance between incremental and radical innovations. Solution partner.	
January 2007	Systematisation of technological development; opportunities in services, knowledge and business models; organisation and upkeep of innovation management; commitment of Group management.	
February 2007	Create new innovations more frequently and more quickly through systematic improvement.	Increasing the number of people producing new solutions and strengthening the role of the technology centre concept.
May 2007	Key partners known, company seen by others as an interesting partner, employees can focus and the group supports them, company is known as an innovation organisation, roadmaps are linked to the environment, opportunities are grasped, services and business as innovation opportunities alongside technology.	
November 2007	Ensure continuous corporate renewal, react rapidly to changes in the operating environment, ensure future competitiveness.	Determining and focusing core competences, success factors and key factors; joining the technology strategy to the business strategy; including foresight; commitment of the project group; management support; visualisation; homework.

The target state broadened as the development project progressed, and at the end of the planning stage the goal – to increase the number of persons producing new solutions – in fact became a tool for attaining the goals set. What is interesting is that the target state was further specified spontaneously by various members of the core group. New versions of goals were presented at core group meetings and emerged in slide shows presented in various contexts, such as in explaining the development project to the Group management and to parallel business units.

The core group members contributed towards the attainment of a shared understanding among the participants in re-defining the target state in the development project. What was originally an invention-oriented goal in the planning evolved into a goal for developing idea-generating processes and for balancing their results between incremental and radical ideas. In May 2007, when the project team had already spent half a year discussing the broad field of innovation management in workshops, the goal had come to include a vision of an organisation that supports innovation (innovation culture), a vision of broad-based innovation (including service and business model innovations) and the innovation network aspect.

In the final reaches of the development project, the goal may be considered to have reflected the company's innovation agenda rather than the performance goals of the project itself. At this point, the goal of ensuring continuous corporate renewal in the organisation was set. The range of means to be used had by this time been specified in quite some detail, covering the field of innovation management very widely.

From this process of shaping goals, the following requirement for the building of a corporate renewal construction emerged: *a vision of the target state continuously updated through a shared understanding*.

5.3 Case A, 1st development project

The learning process at case study company A serves to describe the entire field of innovation management. The purpose of the following description is to identify points that are important in analysing the overall concept of innovation management with reference to the first research question: What are the principal factors that a company must take into account in innovation management? Likewise, further requirements for the corporate renewal construction are sought in the learning process at company A.

The purpose of the development project at case study company A was to find an innovation management system suitable for the company. The company was keen to find a development model that would have been well tested and used in a number of other companies. In particular, the business unit management would have wanted to implement the innovation management programme in the same way as the previous, successful and commercialised continuous improvement programme for suppliers. Besides, at the beginning of the first development project the company would have liked to benchmark well-functioning models successfully adopted by companies in similar markets and operating environments.

However, it seemed impossible to find a comprehensive development programme of the kind envisioned, where a company could be transformed into a creative and innovative business in a short time and with low resources. Most solutions geared towards the theme of innovation focus on individual creativity or enhanced idea generation. Indeed, it would not be easy to find a comprehensive innovation management system that is 'progressive' and capable of being transposed to a different environment as is. Some five years ago, Finnish pioneers in innovation management began to develop the various areas of innovation management methodically, but hardly any comprehensive system has emerged (Apilo et al.*,* 2007).

In the end, the journey towards the original and quite challenging goal was begun by small steps and piloting in the planned development project. Because of this, the project was designed as a series of modules. These modules focused on areas of innovation previously identified in the earlier research project: innovation structure, innovation resources, innovation, strategy, and innovation process (Apilo & Taskinen, 2006). The aim of the development project was to leverage existing competence in the company as far as possible and to learn new things by implementing pilot projects in the course of the development project.

The following is a description of how the development project at the case study company progressed and how the company achieved a shared understanding of innovation management.

5.3.1 Innovation management modules

The first development project at case study company A focused on potential for corporate renewal in the various areas of innovation management, which were reviewed one by one through introductory talks and workshops. Principally, the development project progressed with the core group meeting once or twice be-

tween project group workshops to plan future workshops and to evaluate project progress and the results achieved.

During this first development project, which ran from November 2006 to May 2007, 11 development meetings and 8 workshops were held, and one benchmarking visit was made to a company considered innovative (see the development project log in Appendix A). There was also a lot of virtual contact among the core group outside the meetings and workshops. A substantial number of memos, plans, suggestions and comments were passed back and forth between the core group researchers and company representatives in the core group. The researchers also e-mailed one another to comment on and discuss meetings, documents and project progress in general. With hindsight, the communications between researchers were documented better when their offices were in different cities, as compared to a situation where they would have been in the same room or along the same corridor.

The workshop themes during the first development project were: motivation for innovations and technology strategy; innovation management; foresight; innovation strategy; roadmaps; innovation process; competence management and innovation culture; and open innovation (see also Appendix A). In the introductory talks, an expert in each area brought forth views from the research community concerning what the more advanced companies are doing now, rather than reviewing discussions in the theoretical literature. The guest speaker at the project group's first workshop (motivation and commitment) discussed multiple aspects of the long-term economic impact of innovations, broad-based understanding of customer value, and technology strategy more generally. Foresight workshops also involved experts from outside the project and core groups. There was also an expert at the roadmap workshop to discuss the method and guide the work of drawing up two pilot maps. The researcher gave an introductory talk at the other workshops (innovation process, innovation strategy and competence management).

Table 8. Innovation management development project modules.

Purpose / goals	Sources
Initial workshop Project group motivation and commitment to the goals of the project. Shared understanding of the impact of innovations on long-term success, of customer value and of the purpose of the technology strategy.	Moore 1991; Kim & Mauborgne 2005; Utterback 1994; Marquis 1969; Martins & Terblanche 2003; Amabile 1997; Roos et al. 2005; Stabell & Fjeldstadt 1998.
Innovation management Shared understanding of what innovation management is about. Evaluation of innovation management practices in the company.	Apilo & Taskinen 2006; Apilo et al. 2007; Tidd et al. 2005; Hendersson & Clark 1990; Quinn 1985.
Foresight Shared understanding of foresight and scenarios: the future does not progress in a linear way, the future can be created, there are many time scales for foresights, scenarios are tools for finding new perspectives.	Aaltonen 2007; Kokkonen et al. 2005; Leppimäki & Meristö 2007.
Roadmaps Practicing making technology roadmaps.	
Innovation strategy Shared understanding that there are different strategy concepts and strategy dimensions; competitive advantage can be sought in many directions, using an innovation strategy framework and portfolio management as tools, for instance.	Mintzberg et al. 1998; Apilo et al. 2007; Santalainen 2005; Hambrick & Fredrickson 2001; De Wit & Meyer 2005; Kim & Mauborgne 2005; Wheelwright & Clark 1992.
Innovation process Shared understanding of the current front end of the innovation process, its concrete development objects and background to successful innovations.	Apilo & Taskinen 2006.
Competence management and innovation culture Shared understanding of the organisation's learning potential, supporting this, and defining core competences.	Nonaka & Takeuchi 1995; Nonaka et al. 2000; Apilo et al. 2007; Crossan et al. 1999; Argyris & Schön 1978; Kim 1993; Kamensky 2006.
Open innovation Shared understanding of the opportunities, challenges and models of open innovation.	Chesbrough 2003; Gassmann 2006; Van Aken & Weggeman 2000; Chiesa 2000.

Table 8 shows the purpose and goals of each workshop in the first development project. The bibliography references are to works from which models and theories were used at the workshops. All workshops except for the innovation process workshop contained a theoretical and a practical part, the project group working on the issues together doing exercises. The innovation process workshop focused on the front end of the innovation process, identification of roles

involved, and role allocation and process progress related to development proposals. 'Best practices' and theories for innovation processes had already been reviewed in the first two workshops.

5.3.2 Preliminary innovation strategy framework

During the first development project, a preliminary model for analysing the innovation strategy of company A was created. This model is based on a dialogue between theory and practice, but the need for building it was derived from the will of the core group at case study company A to understand the innovation strategy. What is an innovation strategy, what questions does it answer, and what knowledge is needed to put it together?

In theoretical discussion, innovation strategy is generally only mentioned in the context of regional or national innovation policy (e.g. in the National Innovation Strategy, Ministry of Employment and the Economy, 2008), not with regard to the renewal of an individual company or group of companies. Another perspective on innovation strategy is to see it as an expansion of technology strategy, which will lead to elements of the innovation discussion migrating to the technology strategy discussion. This was done for instance by Burgelman et al. (1988), who created an evaluation framework for innovation competences. In this innovation strategy framework, the dimensions examined are: understanding the technological environment; strategic management capacity; structural and cultural context; understanding competitors' innovation strategies and the development of industrial sectors; and availability and allocation of resources.

Justification for introducing a company-level innovation strategy concept may be sought in the fact that the concept of innovation management has expanded (e.g. Francis & Bessant, 2005) and in innovation management being seen as a process to be managed (Davila et al., 2005; Tidd et al., 2005; Miller & Morris, 1999); as such, it most likely also needs to have a target state and identified means for achieving that target state. Again, a technology strategy, which is a commonly used company-level tool, does not pay sufficient attention to corporate renewal that is not technology-driven.

The starting point for building an innovation strategy framework suitable for case study company A was the strategy diamond (Hambrick & Fredrickson, 2001), whose components are arenas, vehicles, differentiators, staging, and economic logic. In this model, *arenas* refers to issues such as which product categories and segments and in which geographical areas the company operates, what

its core technologies are and what its competences are at each point in the value chain. *Vehicles* refers for instance to internal development, joint ventures, licensing and corporate acquisition, i.e. means of corporate renewal. *Differentiators* include factors such as corporate image, customisation, pricing, design and so on. *Staging* refers to the prioritisation and timetabling of development measures. At the centre of the diamond is *economic logic.*

This model proposed by Hambrick and Fredrickson (2001) was taken as a starting point for exploring factors that should be taken into account when planning corporate renewal, specifically from the perspective of internal development, not so much of alliances or corporate acquisitions. Besides the strategy diamond, input was sought from factors that affect the content of the innovation strategy, such as the resource-oriented and market-oriented approaches mentioned by De Wit and Meyer (1998). In view of the discussion prompted by the Blue Ocean Strategy (Kim & Mauborgne, 2005), markets were considered not just from the adaptation perspective but as opportunities too. The focus thus came to be on the need for change, opportunities and resources. Resources were considered to include competences, abilities and knowledge, in a *combination of the resource-oriented and knowledge-oriented approaches*. The following is a discussion of the three points that in innovation strategy development describe sources of competitive advantage from the perspective of opportunities.

Opportunities in the model are new competition factors with which the company can differentiate itself. It is noted that new things are generated in states of transition and change. This interpretation of opportunities matches the exploration viewpoint in the terminology of March (1991). Changes in customer needs constitute an opportunity. Identifying such changes requires, in particular, anticipation of users' future needs through various user-oriented development measures. Another type of opportunity is technological advancement, which is well established in traditional innovation research, particularly innovation policy research. According to the dynamic innovation model proposed by Utterback (1994), new opportunities and possibilities for new actors in any sector are created at points of technological transition. A third and newer type of opportunity comes from changes within industries. This means the kind of trend observable within several sectors where emerging types of business within and at the fringes of a sector no longer conform to the conventional types of logic in that sector (e.g. Lappalainen et al.*,* 2010). An example would be printed intelligence, a technology for incorporating electronics in paper and packaging. The operating logic of this business is completely different from that of the traditional paper

industry. Another example is industrial services such as capacity services, whose revenue logic differs from that of the maintenance services previously delivered by the same service providers (e.g. Salkari et al.*, 2007*).

Identifying *needs for change* refers to activities where a company compares its target state with its present state. This approach is largely based on resource-oriented strategy theories (e.g. Penrose, 1959; Barney, 1991). It is considered that needs for change can be analysed for instance through supply, technology or product development portfolios. Needs for change may also derive from operating efficiency, for instance the need to improve profitability and performance.

In this analysis, the resource-oriented approach has mainly to do with defining and improving core competences (Prahalad & Hamel, 1990). The company chooses an innovation strategy that allows it to make best use of its knowledge, competence and other resources. In addition to competence in technology, marketing and processes, the ability to change is an important factor in corporate renewal. Tushman and O'Reilly (1996) remark that in the face of a radical technology change old-established companies are faced with a tough challenge, as they not only have to learn new things but to unlearn old things as well, while managing two sets of technology in an atmosphere of uncertainty during the transition. For the purposes of the strategy framework in the study, this core competence perspective should be augmented with two further dimensions, one of which has been recently discussed in the context of open innovation (Chesbrough, 2003): how good the company's ability, opportunity and possibility for using networks are.

Practical experiences from development projects prompt the inclusion of consideration of what development resources the company has available and how accustomed the company is to development efforts. There are numerous counterexamples of the delaying and derailing of development efforts for lack of development resources. Tushman and O'Reilly (1996) further assert on the basis of their research that those companies that continually adapt to changes in their market and competition environment are better placed to handle both major and minor changes. These companies know how to scale their response and do not seek to cope with major changes by implementing incremental development measures within the company.

In addition to the three aforementioned sources of competitive advantage, the present innovation strategy framework incorporates dialectic interaction with the business strategy. An innovation strategy cannot be a separate column in the

company's operations; it should be outlined in interaction with the business strategy.

The key contents in the preliminary innovation strategy framework (Figure 8) were customers, level of radicalness, types of innovation and competition.
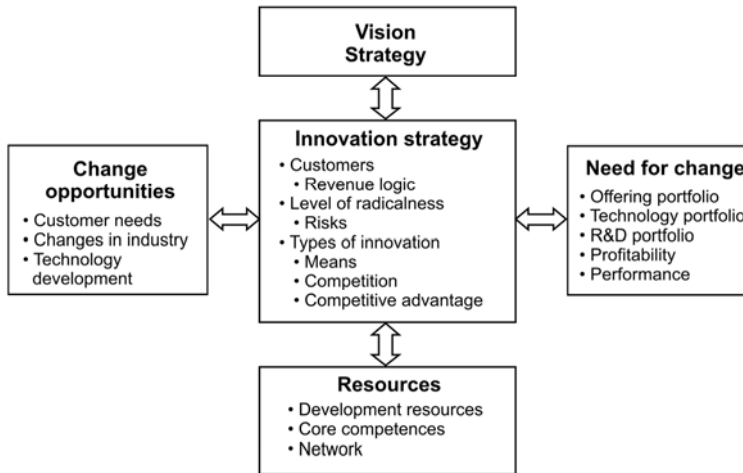
Figure 8. Preliminary innovation strategy framework.

The defining of customers is seen as an active stage which in itself to some extent determines the type and radicalness of the innovations sought through the possible emergence of new markets. For example, the competences or resources of the company may be better suited for other customers, or some customer segment may grow faster than others or be otherwise interesting for the company. Defining revenue logic is considered an important part of customer definition.

Determining the level of radicalness was considered important particularly for internal communications so that there is awareness within the company of whether it is minor improvements or a major change of course that is being sought. The level of radicalness is influenced by the company's capacity for risk-taking, the gap between current competence and the competence needed for achieving the target state, available resources, how challenging the vision is and how prepared the company is for change.

In strategy outlining guided by business management consultants and internal developers, tools play an important role – so much so that a well-productised

tool may become more important than a loosely defined strategy outlining process. Examples of strategy tools that have acquired a life of their own include the balanced score card (BSC) (Kaplan & Norton, 1996), scenarios and roadmaps. With regard to choosing where to apply strategy tools, Aaltonen (2007) for instance outlines usages "spatially".

Incorporating strategy tools in the strategy framework makes the abstract schematic more familiar and more concrete for those involved in practical strategy outlining. Shaping of the innovation strategy framework was thus continued by adding suitable strategy tools (Figure 9). Tools usable for identifying opportunities include customer needs analyses and other user-oriented methods such as focus groups (Hyysalo, 2009; Lappalainen et al., 2010), scenarios and technology roadmaps. Identifying needs for change can be supported through supply, technology and product development portfolio analyses, benchmarking of best practices, and roadmaps. Resources can be evaluated with surveys or competence classifications.
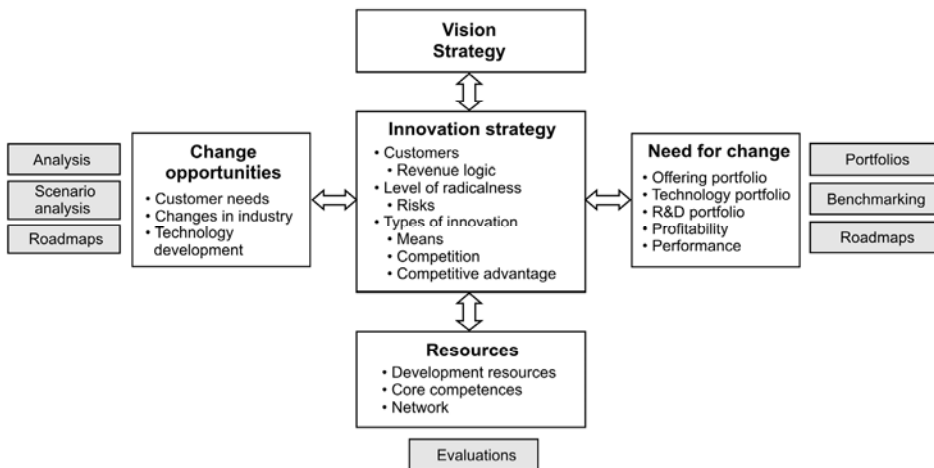
Figure 9. Tools in the preliminary innovation strategy framework.

The innovation strategy framework described above was presented to the project group at case study company A as part of the introductory talk on innovation strategy. It was received with mixed emotions. Those who looked at the big picture liked the variety of angles provided by the model, but those who were expecting a ready-to-implement model could not see any direct added value in the framework. They also did not find the technology strategy checklist that some of them were looking for. Even so, there was one member of the core group, whom

could be described as a change agent in the organisation, who considered the framework clear and suitable for the company.

Leaving the preliminary innovation strategy framework for the time being, the next point of interest is the development and piloting of the innovation strategy process at case study company A. The framework will reappear in building the corporate renewal construction in chapter 6. From the above, the following requirements are added for building the construction: *the simultaneous identification of opportunities and needs for change*, and *taking into account the vision* and *the resource/competence dimensions*.

5.3.3 Analysis of elements of innovation management at case study company A

The following is a discussion of how innovation management in case study company A was analysed as part of the outlining of the innovation management structure as described above. The innovation management evaluation tool (Apilo & Taskinen, 2006; Apilo et al.*,* 2007) developed in the earlier research project was used to support the analysis at the beginning of the first development project (Appendix C).The development project core group conducted an evaluation of five areas of innovation management as a sort of self-assessment that was then verified at a project group workshop. The self-assessment was conducted again at the end of the second development project. These two assessments illustrate the progress achieved in innovation management in the company over a period of two years. Figures 10 and 11 show summaries of these self-assessments.
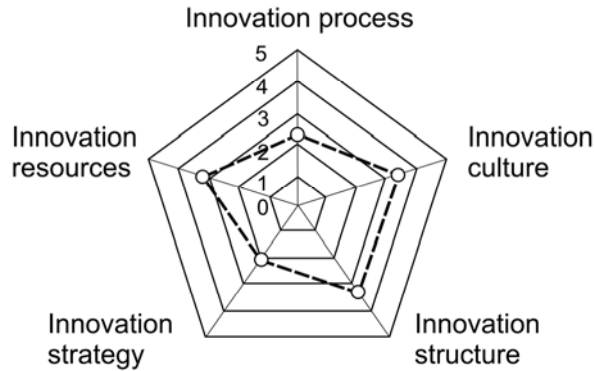
Figure 10. Results of self-assessment at the start of the first development project.
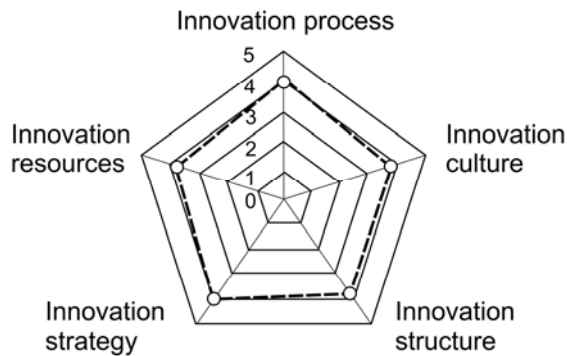
Figure 11. Results of self-assessment at the end of the second development project.

The result of the assessment may be regarded as a rough overview of the state of innovation management at the company. It illustrates what things are considered typical of innovation efforts in both the theoretical and the practical business management literature. What was interesting was to realise that in comparing the two surveys, from the beginning of the first project (albeit following a relatively long planning period) and from the end of the second project, progress is discernible in all five areas. Particular improvement is shown in the areas of innovation process and innovation strategy. These results are reviewed in slightly more detail in Table 9 for all five areas of innovation management at both points

in time (at the beginning of the first development project and at the end of the second).

Table 9. Development of innovation management practices in the course of development projects at company A.

	Beginning of 1st project	End of 2nd project
Innovation process	Product process functions smoothly, but front end of innovation process not described. Idea generation unsystematic, but processes in place for initiatives and inventions, and these produce results. Product process is cross-functional, but responsibility rests heavily with R&D. Domestic research and supplier partners participate in the innovation process. Innovation process not evaluated and has no designated leader.	Innovation process includes not only product process but also compilation, evaluation and further processing of ideas. Innovation process is networked within the company and beyond the organisation. Customers are involved in development more than before. Evaluation of the innovation process introduced and a designated leader appointed.
Innovation culture	Employees are encouraged to present ideas, to experiment and to come up with ways of solving customer problems. Idea generation is invention-oriented, and incentives are not conducive to group work. Training is encouraged.	Employees are encouraged to present ideas, to experiment and to come up with ways of solving customer problems. There is more encouragement than before towards learning and sharing knowledge on multiple levels. Incentives remain individual-oriented, however.
Innovation structure	Cross-functional teams interact extensively in the process organisation, and the organisation does not limit the progress of innovations. Works for domestic innovation networks.	Interaction among cross-functional teams has been increased in the process organisation. Innovation responsibility has been shared throughout the organisation, and the company is more actively engaged in innovation networks.
Innovation strategy	There is no innovation strategy, and technology programmes and portfolio management are not used. Core competences have been identified.	Innovation strategy drawn up, and it governs innovation management to some extent. Portfolio management practices have been introduced, and technology platforms, product roadmaps and technology roadmaps are used. Searching for new opportunities is now increased.
Innovation resources	Continuous personnel development is supported, and domestic innovation networks are used. A wide variety of funding sources is employed.	Continuous personnel development is supported, and domestic and also international innovation networks are used. A wide variety of funding sources is employed. More attention is paid to knowledge management and to diverse recruitment (training, experience).

The result of the innovation management comparison between the beginning of the first development project and the end of the second at company A was used as a benchmark for evaluating innovation management practices at companies B to E (see section 5.3.4). Taken together, these evaluations respond to the first research question: *What are the principal factors that a company must take into account in innovation management?*

5.3.4 Comparing innovation management practices at case study company A to other companies

The following describes the compiling of data to compare to innovation management practices at company A. The first thing to be identified is a short checklist of best practices. This list was featured in the introductory talks at the first two workshops in the first development project at company A. A second comparison was established between case study companies A and B. The development project core group from company A paid a benchmarking visit to observe innovation management practices. The third comparison involved comparing innovation management practices at company A to those of four other companies (B, C, D, E). Figure 12 illustrates the three comparisons.
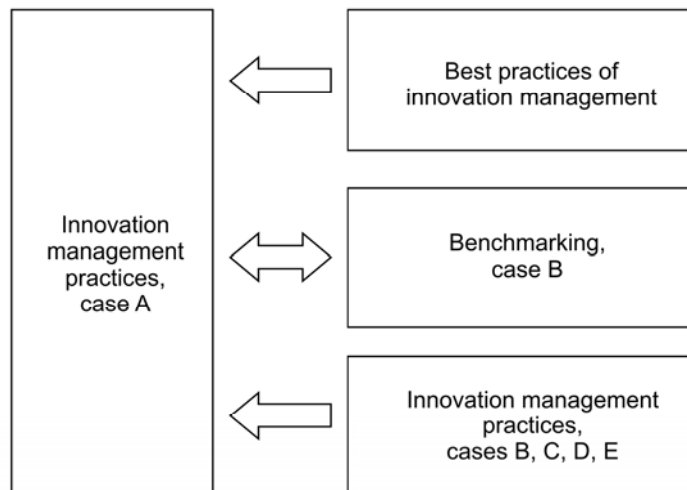
Figure 12. Comparative positions for innovation management in case A.

The first comparison is to the best practices considered in the workshops. The principal purpose of the first workshops in the first development project was to motivate and commit the members of the project group to the development project. In the first workshop (international matters), the guest speaker referred to innovation management practices at several international companies. In the second workshop (innovation management), the introductory talk featured domestic examples, chosen so as to complement those discussed in the first workshop. Table 10 lists examples cited in both workshops. Though, a large percentage of the best practices and examples were discussed at a general level or without mentioning the name of the company; these are not included in the table.

Table 10. Examples of innovation management practices at various companies.

Example	Implementation
Google, Apple, Nokia, Evian	Successful innovations that have motivated others
SoupatHand, Starbucks, Nivea for men	Broad concept of innovation, not only technology-driven
Unilever	Innovation process
Apple	Design
HP	Technology
Nike	Brand
BMW	Team structure
3M	Measurement
Black & Decker	Understanding of customers
Kone	Systematic process + questioning; business model, search for management innovations
Metso	Cost-efficiency and understanding of customers

This list of best practices focuses on large multi-national corporations, particularly those producing consumer goods and services. Nevertheless, the project group at company A considered the examples inspiring and were not bothered by the fact that they were not derived from a similar industry sector or a similar market to those of company A.

Table 11 illustrates the main features of the next two comparative positions. All the five companies featured are Finnish (or business units operating in Finland), and their R&D functions are principally located in Finland. They all operate on a technology-intensive B-to-B market, and each has its own product. Before comparing all five companies, a brief description of the benchmarking visit to company B is in order.

Table 11. The case study companies compared.

	Company A	Company B	Company C	Company D	Company E
Personnel	20 000–50 000	1 000–5 000	100–1 000	10 000–20 000	20 000–50 000
Description	Company with strong development competence on the technology market	Avoids risks through incremental technology innovations	Youngish technology innovator	Technology player expanding its innovation network	Company seeking growth through services using a network of subcontractors
Functions examined	Functions in Finland	Entire company	Entire company	Entire company	Entire company

During the development project at company A, the core group paid a benchmarking visit to a company regarded as an innovation pioneer, referred to in the study as company B. This company B is the same as the company B in the five-company comparison. Company B has in several public contexts announced that it is systematically developing its innovation efforts, which is why the development project core group at company A decided to select it as the first company to visit. In the event, no further benchmarking visits were undertaken, even though benchmarking was identified as one of the most important learning methods at the project planning stage. Several international benchmarking visits were planned, but apparently the need for benchmarking decreased in the course of the development project. Although referred to as benchmarking, this was actually a single three-hour visit in the spirit of transparency to discuss innovation management and the innovation management system; it was not a thorough and systematic benchmarking process proper.

Company B operates in a different industry sector than company A, and its customer base consists of various companies and public bodies. Both companies are technology-oriented. During the visit, representatives of companies A and B shared their experiences on innovation management and their respective innovation systems. Company A gained good practical examples of various areas of the innovation system and learned of experiences in the development of the innovation system at company B.

The notion of holding idea competitions, and the successful compiling of ideas in general, were taken away as a most useful lesson by the company A development project core group. Company B carried out competitions and cam-

paigns to focus ideas generation and to make it simpler to reward teams. In addition to experiences in gathering ideas, the core group members valued the insights they gained in portfolio management and foresight practices.

The third comparative position involved an evaluation based on an innovation management checklist of companies B, C, D and E similar to that conducted for company A. Even so, the data concerning the four latter companies were compiled through interviews, and the information is not entirely compatible with that gathered at company A through action research in the course of the development projects. Secondary data were used for evaluating innovation management at the other four companies in addition to the interviews, and further information had been collected in earlier development projects. The charting of innovation management practices at company A is a more accurate reflection of the actual practices and processes, since this was conducted in cooperation with the development project core group and the project group.

Comparing innovation management at company A to that of the four other companies, which occupy a similar market position and have similar strategy outlines, the practices and processes at company A were largely similar to those of the other four (see Table 12 for a comparison of elements of innovation management at the five companies). This is particularly true after the second development project at company A, at which point the front end of the innovation process was better organised and new practices had been established. As regards innovation culture, company A is fairly well placed in comparison with the others, but particularly compared to C and B there is a distinct lack of participation and presence by Group management. Naturally, in the cases of B and D business unit boundaries prevented dissemination of practices, solutions and knowledge, but at least at those companies the Group management sought to integrate rather than segregate.

The comparison shows that the product process works well at all the companies. They all have similar stage-gate product processes run by cross-functional teams. There are some differences in the front end of the innovation process: C was the only company with an extensive history of methods and practices developed for this purpose. The companies are aware of the importance of the front end of the innovation process, but they were still at the ideas contemplation level, requiring more work on leveraging ideas and joint further processing. There were also differences in how customers and end users participated in the front end of the innovation process and in how easy or difficult the companies

found to get customers, particularly corporate customers, to describe their plans and future needs.

Broadly speaking, the innovation process and particularly innovation strategy and network usage seem to be under development at other companies besides A. Company C was the only one to systematically employ an innovation strategy to steer innovation management. Roadmap, programme and portfolio practices varied slightly from one company to another. Apart from C, B had fairly well established practices for implementing strategic innovation management. At both B and C, the innovation strategy had just come up against a challenge. At B, the senior management, which was largely in charge of the innovation strategy discussion, was replaced. At C, in stead, the significant emergence of new customer segments forced the entire company to reorient itself. As operating practices that worked for old customer segments were no longer applicable, C was forced to scramble to find new practices. Likewise, company A also had faced a similar adaptation challenge when it had a recent history of ownership changes. There was residual cultural inertia at A, showing itself as a nostalgia for the old, smoothly running practices.

Further differences were identified in innovation culture. All of the companies considered themselves innovative, but risk avoidance, incremental progress and cost-cutting are hardly conducive to radical departures in innovation. Learning by doing is allowed at A and at C. The only real radical departure had been undertaken by C, which was seeking new potential in new customer groups. A and D had certain ongoing experiments regarding customer groups. Nevertheless, the five companies had largely similar strategic outlooks and logic for operating on the B-to-B market with relatively low resources (in the global context) but employing high technology and aiming at a narrow, focused customer segment. Company C had a corporate culture younger than that of the others, which showed itself as a more dynamic way of viewing the company and analysing the market. C aimed to shape its existing market actively, while in the other companies' business unit boundaries constituted obstacles for the distribution of knowledge and learning.

From the point of view of the innovation network, all five companies made use of outside actors. International research was on the increase in addition to cooperation with domestic research bodies and customers and the delivery network (especially in the case of A). There were differences mainly in whether to engage in joint development or to outsource development activities; company E, for instance, outsources precisely specified research tasks. Based on this rough

outline and comparison, for most of these companies linking to the customer and user interface and better leveraging of various kinds of joint operations would yield additional resources and help distribute risks even in the case of radical innovations alongside incremental development.

Table 12. Comparison of innovation management practices at five companies.

A		B	C	D	E
Innovation process	Shown in Table 9.	Innovation process well understood in the organisation, some differences in the process between business units. Stage-gate product process. Innovation process front end seen as a bottle neck though several methods and tools developed for it.	Stepwise product process is systematic and efficient. Importance of innovation process front end identified, and some individual processes introduced or in development. Converting market information into usable form is seen as a challenge. Major users are polled for their future needs, and brainstorming sessions are held. It is a challenge to get information on customers' future plans and scenarios.	A stage-gate product process has been described, and product projects are principally implemented according to it. Ideas generation is being made more systematic and transparent, and customers and research bodies are now involved. The sales and maintenance organisation is closely involved in bringing up customer needs in product development. Customers describe their future needs. Product and service development has been integrated for a long time; no barriers. The innovation network plays a significant role; for instance, some suppliers proactively develop new solutions.	Innovation process seen as a process of central importance. The process varies somewhat between business units. The process includes research and roadmap processes. The innovation process front end is considered critical and the most important. The process was originally developed for product development, but also applied to service development. Certain major customers participate in the innovation process, and there is some development cooperation with suppliers and research partners.

Innovation culture	Shown in Table 9.	Built up around a radical technological innovation, this company simultaneously wants to focus on innovation and on risk-free business close to its existing core business. Learning is encouraged. Efforts are made to understand customers, but there is not a lot of contact with them. Inventor-oriented organisational culture.	A company considered innovative externally, but not by its employers. Research investments have increased. A dynamic and young corporate culture makes troubleshooting quicker. Own research projects are basically encouraged, but in practice the workload prevents free innovation. Errors are seen as learning opportunities, and after every development project a review is conducted of what was learned. Mainly product innovation.	Innovation is supported, and employees are encouraged to think and act creatively. Innovation is principally seen as technology innovation, so R&D plays a key role.	Innovation is seen as a cornerstone of the business. However, the focus is on incremental technological advancement. Innovation is seen to be concentrated with a handful of innovators.
structure	Shown in Table 9.	Cross-functional teams implement product development projects. Solution knowledge could be collected and distributed more systematically. Innovation networks play an active role.	Matrix organisation where cross-functional teams implement product development projects. Data from implemented projects are collected and utilised – some success stories in this respect.	Project and solution knowledge is not systematically collected. Business units are independent and do not communicate much. Some cooperation with competitors. Attempts to systematise innovation management and to create shared Group-level practices.	Process organisation with cross-functional teams. Strong culture of cooperation within the company.

Innovation strategy	Shown in Table 9.	Innovation strategy incorporated in the business strategy at some level, governing portfolio management, roadmaps and scenarios. Senior management participates in the product and technology roadmap process.	Innovation strategy not altogether clear now that the old, well-focused approach has given way to new innovations and new markets. New customers are not known well enough. The company knows how to develop technological solutions required by existing customers using the old approach. Drawing up roadmaps is a biannual event in the strategy process.	Drawing up an innovation strategy is being practiced.	Technology platform development is pursued, and a roadmap process is used to determine goals for development projects and a target state for product development steps.
Innovation resources	Shown in Table 9.	Innovation network used actively, also internationally. A wide variety of funding sources is employed.	Employee innovation is supported through training. The aim is to recruit employees with diverse backgrounds. Some research is jointly conducted with research institutions.	International research used in the innovation network in addition to domestic partners. A wide variety of funding sources is also employed.	Employee innovation is supported through training. The supplier network is leveraged to a considerable extent. Much of the product development has been outsourced, with only project management retained. Research organisations only given small, clearly defined tasks in development projects.

In the above comparison, innovation management practices at companies A, B, C, D and E were compared to the innovation management target state that was outlined in the first version of the innovation management checklist (Apilo & Taskinen, 2006) and its more advanced version (Apilo et al., 2007), and in similar classifications and sets of indicators (e.g. Tidd et al., 2005) and descriptions of best practices (Cooper, 1983; 1999; 2008; Belliveau et al., 2002). On the basis of this comparison, the following requirements for the corporate renewal model construction were identified: *a suitable balance of incremental and radical innovations,* and *innovation combined with low risk*. Thus, cases B and C pointed out the *need for managing major internal and external changes*. Generally, *an innovation process must have an efficient implementation stage* (product process + development of other types of innovation) and *more accurate outlining of front end of the innovation process.*

5.4 Case A, 2nd development project

The search for empirically motivated requirements for the corporate renewal construction is here continued with a discussion of the second development project at company A. The purpose of the second development project was to develop and pilot the innovation strategy process. The learning process and its results generated further requirements for the corporate renewal construction.

After completing the first development project, the core group at company A came to the conclusion that had already been prompted by the charting of elements of innovation management at the beginning of the project and in the workshops during the development project: the strategy is the area of innovation management that requires the most development.

This strategy was known as the technology strategy at the company, although it was not intended to be limited to technology alone. It was never the intention to launch a traditional technology strategy process; other forms of corporate renewal were also to be taken into account. Hereinafter, this strategy framework will be referred to as the innovation strategy, because this better describes its content and the piloting process involved in the establishing of a first shared vision.

The second development project was begun almost back to back with the first one, and one pilot subject (a virtual brainstorming and idea evaluation system) remained in use between projects. Specifically, the second development project ran from October 2006 to November 2008, but the final evaluations were con-

ducted at an evaluation meeting in March 2009 (see the development project log in Appendix A). This second project also progressed with alternating development meetings held by the core group (7) and workshops held by the broader project group (6). The membership of the project core group was almost the same as in the first development project. Some cross-functionality was added to the project group: marketing, maintenance and manufacturing were better represented alongside R&D.

The innovation strategy piloting process, illustrated in Figure 13, was planned to last just under one year. The project group met for a half-day workshop about once a month. The workshops were designed so that in the course of the process the group could examine both minor improvement needs in the short term and future challenges with a longer perspective and in non-linear ways. This exploration of development trends and potential consequences, akin to foresight, was considered fruitful by the project group. The intention was that the future challenges, trends, agents, etc. compiled during the pilot round could be analysed in more detail at the company in the following year, focusing the development effort on foresight.
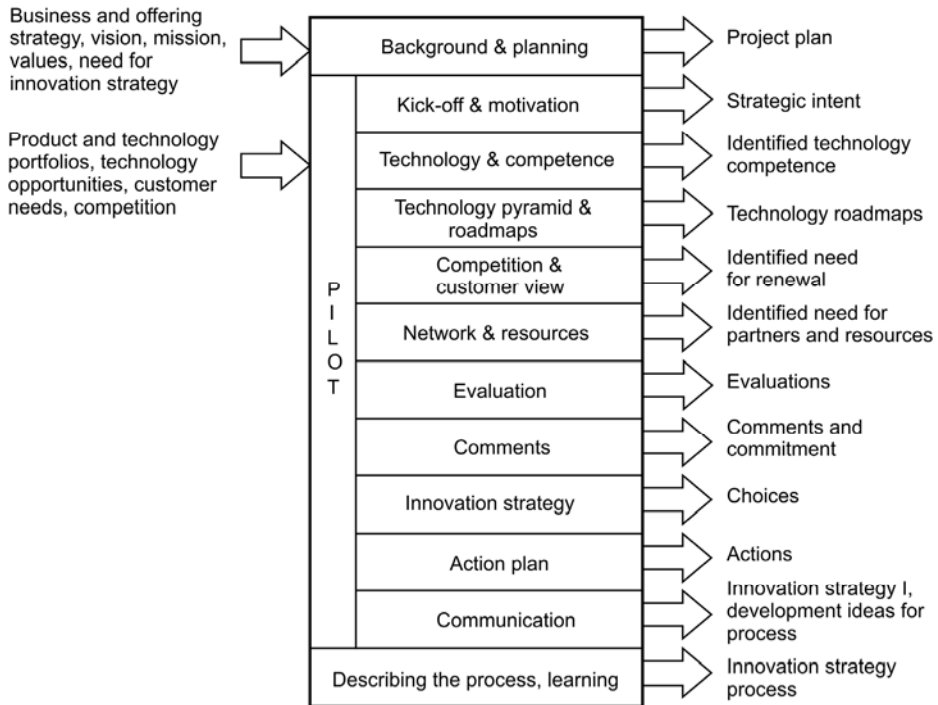
Figure 13. Progress of the innovation strategy process during the second development project.

The implementation of this second project differed from the first in that whereas in the first the various development pilot sub-projects progressed fairly independently around the shaping of a shared understanding by the core group and project group in the workshops, in the second the innovation strategy pilot sub-project was more closely integrated to the development of the innovation strategy process. This was more akin to traditional consultant-led group work, even though the core group as a whole was actively involved in orienting the project and in its practical development.

The project group had formed a shared understanding of what innovation management and the need for a strategy actually mean in the first development project, and this was seen as a potentially fruitful starting point for the second. In spite of that, the work of the project group was complicated by the everyday tasks of its members, the fact that certain key members prioritised other duties, the fact that the project group stood apart from the line management, and a lack of communication with the senior Group management. Still, there was no alter-

native in the organisation to this setup, and in fact the work of the project group was in itself a Group-level pilot that was expected to yield results. There was no desire to publicise the goals widely within the company before results were achieved.

Corporate strategy development generally focuses on tools as well as on the process itself. Thus, despite the rather emergent conception of strategy employed in this study (Mintzberg, 1994), the pilot was conceived as an annual strategy process. An annual strategy process is feasible for the innovation strategy and other components of the business strategy if it is the only way to get important things done. At this point, the distractions of the principal jobs of the members of the core and project groups noted in the first development project had already been taken into account. The case study shows that people tend only to have time to run the day-to-day business of their company, and accordingly strategic thinking must be formulated as a process so that sufficient attention will be paid to it.

In shaping a strategy addressing innovation, the sources of corporate renewal and innovation contain overlapping and conflicting information (see e.g. Nonaka & Takeuchi, 1995). The innovation strategy process should include means, ways and approaches that support dialogue, interaction and learning during parallel strategy processes, earlier innovation strategy processes and the development of the innovation strategy. So as not to ignore the learning angle in the innovation strategy process in the course of the development, the aforementioned elements were compiled, as shown in Figure 14. The point was to make it clear in the project group that the innovation strategy process should above all enable strategic thinking about the future means for corporate renewal in the organisation instead of focusing just on the outcome of one round of the strategy process.

Formulating an innovation strategy represents planned change in the company, but emergent change should also be leveraged by reinforcing it and making it visible within the organisation so that the organisation can evolve a shared understanding of the future.
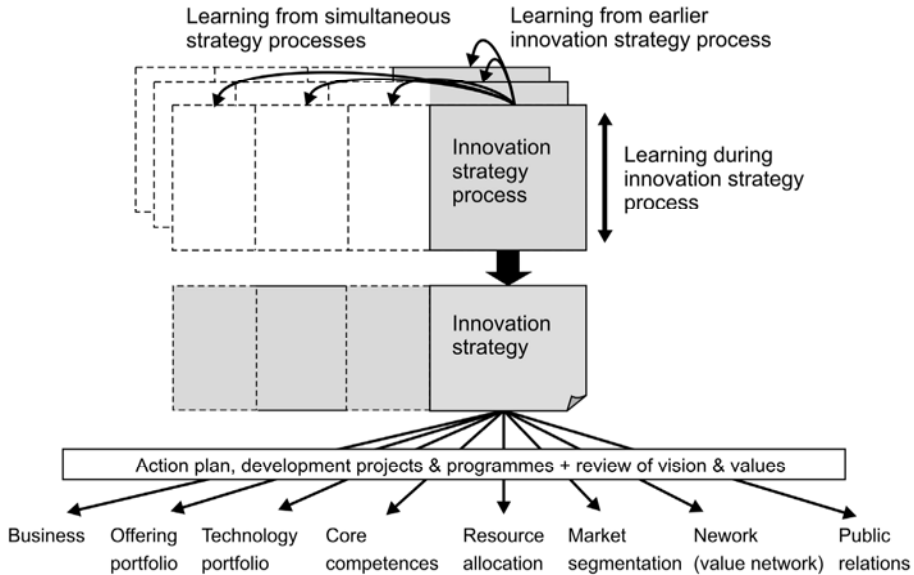
Figure 14. The learning innovation strategy process.

In addition to the learning angle, the tangible benefits of a formalised innovation strategy were emphasised in the project group. These needs included measures, development projects, technology programmes, revision of values and vision related to business, product and technology portfolio, core competences, resource allocation, market segmenting, the value network and external communications (Figure 14). Identifying these in the project group was not difficult, because the absence of strategic policy relevant for the group was frequently emphasised at the planning and initial evaluation stage of the development project. The Group-level strategy was considered too distant, and it was seen not to address the issues that had to be resolved in day-to-day decision-making.

As a result of the above, *the need for the innovation strategy to be a tool for internal and external communications* was added to the list of requirements for the corporate renewal construction.

5.5 Evaluation of development project implementation in case A

The following is a summary of both development projects at case study company A considered as organisational learning events. Table 13 illustrates the matters that arose in the core and project groups at various stages in the development projects, how the participants saw their roles in the process and what they thought of the development projects and their goals. This discussion is based on notes taken during the projects, memos, e-mail correspondence with researcher colleagues participating in the projects, and three measurement surveys conducted during the projects (Appendix B).

Table 13. Evaluation of stages in the development process.

Stage	Planning stage	Innovation management development	Innovation strategy process development
Stage goal	Prepare the development project and establish a shared understanding of its goals.	Implement the development project and approach the goals set.	Use piloting to develop an innovation strategy process suitable for the company.
Stage implementation description	Long duration in terms of calendar time. The goals and implementation preferences for the plan continued to shift for a long time, but the goals did not change very much. The planning stage was delayed partly because of other commitments of those participating in the planning and of the guest speaker in the initial workshop.	The process progressed with alternating development meetings (core group) and workshops (project group) to establish a shared understanding of innovation management practices at a general level and the needs for changing them in the company.	The process progressed with alternating development meetings (core group) and workshops (project group) and the drawing up of individual plans and roadmaps in the core group and project group to establish a shared understanding of the innovation strategy and the innovation strategy process.
Core group commitment and participation	The core group was on board with the planning from the very first. The idea for the project had been thought up by the core group members. Researchers were involved from the earliest stages of planning.	The core group was quite well committed to the development project. Some timetabling issues.	The core group was committed to the development project and considered its goals important. Full consensus was not reached regarding implementation, e.g. which things to do jointly and which from an individual angle.
Project group commitment and participation	The project group was not involved in the planning of the development project.	Nearly all were committed to the goals and implementation of the development project.	The project group was committed to the goals, but not everyone committed to the timetable because of other commitments in customer and research projects.
Organisation commitment and participation	At the planning stage, the organisation did not participate in the development project planning apart from the core group.	The rest of the organisation was not yet involved, to avoid raising hopes before producing tangible results.	The rest of the organisation was involved only to a small extent. Project group members did draw up roadmaps and assess future threats and

			opportunities, etc., with their respective teams.
Manage-ment com-mitment and participation	The members of the core group were in management, so management can be said to have been committed, but the senior Group management was not involved.	The members of the core group were in management, so management can be said to have been committed, but the senior Group management knew very little about the project.	The members of the core group were in management, so management can be said to have been committed, but the senior Group management knew very little about the project even at this stage.
Results	Development project plan.	Analysis of the present state of and development points in innovation man-agement. Some process revision and new practices.	First version of the innovation strategy process and the innovation strategy.
Situation after this stage	The members of the development project core group had a clearer pic-ture of the status of innovation man-agement in the company.	The members of the development pro-ject core group had a clearer picture of the status of innovation management in the company. A need to have an inno-vation strategy to guide decision-making was identified.	A need for more foresight activity was identified. A need to get senior man-agement committed to outlining future goals and visions was identified.

How well the development project succeeded is here evaluated at the core group, project group, management, and organisation levels. The division of duties between the core group and the project group worked well. Learning and an establishing of a shared understanding went on throughout the project. By contrast, there was a barrier to shared understanding and learning between these groups on the one hand and the rest of the organisation on the other; there was no desire to share the results widely within the organisation even at the results stage. The only portion of the project visible to the entire organisation was the ideas generation system pilot, which – being an isolated event – did not illustrate the extent and complexity of the innovation process. The core and project groups, by contrast, formed an impression of the comprehensive nature of the process through doing things together and through dialogue. A relatively large and cross-functional selection of people participated in the innovation strategy process, yet ultimately the innovation strategy seemed to the rest of the organisation to have been something implemented from the top down rather than vice versa, even though the innovation strategy was not construed as a top-down conception imposed by the Group level. The purpose of the piloted innovation strategy was to provide an alternative to the views of the senior Group management – a topic for discussion.

From these two development projects, and from examining learning at company A in the planning stage, the following two points were identified as requirements for the corporate renewal construction: *all levels of the company must participate and commit*; and *the project must be implemented quickly* and *with low resources.* The first development project also raised the requirement of having *a ready-made and tested model. The need for a shared understanding of a continuously updated vision* was also reinforced.

6. Building the corporate renewal construction

The construction presented here combines the theory gap identified in chapter 4 – dual ambidextrous change – with the empirical needs and requirements identified in the analysis of development projects at company A described in the previous chapter. The previous chapter also featured a preliminary innovation strategy framework created in the course of the study on the basis of theory and empirical dialogue. The preliminary innovation strategy framework is the starting point for building the construction, because closer theoretical examination proved that it contains elements required for synchronising the two scenarios in corporate renewal. The *opportunities* are principally new, explorative developments, while *needs for change* are incremental changes in the form of either process enhancement or filling in product or technology gaps.

Brown and Eisenhardt (1997) deduced from their research that continuous change is necessary: change is not a rare and cyclical phenomenon. In particular, they emphasised a view of corporate renewal that relied specifically on product innovation. In the principal outcome of the study, the corporate renewal construction, a broader conception of innovation is proposed than just product innovation. One important reason for such a broad conception of innovation in this corporate context is that each member of the organisation should be able to see himself/herself as part of a process of continuous renewal and innovation. The purpose of the coincident construction is to construe change as occurring in every part of the organisation at once instead of isolating the search for new things in a separate venture organisation (see e.g. Galbraith, 1982; Burgelman, 1983; Leifer et al.*,* 2000). In a way, one aim of the construction is to democratise innovation from the perspective of the organisation, although von Hippel (2005)

has already reserved the term 'democratic innovation' to refer to user innovators.[24]

6.1 Summary of the requirements for the construction based on the case study

The following is a summary of the requirements for the corporate renewal construction identified in the case study discussed in the previous chapter. *Requirements* are here understood to mean points that emerged in the two development projects at company A either directly in goal-setting or through observation of the learning process of the core and project groups in the course of the development projects. They may be understood as empirical hypotheses (see e.g. Eisenhardt, 1989), evaluated from a theoretical perspective in section 6.2. Further knowledge on change and the overall concept of innovation management in particular was obtained through three comparison positions also presented in the previous chapter, comparing innovation management at company A to best practices on the one hand and to innovation at four similar companies on the other. These requirements are summarised in Figure 15, with a reference to the relevant section in the text for each of them.

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[24] User innovators participate in the company's innovation process. This is typical particularly in the leisure equipment industry, e.g. surfing, mountain biking, canoeing, etc. (Lappalainen et al., 2010).

Emergence of development goals (5.2.2)	Preliminary innovation strategy framework (5.3.2)	Comparison of innovation management practices (5.3.4)	Development of innovation strategy process (5.4.1)	Learning from development project implementation (5.5)

Continuously updated vision of target state achieved through shared understanding

Simultaneous identification of opportunities and needs

Taking the vision state and resources/competence dimension into account

Efficient innovation process implementation

Outlining the front end of the innovation process

Appropriate level of incrementals and radical innovation

Innovation combined with low risk

Management of major internal and external changes

Innovation strategy as a tool for internal and external communications

Participation by all levels in the organisation

Quickly and with low resources

Finished, tested model

Definition of empirical requirements for a company's renewal construction

Figure 15. Definition of empirical requirements for the corporate renewal construction (with references to sections in the text).

This list of requirements for the corporate renewal construction is used for arriving at an answer to the principal research question of the study: *What kind of renewal model is needed in order to analyse requirements for innovation management?*

6.2 Identifying the components of the construction

Next, the list of requirements gathered in Figure 15 will be discussed point by point, evaluating the importance of each for the construction while also examining them in the light of dual ambidexterity as described in the theory part (Duncan, 1976; Tushman & O'Reilly, 1996; Raisch & Birkinshaw, 2008), particularly the dual component (Sutcliffe et al., 2000; Boer & Gertsen, 2003). A comparison is also made to theoretical discussion in the field. The aim is to translate these requirements into concrete terms while comparing whether these requirements were satisfied in the first development project at company A, using the innovation strategy framework outlined in interaction between theory and empirical observations. Following this, it is estimated whether the construction could be built simply by developing the preliminary innovation strategy framework or whether it would be easier to start from something else.

Vision of the target state continuously updated through a shared understanding
Shared understanding in an organisation can be considered as a vision emerging through learning mechanisms within the organisation (Crossan et al., 1999; Nonaka & Takeuchi, 1995) and in a bottom-up direction rather than vice versa. Continuous updating could be seen as a combination of emergent and planned vision, the updating involving the examination of the state attained through emergent and planned development and the evaluation (and possible revision) of the suitability of the existing vision. This is akin to setting new coordinates for a moving target as necessary.

The concept of a continuously updated vision fits well with dual change, because both are dynamic in nature. Still, the preliminary innovation strategy framework does not in and of itself address the formulation of a continuously updated vision through shared understanding, although it can probably be used as a tool for this.

Suitable balance of incremental and radical innovations, and simultaneous identification of opportunities and needs for change

Both requirements ultimately refer to the same thing, the first focusing on the end result and the second focusing on the way in which results are obtained. Of course, there is an implementation stage between identification and innovation, but eventually the same target state is the result, unless the company is selling identification of opportunities and needs for change. These requirements prompt the basic question of how ambidexterity, or more specifically simultaneous and coincident ambidexterity, is to be implemented.

The company A case study involves one business unit seeking to establish an operating model for the entire organisation, not a separate venture organisation model (see e.g. Galbraith, 1982; Leifer et al.*,* 2000). Innovation culture emerges as one of the key elements for the dual strategy. Ambidexterity should be made apparent in the vision too. Further, the different needs of the exploitation and exploration approaches should be taken into account in the organisation's learning models (see e.g. March, 1991). March pointed to learning and the resource-oriented approach as distinguishing between the implementation of the two approaches.

The preliminary innovation strategy network does not address the balance issue; it simply presents both scenarios without bias.

Taking the vision state and the resources/competences dimensions into account

One way of turning a company's business strategy and/or vision stage into a continuous dialogue is to ensure that the construction is dialectic with the business strategy. Operating goals and corporate renewal should be discussed in the same process. These two processes also share the feature of addressing the company's competences and resources and the need to augment these.

These two elements – the vision state and the combined resources/ competences perspective – are reflected in the preliminary innovation strategy framework.

Efficient innovation process implementation

Efficient innovation process implementation will most likely enable continuous corporate renewal. Efficiency in the innovation process at the case study companies consisted mainly of product processes refined in practical development work over a long period of time. Company B had also integrated service devel-

opment into the product process. At the other companies, service development was largely at the experimental stage, which is typical for product technology companies (e.g. Salkari et al*.,* 2007). Another observation on the factors underlying efficiency in the innovation process, and one which concurs with the product development literature is the presence of cross-functional teams. The case study companies also made extensive and diverse use of their innovation networks.

With dual ambidexterity, an efficient innovation process firstly enables efficient leveraging of existing knowledge. Secondly, in terms of exploration radical innovations are implemented exactly like exploitative innovations in an efficient innovation process[25]. This applies to all innovations, not just product innovations[26]. On the other hand, there is academic discussion as to whether these types of innovation and approach actually require similar or dissimilar competence, and whether it is possible to implement them in the same organisation at the same time (March, 1991; Tushman & Romanelli, 1985). The preliminary innovation strategy framework does not consider the innovation process except in terms of the need for identifying resources and competences.

Analysing the front end of the innovation process

The importance of developing the front end of the innovation process continues to increase in both research and practical innovation management (e.g. Reinertsen, 1999; Poskela, 2009). There is discussion about whether the front end of the innovation process should be precisely processed like the implementation stage (e.g. Cooper, 1993; Koen et al*.,* 2001, 2002) or project-based, or whether more freedom should be allowed at the front end of the innovation process than at the project-based stage (e.g. Khurana & Rosenthal, 1998; Nobelius & Trygg, 2002).

The preliminary innovation strategy framework points out directions for analysing corporate renewal at the front end of the innovation process. However, the

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[25] In the book *Johda innovaatiota* (Apilo et al*.,* 2007) the authors explain that from a management point of view both radical and incremental product development could follow the same development process, basically a stage-gate process. After the front end of the innovation process, both innovation types have the same level of product specification as their starting point for the rest of innovation process. Only the time span and the level of activities in the front end of innovation process are different.

[26] In a paper comparing different kinds of development projects the author concludes that both product and business process development can be carried out through a similar development process (Apilo, 2004).

framework does not indicate how exactly the front end should be implemented. The expanded version of the framework shows what kind of tools may be used at each stage.

Innovation combined with low risk

If innovation by definition involves taking risks in order to discover new things, this requirement seems an oxymoron. Nevertheless, exploring how to minimise risks, feasible solutions or alternatives may present themselves. At least six ways of minimising risks can be identified in theoretical discussions. Most of these are related to open or networked innovation. The use of external knowledge and competence (*inbound*) in an open innovation network is an innovation network aspect (Chesbrough, 2003). This involves minimising risk by distributing responsibility for interpreting future knowledge. An innovation network can also be used to spread out risks through joint projects, alliances, etc. Using user-oriented innovation approach (e.g. Lappalainen et al., 2010) to achieve better understanding of customers and end users minimises the risk of developing something for which no customer need exists. Of the remaining three ways of minimising risks, the first is to make innovation continuous, reducing the risk of failure through organisational learning; the second is to conduct small-scale experiments (Brown & Eisenhardt, 1997; 1998; Thomke, 2003; Chesbrough, 2010); and the third is to make use of foresight activities and scenarios in new experiments.

The preliminary innovation strategy framework provides no help in risk minimising as such; it simply advises the company to define an acceptable level of risk in seeking to discover new things.

Managing major internal and external changes

The last item mentioned in the previous section was foresight activities. As far as managing major internal and external changes goes, foresight may take centre stage, since change rarely happens completely unexpectedly: identifying what are known as weak signals may give the company time to prepare. Another way of managing major change is analogous to the intentionally unstable design of a fighter jet: if the organisation is constantly in a state of change, no major future change will disrupt it. A third way is to move from a strategy of defence to a strategy of offence, the company becoming a change agent instead of a victim of change (see e.g. Kim & Mauborgne, 2005).

Out of these three, the preliminary innovation strategy framework features the translation of changes into opportunities. Various foresight methods and scenarios are presented as tools for shaping innovation strategy.

Tool for internal and external communications

This requirement has more to do with implementation, placing demands on the presentation of the results obtained by using the construction. On the other hand, the requirement could also be read to mean that the construction in itself points out the expectations that the company likes to communicate. The role of internal communications was emphasised in case A: the strategy was seen as an aid to practical decision-making. This was referred to in the case study as 'strategy hunger'. Strategy hunger may be influenced by other uncertainty factors in the corporate culture and structure (reorganisation, changes in command chains, moving to self-governance, management by resources instead of management by vision, etc.) rather than just the strategy being unclear or invisible.

The preliminary innovation strategy framework may be used in internal communications, but for external communications there should probably be less detail, since companies are not always prepared to disclose identified sources of competitive advantage.

Participation and commitment by all levels in the organisation

The continuously updated vision of the target state described above requires but also causes commitment by all levels in the organisation as each employee discovers his/her own role and perspective in implementing the vision. Participation across the board, particularly in a large organisation, would be almost impossible to achieve with traditional means, at least if it has to be done frequently. Today, technology provides the facilitators for broad-based participation, including the social media.

Dual ambidextrous change benefits from commitment on all levels of the organisation, because this enables both the leveraging of existing competence – exploitation and the exploration of new experiments. The preliminary innovation strategy framework may be used in a participatory way and thereby to increase commitment at various levels in the organisation.

Quickly and with low resources (ready-made, tested model)

This requirement often emerges in practical development initiatives. Since organisations are usually geared towards practical operations, all kinds of development and change are seen as superfluous activities which take time away from real work and which should be performed spending as little resources as possible. Development requires resources with decision-making powers and a broad-based vision of the organisation and its operating environment, which does not make the low-resource requirement any easier to fulfil. The point in all this is that for the construction to be easy and quick to use is critical for its being adopted. One possible solution is to include in the construction as many operational activities as possible that would get done anyway. This serves to leverage existing practices and processes while keeping the model streamlined. The requirement for a ready-made and tested model is subsumed in the requirement for a quick and easy model that contains pre-existing components.

The tools in the preliminary innovation strategy framework are to some extent familiar to companies, depending on how many different tools and methods they have adopted. Instead, the form in which the innovation strategy framework is presented is probably unfamiliar to most companies, even though it has been published in a business book.[27]

6.3 Building the construction

The present study has now progressed to a point where convergence takes priority. Here, the point is to bring the components of the construction together and to fashion a coherent model for corporate renewal. The construction is intended to incorporate the requirements discussed above related to continuous dual ambidextrous corporate renewal through innovation.

The conception arising from the case study, innovation literature and the ambidexterity angle shared by the four research approaches (innovation, strategic renewal, organisational change and organisational learning) indicates that the core of the construction is not so much the tension between exploration and exploitation (see e.g. March, 1991) as the learning and interaction process between these different approaches (see e.g. Nonaka & Takeuchi, 1995), the alternation

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[27] The preliminary innovation strategy framework was first described in *Johda innovaatioita* [Manage innovation] (Apilo et al. 2007).

of explicit and tacit knowledge in the organisational learning process. *Exploitation* is about seeking out needs for changes in process efficiency, performance and speed or ideas for improving products, technologies and business models (continuous and incremental changes, ones that leverage existing competence, abilities and processes). *Exploration* is about seeking needs for change and opportunities in changes in the market, the competition situation, customers, users, public opinion, the environment, etc., and experimenting with new solutions or operating models on the basis of these opportunities.

Exploitation and exploration are essentially separate at the front end of the innovation process when viewed at a general level. The former is almost process-like, proceeding from idea generation, further development and evaluation to concept formation, while the latter is freer and involves exploring and experimenting, etc. The conjunction of these two approaches could be described as the heart of the corporate renewal construction proposed here, '*an engine of renewal*' (see Figure 16).

Implementing both exploration and exploitation simultaneously in the same organisation offers a new perspective on the discussion of ambidexterity. The construction presented here is a concrete operating model, describing how a company can organise these two approaches without separating them organisationally or in time. Also, dividing the front end of the innovation process between two different operating models contributes not only to the discussion of ambidexterity but also to the discussion of how to implement the front end – process-like or not.

Whereas the front end of the innovation process involved a dialogue and a learning process between the two approaches, the implementation stage proceeds according to *the same innovation process for both* as discussed above. The efficiency achieved in the organisation through processes and routines, and the organisational learning invested in them, can thus be leveraged in the innovation process. By analysing the innovation process into a front end and an implementation stage, the process can be turned into something owned by the entire organisation and not just managed by a handful of inventors or the R&D department. Figure 16 shows the implementation stage as a circle around the core formed by the front end as described above.

The next element in building the construction is, instead of a top-down target state, a shared understanding of the target state that guides and informs the ideal innovation process. This is illustrated also in Figure 16 as a circle around the innovation process. Senge (1990) and e.g. Mintzberg et al. (2003) speak of *a*

shared-vision process, vision here meaning a constantly evolving view of the future instead of a formal management statement. This shared understanding is closely related to the mental shared space of *ba* as described by Nonaka et al. (2000). They explain that *ba* can be reinforced with freedom, creative chaos and overlapping information, but also with caring and trust. A similar need for strategic sensitivity and collective commitment was described by Doz and Kosonen (2008) in their '*fast strategy*' model.

The shared understanding process proceeds from the top down and from the bottom up simultaneously (see e.g. Burgelman, 2003), or actually in all directions at once, since no single level in the organisation is always in the possession of the best view of the outside world while also having access knowledge about the abilities of the organisation and the innovation network to grasp the opportunities available. The concept of *strategic intent* refers to a target state born out of shared meaningfulness in an organisation, enabling personal commitment of members of the organisation at all levels (Hamel & Prahalad, 1989; 1994); it is distinct from *vision* in that it is not just a tool for senior management (Mantere & Sillince, 2007).

The last element to be added to the corporate renewal construction consists of the competence and resources of the company's own organisation and the innovation network. They are seen as enablers on the one hand yet as potential challenges on the other. These constitute the outermost circle in the model (Figure 16), emphasising the importance of the innovation network on the one hand and the bringing together of resource-oriented and knowledge-oriented approaches on the other. The innovation network – which includes suppliers, research partners, customers, users, and so on – is a source of expertise and resources but also a participant in the ambidexterity dialogue and the innovation process, as the case may be. The importance of the network in exploitation is in the leveraging of existing knowledge and competence (augmenting the company's core competence) and in providing resources (sub-contracting, partnerships, alliances). In exploration, the innovation network helps identify opportunities (and reduce risks) and engage in experiments (piloting partners, development groups).
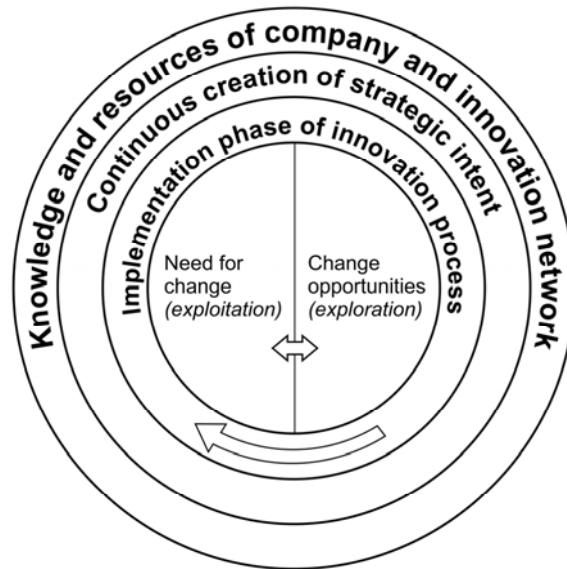
Figure 16. Model of continuous corporate renewal.

There is one requirement listed above (Figure 15) that the construction does not fulfil: it is not a ready-made and widely empirically tested model that would be quick and easy to implement in companies. This weakness will be discussed below in evaluating the results of the study. Also, the dimensions of the model and the construction as a whole both will be considered more closely from the practical angle and from the perspective of theoretical contribution.

Based on the constructed model, it can be assumed that increasing understanding about continuous corporate renewal through innovation – the purpose of this dissertation – is useful. The core of the model, a dual ambidextrous front end, generates concepts for an efficient innovation implementation process. The model also highlights the importance of strategic intent and the role of innovation networks.

The model of continuous corporate renewal and other findings of the present research will be summarised and evaluated in the following chapter.

7. Summary and conclusion

This final chapter contains summaries of the findings, answers to the research questions and an evaluation of their contribution from both a theoretical and a practical viewpoint. The summary of objectives and results, and further, their roles in the dissertation, are analysed in Table 14. (A summary of management conclusions is shown in Table 16.)

Chapter 3 above is a theoretical introduction to the complex nature of corporate renewal through innovation. Four viewpoints on corporate renewal are identified in the literature – innovation, strategic renewal, organisational change and organisational learning – are drawn from the literature, and further, a preliminary framework is outlined. Chapter 4 features a more detailed discussion on an integrated concept of corporate renewal, especially from an ambidextrous perspective. The main result from the theoretical part of dissertation is identifying the ambidextrous 'both-and' approach as a relevant viewpoint for corporate renewal. Specifically, the dual ambidextrous perspective is rarely discussed in the literature and mainly seen as a conceptual-level approach. There thus seems to be a need for further research to gain a better understanding about companies pursuing renewal through exploitation and exploration simultaneously.

An understanding of an innovation management system was sought through participatory action research in the first development project of case study company A. The results include: firstly, the description of practices and challenges of the goal-setting; secondly, the implementation description of the innovation management system; and thirdly, the requirements for the corporate renewal construction. Furthermore, the checklist of innovation management elements was verified in the same development project. The comparison of five case study companies exhibited a more detailed picture of challenges and enablers in a corporate-level innovation management system and also brought up more requirements for construction building.

The second development project in case study company A outlined the piloting of the innovation strategy process. Moreover, through participatory action research in this second development project the importance of learning aspects during the innovation strategy process was recognised. As in the other empirical sections in this dissertation, more requirements for the construction building were identified.

Organisational learning, particularly barriers to experiential learning were considered during the progress of both development projects at case study company A. A learning perspective is considered in the evaluation of development project success.

Chapter 6 brings together the requirements, both theoretical and empirical, identified in earlier chapters for a comprehensive model of corporate renewal. The model takes into account needs for exploitation and exploration perspectives at the front end, an efficient innovation process, an utilisation of resources and capabilities not only from a company but also from an entire innovation network. The model also stresses the importance of the continuous updating of strategic intent.

Table 14. Summary of dissertation.

	Corporate renewal (3)	Integrated conception of corporate renewal (4)	Development of innovation management system (5.2, 5.3.1, 5.3.2 & 5.3.3)	Comparing innovation management systems (5.3.4)	Development of innovation strategy process & framework (5.4)	Learning from development project implementation (5.5)	Building the corporate renewal construction (6)
Objective	To study the literature of innovation, strategy, organisational change and organisational learning from point of view of corporate renewal	To discuss the integrated conception of corporate renewal from a dual ambidextrous perspective	To analyse elements of a corporate-level innovation management system	To produce a more detailed picture of challenges and enablers in a corporate-level innovation management system	To analyse how a company may develop an innovation strategy process and framework	To evaluate the development project stages from an organisational learning perspective	To build a model of continuous corporate renewal
Data/ method	Literature review	Literature review	Action research, case study	Benchmarking, multiple case study	Action research, case study	Action research, case study	Construction building

Results	- Identifying from the literature four viewpoints on corporate renewal - Preliminary framework for corporate renewal	- Identifying similarity of dual approaches in innovation, strategy, organisational change and organisational learning literature - Identifying research cap and theoretical basis for empirical research with a dual ambidextrous renewal approach	- Identifying practices of goal-setting and implementing of innovation management system - Identifying elements of innovation management system through verifying a checklist for innovation management - Preliminary innovation strategy framework -Identifying requirements for the corporate renewal construction	- Identifying challenges and enablers in a corporate innovation management system - Identifying requirements for the corporate renewal construction	- Analysing the innovation strategy development process -Identifying importance of learning in the innovation strategy process - Identifying requirements for the corporate renewal construction	- Identifying learning barriers in an organisation and at the Group level - Identifying requirements for the corporate renewal construction	- Identifying the components for the corporate renewal model - Model of continuous corporate renewal
Role in the dissertation	Background on corporate renewal through innovation	Understanding of the ambidextrous perspective in innovation, strategy, change and learning	Understanding of the innovation management system in a company	Deepening the understanding of the corporate innovation management system	Understanding of the corporate innovation strategy process	Understanding of development projects as an organisational learning activity	Summarising the main contributions of the study

7.1 Answers to the research questions

The research questions emerged in the course of the study. Table 15 summarises the research questions and the origins of the answers. Furthermore, each of the three questions – about the corporate innovation management system, corporate innovation strategy and corporate renewal – is discussed separately below, in sections 7.1.1, 7.1.2 and 7.1.3, respectively.

Table 15. Summary of the research questions and the origins of the answers.

Research question	Corporate renewal (3)	Integrated concept of corporate renewal (4)	Development of the innovation management system (5.2 & 5.3)	Comparing innovation management systems (5.3.4)	Development of the innovation strategy process & framework (5.4)	Building the corporate renewal construction (6)
1. What are the principal factors that a company must take into account in innovation management?	Theoretical point of view: innovation generation factors (Table 4)		- Elements of innovation management – self-assessment tool (Appendix D) - Comparison of elements at the beginning and the end of the development project (Table 9) - Example of innovation management system development process (see e.g. Table 8 and Appendix A & B)	Comparison of innovation management practices at 5 companies (Table 12)		
2. What should be included in an innovation strategy framework?			Preliminary innovation strategy framework (Figure 8 & 9)	Comparison of innovation strategy practices at 5 companies (Table 12)	- Example of innovation strategy development process (Figure 13) - The learning innovation strategy process (Figure 14)	
3. What kind of renewal model is needed in order to analyse requirements for innovation management?	Preliminary framework for corporate renewal – four perspectives (Figure 6)	- Integrated view of planned and emergent renewal process (Figure 6) - Duality in corporate renewal (Table 5) - Dual ambidextrous approach (Figure 7)	Requirements for the corporate renewal construction	Requirements for the corporate renewal construction	Requirements for the corporate renewal construction	- Definition of empirical requirements for the construction (Figure 15) - Model of continuous corporate renewal (Figure 16)

7.1.1 Elements of corporate innovation management

An answer to the first research question *(What are the principal factors that a company must take into account in innovation management?)* analysing the elements of innovation management was sought from literature of innovation, strategy, organisational change and organisational learning and further verifying results of earlier research through case studies. In the study, as part of the first development project at case study company A (as the first action research cycle), the functioning of five elements of innovation management was verified as a self-assessment tool for innovation management (Appendix D). In addition to the practical experience gained from the case study, the innovation management model was set against the more general discussion on innovation management.

The discussion of results begins with the addressing of two upper-level problems related to corporate innovation management. The first is the diversity of the concept of innovation management, and the second is the practical implementation of innovation management. These two challenges constitute a motivation for finding solutions, since a substantial consensus exists on the results potentially to be attained (e.g. Tidd et al., 2005), but on the other hand they demonstrate that there is still a lack of research in the area and that there is a need for analyses with practical application.

Case A demonstrated that a shared understanding of innovation management in an organisation can be attained at least through the learning-together method. The company's target state is compared to other companies that are considered innovative and to models presented in literature. Case A does not really involve a shared understanding across the board in the company, but there was a broad shared understanding in an extensively cross-functional group.

The model tested involved five basic elements of innovation management: innovation process, innovation culture, innovation strategy, innovation resources and innovation structure. (Compare this to the evaluation model presented by Tidd et al. 2005)[28]. In evaluating innovation management in companies A, B, C, D and E using the model it was found that there was some overlap at the statement level between the five dimensions or elements evaluated. For instance, the

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[28] The dimensions for their 40 statements were strategy, processes, organisation, communications and learning. They also presented 40 further statements from the perspective of discontinuous innovation.

evaluation of innovation structure involved evaluating the innovation process and resources (functioning processes, using the innovation network). It was therefore considered that the number of elements could be reduced to four, innovation structure not being shown as a separate element at the upper level; its key components would be subsumed under the other elements. Moreover, the label 'innovation resources' does not explicitly involve capabilities, which were therefore added to the element name. After this revision, the elements of innovation management are: innovation strategy, innovation process, innovation culture and structure, and innovation resources and capabilities (Appendix D).

These four may be briefly described as follows: *Innovation process* covers idea generation, idea evaluation, concept design and implementation (see e.g. Cooper, 2008; Koen et al.*,* 2002). The process is understood throughout the organisation, everyone has a role in it – e.g. management, ideas generation, combination, implementation – and roles may change on a case-by-case basis. What is essential is for the organisation to comprehend the process as a shared one and not as something involving only part of the organisation, such as the R&D department. Efficiency is sought in the innovation process through routines and practices at the implementation stage (see e.g. Ohly et al.*,* 2006), but there must be capacity to give space to experimentations and radical experiments (see e.g. Brown & Eisenhardt, 1997). An increasingly large and important part of the innovation process is conducted in the innovation network together with customers, suppliers, partners and end users (e.g. Lappalainen et al.*,* 2010; Miller & Morris, 1999).

The need for an innovation strategy was emphasised in the case study. An innovation strategy is needed to steer corporate renewal. Means for renewal should be sought out all the time, by identifying change needs and opportunities simultaneously (see e.g. Tushman & O'Reilly, 1996; Kim & Mauborgne, 2005). Strategy tools such as programmes, portfolio management and foresight are used for this purpose. The innovation strategy and the business strategy should be continuous, dialectic learning processes.

Innovation culture and structure enables internal and external dialogue and questioning on a number of levels (e.g. Nonaka & Takeuchi, 1995). Moreover, overlapping and conflicting information is produced, tolerated and leveraged ("entropy" in Ståhle, 2004; "redundancy" in Nonaka, 1991). Unnecessary rush and routines are eliminated. Controlled risks are acceptable, and there is a willingness to abandon old habits. Team work and cross-functional work are emphasised (e.g. Wheelwright & Clark, 1992; Boer & Gertsen, 2003).

Innovation resources and capabilities is a component that encourages continuous learning and improvement in the organisation. The innovation network is seen as a risk minimiser and a facilitator (Chesbrough, 2003; Valkokari et al.*,* 2009). Innovation capabilities are developed all the time (see e.g. Francis & Bessant, 2005; Ståhle, 2004).

For the third research question of the study, identifying this innovation management framework – which also constitutes the answer to the first research question – forms the main conceptual analysis basis. It is used to determine a foundation on which the actual corporate renewal construction is built. From the point of view of practical innovation management, the benefit of this or a similar evaluation method is in the evaluation process itself, not so much its outcome. Both Tidd et al. (2005) and Davila et al. (2005) propose that companies seeking to implement discontinuous innovation should not compare their innovation process to best practices but to what are known as *next practices*.

7.1.2 Management with the innovation strategy

The second research question in the study was: *What should be included in an innovation strategy framework?* Underlying this question is the idea that innovation should be managed through a description of the vision state, which would then give rise to a need for a strategy that would bring together a wide range of development and innovation activities in the company. In many a company the business strategy does not contain detailed descriptions for instance of ways in which to reach out to new customer segments or in which to pursue efficiency. The need for an innovation strategy was heightened during the development project in case A. There has also recently been discussion in the literature on a need for innovation strategies at the company level (Koivuniemi, 2008; Herzog, 2008; Tidd et al.*,* 2005).

Many manufacturing companies understand innovation primarily as a R&D function, or at least the R&D department is assumed to take principal responsibility for innovation. Thus, components of innovation strategy can be found in technology strategy, whose content and development have been studied (e.g. Porter 1980; de Wit & Meyer 1998; Burgelman et al.*,* 2001; Pavitt & Steinmüller, 2002; Sahlman, 2010). But as case A above demonstrates, technology strategy only identifies those opportunities that technological advancement brings. Yet there are opportunities in other dimensions too: new customer needs,

the competition situation, the operating environment, various interfaces and, for instance, opportunities arising from regulation.

The preliminary innovation strategy framework (Figure 8) was outlined in the context of the case study, indicating that innovation strategy arises from the identification of *opportunities* and *needs for change* and the linking of these to existing resources, the vision state and the business strategy. It is recommended in the model that the innovation strategy address the issues of customers, the level of radicalness desired, the competition situation desired, and the types of innovation suitable for the situation at hand.

The case study indicates, however, that if the innovation strategy is understood as just a document or a collection of documents, it makes little difference what its actual content is. The innovation process itself that the company employs for drawing up the innovation strategy would seem to be much more important than the outcome of that process. *The innovation strategy process* is important for clarifying the company's future target state, particularly with regard to learning.

However, to somebody pose the question of whether the four components entered in the innovation strategy framework are matters in which a shared understanding should be found, the answer – depending on the case-by-case context – would seem to be 'yes'. The checklist determining goals for the competition situation, the customer plus revenue logic combination, risks and means for achieving them is largely similar to the business model (see e.g. Magretta, 2002; Chesbrough & Rosenbloom, 2002; Casadesus-Masanell & Ricart, 2010) but also gives the means for attaining a shared understanding. Nevertheless, a company-level innovation strategy most likely needs to allow for diverse simultaneous approaches, such as using different means, risk levels and revenue logics in different customer segments.

The innovation strategy process is more important for a company's success than the resulting innovation strategy, because the process brings out hidden opportunities and can generate new input for the innovation process. Another important function of the innovation strategy is that the innovation strategy process challenges the existing business strategy by bringing out new directions.

The following is an example of the innovation strategy challenging the business strategy. In a particular product or technology portfolio, the suitability of a new idea for the business strategy is evaluated. If the idea is considered not to fit the strategy and it is discarded, a future opportunity may be lost. In the innovation strategy process, ideas are evaluated according to how the company could

renew itself using them and whether this renewal is consistent with the direction in which the company wishes to develop. Therefore it is necessary for the innovation strategy and business strategy processes to engage in continuous dialogue. Without this dialogue, it is difficult for a company to notice needs and opportunities for corporate renewal. The innovation strategy process forces the company to take the corporate renewal aspect into account in the business strategy process.

For the purposes of the end result of the study, the preliminary innovation strategy framework outlined earlier was a useful interim stage in shaping the corporate renewal construction and its relationship to various strategy tools. It helped discover the simultaneous existence of needs and opportunities for change and their importance to corporate renewal and hence to the long-term success of a company.

7.1.3 A model for corporate renewal

The answer to the third research question of the study (*What kind of renewal model is needed in order to analyse requirements for innovation management?)* is found in the corporate renewal construction presented in chapter 6. The model presented (Figure 16) is not yet very detailed but does bring out certain essential aspects of continuous corporate renewal.

Firstly, the construction proposes the simultaneous or ambidextrous use of exploration and exploitation to constitute the core of corporate renewal, i.e. the front end of the innovation process. Instead of the tension between exploration and exploitation referred to in the earlier literature (March, 1991), these two approaches engage in interaction and dialogue in the model presented here. Neither approach is inherently superior to the other; it is equally important for companies to remember both to leverage their existing knowledge, competence and processes for incrementally improving their products, services and technologies based on earlier knowledge and expertise and to ensure their longer-term success by investing in exploration, i.e. the seeking of new opportunities and experimentation.

On the other hand, as March (1991) expressed, both approaches make use of the same limited company resources. This prompts the conclusion that since the same resources are being used in any case, the notion that both scenarios are valid at the same time can serve to clarify the allocation of resources (see e.g. also Bledow et al.*,* 2009). Benner and Tushman (2003), however, looking at a

situation where a company attempted to manage both approaches at once, recognised a productive dilemma. Bledow et al. (2009) considered this productive dilemma to be the result of a dualist approach, appearing when the two approaches are kept separate. They proposed a dialectic approach to solve the productivity problem through integration and management. Westerman et al. (2006), writing from the point of view of organisation research, note that isolating these two scenarios from one another for instance by assigning exploration only to the R&D department can only create more problems while also preventing the emergence of synergies. In view of the above, a growing amount of studies in organisational research regards ambidexterity as possible or even desirable within the same organisation.

In addition to embodying a dual ambidextrous approach, the outcome of the present study, the corporate renewal construction, addresses the discussion on the front end of the innovation process. In the construction, the front end of the innovation process is precisely where the two halves of dual ambidexterity interact. The discussion on the front end of the innovation process has hitherto focused firstly on how important it is, secondly on outlining the tasks it includes, and thirdly to emphasise the importance of the strategy aspect (see e.g. Koen et al., 2001; Reinertsen, 1999). The model of corporate renewal proposed here includes an essential new perspective compared with the discussion so far: the observation that the incremental innovation process and the radical (discontinuous and/or disruptive) innovation process do not have to be completely separate processes (see e.g. Tidd et al., 2005) but that only the front end is different. The reasoning behind this is that radical, creative innovations require an efficient innovation organisation and network at the implementation stage just like incremental innovations; routine building and standardisation release cognitive resources for creative thinking (Ohly et al., 2006). This, in turn, frees up resources for learning through exploration and experimentation.

The discussion on the innovation process is typically fragmented in that it focuses either on the product process (e.g. Cooper, 1983; 2008; Wheelwright & Clark 1992) or the service innovation process (e.g. Scheuing & Johnson, 1989; Alarm & Perry, 2002; Nijssen et al., 2006) or, from the diffusion-adaptation viewpoint, on technology innovations (e.g. Utterback, 1974; Henderson & Clark, 1990), administrative innovations (e.g. Daft, 1978; Damanpour & Evan, 1984) or more generally the generating of new knowledge (e.g. Nonaka & Takeuchi, 1995; Crossan et al., 1999). The construction presented here, however, makes no distinction between types of innovation or between whether what is being devel-

oped is a new offering, a new strategy, a new business model or a new operating process. Instead, it is based on an integrated conception of research into innovation, strategic renewal, organisational change and organisational learning. The implementation stage circle of the innovation process in the construction thus seems to link rather well to the ongoing discussion, especially as regards product processes and product development projects, in expanding on the experiences of the rather practically oriented product process discussion. It is the broader concept of innovation referred to above that distinguishes this model from the views presented by the aforementioned innovation process researchers.

Terms and concepts may also be found regarding the shaping of the target state through shared understanding (e.g. Nonaka & Takeuchi, 1995; Crossan et al., 1999; Doz & Kosonen, 2008). These approach the challenge from slightly different directions and research traditions. In this regard, no direct models for solutions can be found in the case study. The necessity for this approach is identified as the 'strategy hunger' and the desire to participate in shaping the future noted at company A. Furthermore, individual examples of achieving a shared understanding are identified (analysis of innovation management at company A). The second circle of the model challenges the traditional top-down strategy and target state approach whereby a strategy is first planned (Ansoff, 1965) or shaped (Porter, 1980) and then implemented. The model is therefore better suited to the emergent strategy concept (see e.g. Mintzberg, 1994). This emergent strategy concept incorporated in the construction and the two different strategic approaches required at the front end of the innovation process are supported by the conceptual theoretical framework proposed by Reid and Brentani (2004) for analysing the front end of the innovation process. Their discontinuous innovation model emphasises the roles of individuals in a three-stage process.

Both the resource-oriented and the knowledge-oriented organisational concept share the same information sources, knowledge and resources in the organisation and the innovation network. While resource-oriented strategies are criticised in the literature on knowledge-oriented strategies and dynamic capabilities for not considering dynamic approaches and resource development, the present study contains some criticism of the knowledge-oriented approach too. This is due firstly to the fact that the knowledge-oriented approach seems to push the resource aspect too far into the background, and secondly to the fact that information and knowledge alone are not enough to produce innovation. Indeed, D'Aveni (1994) and Eisenhardt and Martin (2000) pose the question whether ownership and use of knowledge are enough for operating in a dynamic operat-

ing environment. In addition to information and knowledge, processes and practices are needed to bring knowledge and competence together, i.e. dynamic capabilities (Teece et al.*,* 1997; Teece, 2000; Eisenhardt & Martin, 2000; Zollo & Winter, 2002), and various actors to execute all this – people and teams. While ideas are often considered as the key element of innovations, it is often easily forgotten that an innovation is not simply a refined version of a single idea but a solution that is a combination of factors each with their own parameters. Hargrave and van de Ven (2006) concur with this, noting that at the team level and the organisation level, innovations are created in a process to which various parties contribute and that the end result is different from what each individual contributor originally intended. The success of a solution or an innovation does not depend on chance on the market but on a whole series of chances throughout the history of the innovation (see e.g. 'serendipity').[29]

Not only does the outer circle of the model bring together the resource-oriented, knowledge-oriented and dynamic capabilities aspects, it also contributes to yet another current discussion. Open innovation (Chesbrough, 2003), innovation networks and networked innovation (Valkokari et al.*,* 2009) are currently in focus and approached from various angles. The present construction does not focus so much on the open innovation aspect as per Chesbrough (which has to do with the IPR trade and the acquisition of ideas) as on how a company's innovation network as a whole (including suppliers, partners, research bodies, customers and end users) minimises risks in exploring new opportunities and acts alongside the company's own organisation as a facilitator of creation and renewal by providing competence, knowledge and resources as inputs for the innovation process.

7.2 Evaluation of the research

This evaluation of the results of the study follows the principles and criteria regarding qualitative research referred to in the chapter describing the research process and concerns: firstly, the theoretical contribution of the dissertation;

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[29] 'Serendipity' is the ability or tendency for discovering unexpected opportunities while studying something completely different.

secondly, the practical contribution of the study; and thirdly, the research as a whole from the perspective of dependability, confirmability, credibility, and transferability (see e.g. Denzin & Lincoln, 2000).

7.2.1 Theoretical contribution of the research

The theoretical contribution of the study is here evaluated by first addressing the relevance of the research question, the novelty of the knowledge generated, the originality of the work and the applicability of the results. The appropriateness of the research approach and the using of relevant theory are also considered.

The relevance of the research question lies in its importance for practical purposes (as seen in the following section). On the other hand, its theoretical value can most likely be evaluated by noting how much research there is under several different paradigms on the same matter – corporate change, innovation, learning and strategic renewal.

The framework for corporate renewal may be pointed out as a theoretical contribution, integrating innovation, strategic renewal, organisational change and organisational learning aspects, with specific reference to their ambidextrous aspects. Further, the listing of innovation generation factors (Table 4) differs from existing listings of success factors in that it its principle is integration but also because of its networked view of innovation. The preliminary model and framework thus increase understanding of an ambidextrous perspective in innovation, strategic renewal, change and organisational learning and also lay a theoretical foundation for empirical research based on the integrated dual ambidextrous renewal approach.

The claim proposed in the study concerns the possibility and necessity of simultaneously implementing exploration and exploitation strategies for corporate renewal in the same organisation. The solution for combining these scenarios may be found in considering them in dialectic interaction at the front end of the innovation process. The novelty of this solution in the field of theoretical discussion is firstly that the model integrates concepts from the separate research approaches of innovation, strategy, change and organisational learning research and integrates them into the practical company innovation process and corporate renewal.

Secondly, the model presented draws on earlier studies focusing on exploratory freedom at the front end of the innovation process or efficiency in exploiting existing resources, and a project-oriented and process-like approach at the

implementation stage of the innovation process. Thus, the model contributes to discussion of the front end, providing an integrating perspective. The existing and increasing discussion mainly focuses on whether front end activities should be more processed, like the implementation stage of the innovation process, or more project-based, and also whether the best solution would be to give employees more freedom and resources for innovation (e.g. Reinertsen, 1999; Koen et al., 2002; Poskela, 2009).

Thirdly, the continuous renewal model presented features a concrete proposal as to how ambidexterity, particularly dual ambidexterity, can be added to the operative processes in companies. In the existing literature on ambidexterity, most models explain how exploration and exploitation can be combined (if indeed they can be combined at all) through a separate venture organisation structure or through other structural organisational arrangements (e.g. Galbraith, 1982; Leifer et al., 2000; Bledow et al., 2009). Another view is that exploitation and exploration will be employed alternately and not simultaneously, as for instance in the punctuated equilibrium model (e.g. Gersick, 1991; Romanelli & Tushman, 1994).

In any case, the literature on ambidexterity yields certain models and concepts for solving the dilemma. An example of this is Brown and Eisenhardt's (1997) approach of 'chaining' new product development projects in a continuous flow combining a planning approach and experiments. Boer and Gertsen (2003) named three other ambidextrous concepts: Bolwijn & Kumpe's (1998) the innovative company, Senge's (1990) the learning organisation and the strategically flexible production as proposed by Spina et al. (1996). Doz and Kosonen's (2008) the fast strategy concept also involves characteristics of this approach. The continuous renewal model presented here thus suggests a new concept under the discussion of ambidexterity.

Eisenhardt (1989) states that generally the strength of a case study is in its likelihood to generate novel, testable and empirical valid theory. She points out evaluation criteria outlined by Pfeffer (1982): a good theory must be parsimonious, testable and logically coherent. Testability and logical coherence are assessed in next sections. As for the parsimonious requirement, the continuous renewal model does not contain anything extra (parameters), but also does not emphasise any causalities. Instead, the model indicates the elements in corporate innovation management which are relevant and essential for continuous renewal. In particular, the model describes development targets for each element, e.g. what kind of front end will accelerate the exploitation and exploration ap-

proaches in the company or how the shared understanding process should be arranged to produce strategic intent to support these exploitation and exploration processes.

The theoretical contribution of the study also includes the answers to the research questions 1 and 2 and a conceptual analysis of concepts of innovation and innovation management that seeks to combine the research traditions of the aforementioned approaches with one another and with experiences from practical development work. The value of the processes presented and frameworks concerning research questions 1 and 2 is in their practical usefulness, and this is evaluated more in more detail in the next section.

Originality in the study is sought through the description of the development projects at company A and their documentation in some detail and from several perspectives (practices of goal-setting, development of the innovation management system, development of the innovation strategy process and framework, learning barriers).

At the beginning of the study, its scope was limited to the company or business unit level. The case study companies A to E are all Finnish companies operating on a technology-driven market. The results of the study may be more generally applicable as regards the dual ambidextrous model of corporate renewal, the elements of innovation management and the analysis of innovation strategy to other Finnish companies offering their own products or services on the market. With reference to the study by Lappalainen et al. (2010) examining innovation practices at innovation management forerunner companies, the impact of a particular industry or whether the company operates on a consumer market or a B-to-B market would seem to have no limiting effect on the applicability of these results beyond the technology sector considered or to companies with different approaches and strategic choices. As a matter of fact, the wide range of companies included in the aforementioned study – representing different industries, being of different ages and being at different points in their life cycle, and operating on both the consumer market and the B-to-B market – showed the same characteristics of living in the present moment and adhering to a single operating practice as the case study companies A to E in the study. Thinking of future innovations in concrete terms was particularly difficult even for companies acknowledged as innovation leaders. Therefore an analysis of corporate renewal might be of use for these other companies too not only for those operating on a technology-driven market.

The usefulness of the model may be limited among companies that have no formal development activities. Such companies lack the practices and processes required for generating new knowledge and efficiently leveraging existing knowledge and expertise. In addition, companies operating on a highly stable market with little competition probably have no need to implement a model such as this.

The applicability of the study to companies outside Finland is guesswork, but it seems likely that the models and analysis would have relevance elsewhere too. The models are not tied to a specific geographical area or culture. Expansion of the scope of applicability of the model is also supported by the fact that all the case study companies operate in a global competition situation, and the theoretical discussion underlying the model is largely derived from the international context.

Examining the appropriateness of the research approach begins with an evaluation of the choice of qualitative and quantitative research approaches. The research topic supports the case for employing a qualitative approach, because there were no ready-made models or theoretical basis to be found. The research approach had to enable the discovery of new approaches (Eisenhardt, 1989; Voss et al., 2002). When the purpose of research questions is to understand a phenomenon and to present hypotheses for further research, participatory observation is suitable for a case study (Marshall & Rossman, 1995). Longitudinal research provided a good starting point for achieving in-depth understanding (see e.g. Leonard-Barton, 1990; Remenyi et al., 1998). As the researcher was used to company-based development, participatory action research was a familiar concept, but what made it particularly useful for this case study was that it enabled the gaining of in-depth understanding both of the phenomenon itself and of the organisation studied.

Longitudinal research combined with multiple case studies enabled not only in-depth understanding but also a comparative situation for assessing how unique the observations were; in other words, whether the matters observed at company A had wider applicability. The comparison helped overcome a challenge typical of longitudinal research, extending the applicability of the research findings beyond the single case (e.g. Voss et al., 2002). In practice, the case studies represent a compromise, since it would not have been possible to implement the long period required for longitudinal research simultaneously or consecutively at the companies studied. Since the source data includes complementary information from a variety of sources and documentation from other devel-

opment projects involving the same companies (including field notes), it presents a rather representative picture of the four other case study companies.

Quantitative research can be introduced once the field of study has been analysed through qualitative research. So far, quantitative innovation research has focused mainly on small, well-delimited research objects and on using the narrow definition of innovation (product/technology) form the point of view of product development, the ideas generation process, or the creativity and innovation of the individual.

The study may be considered to fulfil the requirement of a relevant theory, although this is also a potential stumbling block since the study does not corroborate or refute any single theory but instead draws selectively on several theories and research traditions to find component solutions to practical problems rather than monolithic overall solutions. One of the contributions of the study is thus the integration of several approaches to aid in responding to a company-oriented research problem. The use of several theories is due to the practical research approach but also to the fact that some of the areas studied are not organised or theoretically coherent, as for instance Eisenhardt and Santos (2002) remarked concerning knowledge-oriented strategy theory and Lähteenmäki et al. (2001) remarked concerning organisational learning theories.

7.2.2 Practical benefits of the research

The management and practical contribution of the study is here evaluated by addressing first the practical relevance of the research questions. Then, management conclusions are summarised and assessed from the perspective of business management benefits.The applicability of the results is also discussed. The action research part and the constructive part are evaluated separately by considering whether the study had achieved improvement and change through the action research project at case study company A and whether the construction developed will achieve improvement and change more widely in the industry.

The principal research question is undeniably of practical importance, as corporate renewal is generally regarded as highly important. Companies that produce innovations win over their competitors in terms of market share, profitability and leveraging growth (e.g. Tidd, 2000). Moreover, accelerated development in the business environment, the constant entry of new solutions onto the market and global competition pose challenges for the change capacity and renewal rate of just about any company. Corporate renewal and the capacity of companies to

implement it are becoming increasingly important as work is being redistributed on a global scale into productive and creative work with the industrialisation of the developing world. Nevertheless, many of the management models and strategy tools used by companies are resource-oriented. In addition, the owner market has become dissociated from understanding how companies actually operate, the challenge for implementing corporate renewal is even greater. Quarterly market estimates do not encourage all companies to seek to maintain future competitiveness or to develop themselves; rather, the quarterly economy prompts cost-cutting and other quick-fix measures.

Nevertheless, many companies are interested in finding out what opportunities improved innovation efforts could bring. Little (2004) notes that a large percentage of managers are dissatisfied with innovation management at their companies. There do not seem to be any ready-made and tested models that any company could adapt in order to leverage its innovation potential. The purpose of the study was to increase understanding of corporate renewal, specifically from the perspective of innovation, and accordingly, the study analyses the field of innovation management and renewal to help companies be better equipped to evaluate their own innovation management.

Table 16 summarises the management conclusions of the dissertation. The first research question concerns the innovation management system. The management implications of this theme point out the importance of developing and assessing a corporate innovation management system and an innovation strategy process, which falls within the scope of the second research question. Most of the management implications pertain to answers to the third research question concerning the corporate renewal models.

Table 16. Summary of management conclusion.

Theme of research question	Results	Description of management perpective
1. Innovation management system	Self-assessment tool for evaluation of innovation management	Companies should self-assess their innovation management practices to understand the next development objectives of their innovation management system. This study introduces a method for evaluation.
	Development process of innovation management system	Companies should also develop continuously their innovation management system. This study illustrates an example of how the development of innovation management system could be executed in a comprehensive manner in a development project.
	Comparison of five companies' innovation management practices	Benchmarking of other companies' innovation management systems could bring out new ideas to improve the innovation management system of one's own company. Still, it is more important to try to find through continuous organisational learning process the right company specific practices than just try to implement the 'best practices'.
2. Innovation strategy	Preliminary innovation strategy framework	Companies should have an innovation strategy in addition to their business and technology strategies. The study presents an innovation strategy framework which combines change opportunities and need for change.
	Development process of innovation strategy	The innovation strategy process should be continuously improved like other strategy processes in the company. This study illustrates an example of how the development of innovation strategy could be carried out in a development project.
3. Renewal model	Four perspectives on corporate renewal	Corporate renewal is seen in this study as a strategic organisational learning and change project through innovation. Companies should take account of all four aspects concerned – innovation, strategy, change and organisational learning – and utilise the knowledge of them already possessed.
	Integrated view of planned and emergent renewal process	The process illustration of planned and emergent renewal processes combining innovation, strategy, change and organisational learning in the same model can help managers to outline all these four activities in their company through new perspectives and therefore provide an opportunity to develop them all in a balanced and more comprehensive way.
	Model of continuous corporate renewal	The model presented for continuous corporate renewal suggests that companies should - divide the front end of innovation process into two parts: exploitation and exploration. - organise exploitation into a process where the organisation searches for new ideas for products, services, operation processes, management models etc. mostly through improved efficiency of utilising its existing knowledge about customers, technology and markets.

		- organise the exploration part of the front end so as to gain freer opportunities to make experiments and search for new ideas for instance through the innovation network, end user experience, new technologies and changes in industry.
		-search for efficiency and speed for the innovation process from efficient processes and routines.
		- direct both exploitation and exploration by a shared understanding and commitment process called strategic intent different from vision in its scope (whole organisation participates vs. senior management) and continuous learning perspective.
		- utilise its innovation network (including research partners, suppliers, end users and customers) also for to minimise risk by distributing responsibility for interpreting future knowledge not only for searching for development resources and missing capabilities.

Thus, practical benefits may be gained from the study through the dual ambidexterity model of corporate renewal and the simplicity of the elements of innovation management included. One important practical contribution made by these models is that they provide company managers with concepts for analysing the complex field of innovation and corporate renewal; increasing knowledge thus serves as a practical benefit in itself.

The self-assessment tool is easy to adopt and can be added for instance as an innovation management module to a self-assessment toolkit already in use in companies. There seems to be a need for tools and toolkits of this kind. Likewise, companies seem to be interested in benchmarking and are eager to find the 'best practices'. The comparison of the five companies' innovation management practices will also serve that need by offering the descriptions and the assessments of the modules of the innovation management systems (process, strategy, structure, culture and resources). Moreover, the preliminary innovation strategy framework can also provide insights into the importance of the corporate innovation strategy and its content.

The dual ambidexterity model of corporate renewal is not applicable 'as is', since it requires changes in the company at a mental model level (see e.g. the dual-loop model, Argyris & Schön, 1978; Kim, 1993). On the other hand, it may largely be implemented using existing corporate practices related to development, the strategy process and change. As a result, this model is most probably timeless. It will not become dated; it is suitable for companies at various stages in their development and for various types of organisation. It is probably easier to implement if the company already has organised development, as noted above in the context of the theory contribution. In addition, the model of corporate

renewal is probably generally applicable across sectoral, geographical and cultural borders.

Considering the two development projects at case study company A not only as a method of data collection but also as a participatory action research project yielded the opportunity to evaluate the results concerning achieved and attainable improvement and change. Actually, change was evaluated by the project development group using the checklist of innovation management as a self-assessment tool at the beginning of the first development project and again at the end of the second development project. The results of the groups' self-assessments showed discernible improvements in all five areas of the innovation management system. Particular improvements were perceived in the areas of innovation process and innovation strategy, both of which were development objectives of the projects.

Furthermore, the progress of the development projects from an organisational learning point of view was assessed by using development project progress questionnaires three times in the course of the action research study. The main purpose of the questionnaires was to clarify the major components of a successful change process for the development project group members and also to measure progress in the projects. The responses to the questionnaires supported the objectives of the projects, the approaches used and the means employed while also illustrating learning in the projects. The questionnaires brought up the need for strong commitment from the Group level senior executives.

This evaluation indicates that the way in which the innovation management system and the innovation strategy process were developed could be adopted successfully in other companies too. The rather detailed process description in the dissertation and its appendix will help apply the development process.

Kasanen et al. (1993) proposed the market-based test for evaluation of practical contribution. This test is better suited for studies testing the usability and/or extent of an existing model or a situation where a construction is not only built but tested widely in practice too, rather than a study such as the present one where a new construction is introduced.

Full-scale introduction of the model of continuous renewal will probably require an attitude shift and a broader understanding of innovation than most companies traditionally have had. The quality of the model should thus also be considered from an operating analysis point of view, the primary task being understanding the phenomenon and generating new theoretical knowledge (see e.g.

Olkkonen, 1994), since the constructive approach was here principally a means for creating a model.

For the aforementioned reasons, the solution may be suitable for practical purposes, as it is not limited to selected details but considers corporate development and renewal comprehensively. Compared with earlier practical solutions, the continuous corporate renewal model created in the study is challenging for the same reason: it is comprehensive and must be approved by senior management and the entire organisation before it can be adopted.

7.2.3 Dependability, confirmability, credibility and transferability

The research is evaluated from the perspectives of dependability, confirmability, credibility, and transferability. These evaluation criteria conform better to evaluation of qualitative research than reliability and validity, which are used in quantitative research (see e.g. Lincoln & Cuba, 1985).

Dependability evaluates how consistent the findings are and whether the research be repeated by assessing the quality of the integrated process of data collection, data analysis and theory generation. It also assesses the researcher's assumptions and the documentation of the process.

Empirical and theoretical phases alternated in the present research process, as is natural for hermeneutic qualitative research. The process included three learning cycles during which understanding of the corporate innovation management and renewal increased and the requirements for a corporate innovation system, an innovation strategy and finally a continuous renewal model were identified. In the dissertation, the research process is illustrated both as a logical process (the structure of the dissertation) and as it happens in real life, through iteration cycles (learning cycles). Moreover, longitudinal research improved the dependability of the study by confirming the researcher's understanding of the context.

The research process in the action research phase was mainly a joint effort by several researchers. In the interpreting of the empirical data, this helped to avoid subjectivity and bias. The progress of the workshops and the planning meetings was also evaluated after the fact among researchers and also with members of the company development project core group. Furthermore, the assumptions of the researcher are described in extensive detail in the dissertation.

The progress of both development projects is documented in this dissertation, mostly in various tables and figures but also in brief descriptions and further in a development project log in the appendix.

Triangulation improves dependability. Besides investigator triangulation, data triangulation was used in the comparison of the five case studies due to the extended duration of the longitudinal research. A combination of longitudinal research and multiple case studies was used for diversity. Moreover, theory triangulation was used in the study: several theories were sourced as background for building the constructive model.

Confirmability measures the degree of sufficiency of the research process and assesses whether the findings flow from the data. Confirmability can be sought for instance from other studies exploring similar phenomena or through triangulation.

The empirical part of study based on several data sources: some preliminary interviews, action research projects, written materials and slides. The use of various data sources improves confirmability. Concentrating mainly on data from one company (two cases) enabled a rich description of the projects (cases), although the volume of data forced compression of the main issues of the narrative data into tables and figures.

Support for the continuous renewal model and other findings in the dissertation may be found in other studies which indicate the importance of the innovation management issue, a need for corporate renewal and increasing discussion of the ambidextrous approach and also increasing interest in improving the front end of the innovation processes and practices.

Comprehensibility was sought in the study by describing the evolution of the models from both the theoretical perspective and the case study perspective. While the study is designed to be comprehensible and logically progressing, clear arguments have been made for the choices made at various stages of the study.

However, the empirical portion of the study refers to some extent to earlier or simultaneous studies which nevertheless are not incorporated in this study. Excluding these studies is justified firstly by the fact that the previous studies did not broadly cover the entire field of innovation management and corporate renewal in a manner that was possible in the case study of company A. Secondly, it was considered that the details required for the study could be referred to in studies reported elsewhere; for example, the above evaluation of expansion of the applicability of the results refers to the report of the Fores project (Lappalainen et al., 2010). Another approach would have been to report the study as a compilation dissertation, including all of the previous articles and chapters from books as parts of the study. However, the monograph form was preferable for

the sake of clarity and because most of the sources referred to are books so extensive as to be difficult to include in a dissertation.

Credibility evaluates the 'truth' of the findings. The various forms of triangulation were mentioned above, likewise the prolonged relationship with the case study company. Furthermore, observation criteria can be considered to have been fulfilled, although actually in the participatory action research project the researcher did not just observe but participated in and facilitated both development projects.

Credibility was improved also through the researcher's participation in most of the research activities: interview design, interview implementation (except for one), interview analysis, the case study company's project planning, project facilitation (two development projects – almost three years), taking of field notes, analysing of project data, analysing of case data from the other four companies, and finally, analysing all the material.

Transferability shows that the findings are applicable in other contexts too. The same aspects are considered above in sections on the theoretical contribution and management benefits. The answer found there was that the contributions (frameworks and models) could be transferable in some circumstances or that at least there do not seem to be any obvious obstacles to it. Be that as it may, transferability depends on how accurate and how rich the description of the research process is so that the potential adapter may judge whether the findings are transferable to another context or not.

7.3 Further research

Hopefully the study will inspire other researchers to use an integrating approach in studying innovation, strategic renewal, organisational change and organisational learning. By making use of research findings in all these research approaches and their overlapping analyses it will probably be easier to generate models which reflect practical realities in companies and which are therefore easily usable. Integration is also motivated by the fact that the research approaches considered are often described as fragmented and that there are no comprehensive theories, as discussed above.

The dual nature of the front end of the innovation process in the continuous corporate renewal model presented here also provides an integrating perspective for further research in the area. An interesting direction for further research

would be to test the applicability of the corporate renewal construction to practical company cases and also at companies operating in different innovation environments and competition situations. Through various piloting projects, new requirements and therefore correctives would be found, and perhaps also extensions to the model.

The continuous innovation model also needs to be translated into more concrete terms, which can be achieved by developing practices. Some of the models and methods are company-specific, but generic models are also needed.

Moreover, the discussion on how to define innovations has continued for several decades. The definition of innovation used in the study, as many other definitions including success in addition to novelty and/or utility, presents a problem of evaluation: if successful implementation is what makes a solution an innovation, then what constitutes an innovation must vary according to the time, the person doing the evaluating and the evaluation criteria. Now that a technological invention is not considered the basic requirement for an innovation in the broad concept of innovation, the idea–invention–innovation chain only describes the actual innovation process in very few cases. Even the shorter idea–innovation chain does not fit many cases in practice. The purpose of this discussion is to illustrate that in a practical innovation process a solution that can later be considered an innovation is the result of further development and combination of several ideas. It seems likely that a concept is needed which describes a solution created through combining ideas and experimentation that has not yet been determined to be an innovation. This problem of definition arises when discussing business or service innovations, i.e. when the innovation is not a physical product or a new technology. The need for creating new concepts is relevant for practical development work in companies, as something is needed to encourage individuals, teams, organisations and networks to renew themselves and to improve their operations through means that are considered innovative and experimental.

The study principally focuses on innovation management at one company. The topic should be broadened to include the innovation network, thereby enriching the discussion on open innovation (Chesbrough, 2003; 2006; Gassmann, 2006) for example to focus more on the member companies and other actors creating new things together (see e.g. Noteboom, 2004; Valkokari et al., 2009). The open innovation model proposed by Chesbrough (2003) is a rather narrow perspective on cooperation between companies and other actors, addressing the efficient exploitation angle.

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Appendix A: Development project log.

Planning stage	
First negotiations and e-mails, March 2006	• Development points, innovation and strategy. • Development project implementation: working through the group + benchmarking to chart the path. Compiling existing ideas and processing them into innovations. Group leader has an important role. Company core group: • further processing of ideas in-house because of change resistance and other commitments • integrating the process into normal operations + ensuring continuity • creating best practices and an innovation culture • developing identified core competences • putting together a strategy group and distributing responsibilities for strategy preparation.
Initial interviews, April 2006 • 5 interviews, 2 interviewers*[30] • on two days • objective: background information for the development project plan	Background information for the development project: • much tacit knowledge – no instruction • bringing up true customer needs • addressing technical details • processes not updated to meet new needs • innovation activities not organised • product development decreased from earlier level • corporate culture and identity suffered from the change • focus on incremental development.
Planning meeting, May 2006 • interview analysis and project planning • 2+1	
Planning meeting, June 2006 • objective: clarifying the goals of the development project and specifying the project plan • 3+2*+1	Implementation: 1.5 year stepwise innovation and strategy process development project
Planning meeting, June 2006 • clarifying the project goal and funding • 3+1*+1	Objective: Raise innovation management to a new level to ensure global competitiveness through an international network

[30] *) participation / presentation / introductory talk by the reseaercher
no. of company representatives + no. of researchers + no. of other guest experts

Appendix A: Development project log.

Internal planning meeting, August 2006 • specifying the project target state in more detail • 3+0	Target state: • networking internally and externally • creating an innovation infrastructure • innovation management development • better use of internal Group resources • using customer processes as a source of innovation • combining technology roadmaps with the technology strategy. - create new innovations more frequently and more quickly through systematic improvement
Planning meeting, September 2006 • further clarifying the project goal and funding • 3+1*+1	• Objective: lots of people who can produce new solutions • organising the best practices workshop -> getting a feel for where we are, and prioritising development goals • benchmarking • progress partly through technology strategy cases • making diverse use of various approaches and tools • beginning work immediately.
Planning meeting, October 2006 • finalising the funding and project plan • 3+1*+1	

Innovation management development stage	
Development meeting, November 2006 • launching the core group • development project resource allocation and role distribution (core group and project group) • 2+2*	Objective: • from ideas to solutions • balance between incremental and radical innovations. vision includes increasing importance of services
Development meeting, January 2007 • planning of initial workshop • action plan • development project working practices • measures in the immediate future (spring 2007) • 3+2*	
Project group initial workshop, January 2007 • Objective: project group motivation and commitment to the development project and innovation • introductory talk on the impact of innovations on long-term success, of customer value and of the purpose of the technology strategy	Focus in developing the innovation management system: • making technological development systematic • the potential of services, knowledge and business models • innovation management organisation and maintenance • Group management commitment.

- presentation of project plan and goals - discussion of development project goals - group work on practical strategy work in the company, the innovation management system and the innovation culture 10+3*+1	Group work: - lack of strategy is a shortcoming - a new leap is needed (the success of the company was based on a technology leap) - what is missing is a search for and evaluation of new ideas, and portfolio management - marketing communications and networking need development - strengths: lack of hierarchy, error tolerance, flexibility.
Workshop, January 2007 - Theme: Innovation management - further brainstorming on the basis of the initial workshop - introductory talk on innovation management*: innovations can and should be managed, whole organisation vs. invention-oriented innovation - reviewing the quick checklist of innovation management elements* 11+2*	Development points according to the quick checklist: - front end of the innovation process not described - no goals or indicators set for the innovation process, and it is not evaluated - people are too busy to innovate in their spare time - incentives do not support group work - technology programmes are not used - no systematic knowledge management - the innovation strategy does not manage innovation process.
Development meeting, January 2007 - planning of following stages: five workshops in the spring - planning of the piloting of the ideas generation tool - distribution of work among the core group regarding workshop and pilot preparations 2+2*	
Development meeting, February 2007 - measures in the immediate future 3+2*	Specified goal: create new innovations more frequently and more quickly through systematic improvement - increase the number of people producing new solutions - strengthen the role of the technology centre concept.
Workshop, February 2007 - Theme: foresight - introductory talk on foresight: the future is not linear, creating the future, multiple timelines - introductory talk on scenarios: seeking new perspectives, scenario creation process 11+2*+2	
Development meeting, February 2007 - pilot preparation - future workshop preparation - planning for the summoning of the innovation groups 2+2*	

Appendix A: Development project log.

Workshop, March 2007 • Theme: innovation strategy • introductory talk on innovation strategy*: various strategy concepts, dimensions of strategic thinking, innovation strategy framework, seeking competitive advantage and portfolio management • company strategy processes • group work: strategy alternatives questioning the status quo (the value curve and strategy diamond are being tested) • 10+2*	
Development meeting, March 2007 • division of duties and responsibilities, development projects and pilots • organising Group-internal benchmarking • planning benchmarking • 3+2*	
Workshop, March 2007 • Theme: roadmaps • drawing up two pilot roadmaps (service concept and technology) • 10+1+1	
Development meeting, March 2007 • Innovation process workshop preparation: outlining roles in the innovation process, challenges in the innovation process, features of the goal-oriented innovation process • pilot monitoring • development project progress monitoring • investigating innovations achieved in recent years • 2+2*	Challenges that came up in the development project (core group): • need to broaden the range of participants • assembling agreed innovation groups and agreeing on tasks • closer adherence to project practices • commitment of the project group (time and resources).
Workshop, March 2007 • Theme: innovation process • recap of goals • two innovation stories • examples of innovation processes* • roles in beginning stages of the current innovation process and concrete development points • 12+2*	Innovation process development points Identifying opportunities and, at the idea collecting stage: • leveraging customers and the network • technologically more active monitoring • practices in place for ideas that are not invention-oriented • incentives that reward group work • collecting of ideas for further idea generation.

	Idea evaluation: • new roles in projects broader than product line • integration of separate evaluation groups • presenting alternative solutions • need for interaction with the innovation strategy. Behind successful innovation stories: • strongly committed management • motivated project group • to a good concept through piloting despite difficulties • customer-oriented approach.
Development meeting, April 2007 • Getting to know competence management practices in the Group • 3+2*	
Development meeting, April 2007 • Workshop planning • Forum introduction planning • 2+2*	
Workshop, April 2007 • Theme: Competence management and innovation culture • introductory talk on competence management*: what information and competence are, organisational learning and how to promote it, determining core competences • exercise on what competences exist and what is missing, what will be needed in 3 to 5 years • 9+2*	
Development meeting, April 2007 • open innovation workshop planning • benchmarking visit planning • foresight meeting planning • project continuation planning • 3+1*	Challenges to adhering to the development project plan • innovation strategy pilot frozen, waiting for pilot status • technology roadmap pilot partly unfinished • product process update delayed • setting up of innovation groups still incomplete • description of innovation organisation incomplete.
Development meeting, May 2007 • foresight practices and implementation possibilities • 3+1*+2	
Benchmarking visit, May 2007 • exchange of experiences on the suitability of various practices for the innovation process and innovation management, especially regarding idea collection and evaluation • 4+1*+3	

Appendix A: Development project log.

Development meeting, May 2007 • development project continuation planning • further specifying goals • open innovation workshop preparation continued • 2+2*	Vision of the target state: • key partners known • seen by others as an interesting partner • people can concentrate and the group supports them • recognised as an innovation organisation • roadmaps linked to the environment • opportunities seized • services and business as innovation opportunities alongside technology.
Workshop, May 2007 • Theme: Open innovation • introductory talk on the dimensions of open innovation*: needs, challenges, implementation options • success story of creating a research network around a single technology • success story with suppliers as innovation partners • exercise using own networks • interim questionnaire on development project progress • 8+1*	

Innovation strategy development	
Development meeting, October 2007 • review of basics of technology strategy development • 3+1*	Business from technology strategy development: • massive effort • organisation to be created and goal assigned • challenge to get the managers and principal designers to commit.
Development meeting, November 2007 • review of basics of technology strategy development • organising the project group • recognising the data needed • 3+1*	On process development: • ensuring continuous renewal of the organisation • quick reactions to changes in the operating environment. • linking to business strategy • inclusion of foresight activities • commitment, management support, homework, visualisation, leveraging, updating. Goals for the innovation strategy: • identifying and specifying core competence, success factors and key technologies • ensuring future competitiveness • understanding of future key technologies in the organisation • communication tool for the Group • communication tool for network partners concerning core competences and profiling • helps with day-to-day decision-making and choices • helps with technology risk management • determines the need for and distribution of resources.

Development meeting, November 2007 • review of basics of technology strategy development • noting the market situation • 4+1*
Development meeting, November 2007 • planning of development process stages • recognising engines of change • compiling a background information package • workshop content design • 2+2*
Workshop, December 2007 • Theme: innovation strategy process launch with the project group • Objective: identified target state • market and technology reviews • prioritisation of change engines • instructions for drawing up roadmaps • recognition of future technologies • 9+2*
Development meeting, January 2008 • workshop planning • 1+1*
Workshop, January 2008 • change engines • competence strategies and other background information • 7+1*
Workshop, February 2008 • Theme: linear future • drawing up a product roadmap • drawing up a technology roadmap • needs for competence • 7+1*
Development meeting, March 2008 • next workshop planning • preparation of threat scenarios • 1+1*
Workshop, March 2008 • Theme: 'what if' future – new opportunity from threats • threat and opportunity assessment • two exercises involving unanticipated events • 8+1*

Appendix A: Development project log.

Development meeting, April 2008 • next workshop planning • technology lists • 1+1*
Workshop, April 2008 • Theme: Resources and networking • roadmaps from the resource perspective • description of recognised future projects • 8+1*
Workshop, August 2008 • Theme: project continuation planning • innovation strategy status • action plan • communication planning • what have we learned from the development project • Theme: project continuation planning • 9+1*
Evaluation meeting, November 2008 • development project evaluation • questionnaire on project implementation and goal attainment • 3+1*

Appendix B: Development project progress questionnaires

Questionnaire at the opening of the first development project at case study company A (names of the development project and the company deleted).

The purpose of this questionnaire is to gauge the organisation's attitude to development projects at the beginning of this development project and lessons learned in earlier development projects. The results will be used in choosing the practices and methods in the development project now being launched.

Please indicate whether you disagree or agree with the following statements on a scale from 1 to 5; circle the appropriate alternative.

1 = I disagree completely
2 = I disagree somewhat
3 = I neither agree nor disagree
4 = I agree somewhat
5 = I agree completely

DEVELOPMENT ATMOSPHERE

Our organisation values the development of operating practices and processes	1 2 3 4 5
Change resistance in our organisation is not strong	1 2 3 4 5
Different personnel groups work comfortably together in development	1 2 3 4 5

PREVIOUS OPERATIONS DEVELOPMENT PROJECTS

Our operations development is generally project-based	1 2 3 4 5
Previous development projects have proceeded according to plan	1 2 3 4 5
Previous development projects have attained their goals	1 2 3 4 5

DEVELOPMENT PROJECT GOALS

The project goals are inspiring	1 2 3 4 5
Success in this project is essential for the company	1 2 3 4 5
The project is strategically appropriate	1 2 3 4 5
The company management is committed to the goals of the development project	1 2 3 4 5

DEVELOPMENT PROJECT IMPLEMENTATION:

The implementation plan is concrete enough	1 2 3 4 5
The implementation plan is detailed enough	1 2 3 4 5
The development timetable is realistic	1 2 3 4 5
It is good to have expertise from outside the organisation in the project	1 2 3 4 5

What are your expectations and attitude regarding the development project?

What do you consider the greatest challenges in implementing the development project, based on experiences from previous development projects?

What are your wishes regarding the implementation of the development project?

THANK YOU!

Questionnaire conducted in the course of the first development project at case study company A (names of the development project and the company deleted).

Interim questionnaire:

The purpose of this questionnaire is to investigate how the initial stage of the development project has progressed and what the expectations are for the development proper. The results will be used in choosing and developing the practices and methods in the development project.

Please indicate whether you disagree or agree with the following statements on a scale from 1 to 5; circle the appropriate alternative.

1 = I disagree completely
2 = I disagree somewhat
3 = I neither agree nor disagree
4 = I agree somewhat
5 = I agree completely

WORKSHOPS AND SEMINAR DAYS

We managed to outline the target state of innovation activities	1 2 3 4 5
I myself participated actively in workshops and seminars at the exploration stage	1 2 3 4 5
The composition of the project group at the exploration stage was successful	1 2 3 4 5
I fell that the matters discussed in the workshops were important and relevant	1 2 3 4 5
The atmosphere in the workshops was open and positive	1 2 3 4 5

LEARNING

At the exploration stage I learned which topics go into innovation management	1 2 3 4 5
At the exploration stage I learned which practices and procedures at the company should be developed to improve innovation	1 2 3 4 5
I have talked about matters discussed in the workshops with other colleagues than those who participated in the workshops	1 2 3 4 5

DEVELOPMENT PROJECT GOALS

The goals shaped for the project are inspiring	1 2 3 4 5
Success in this project is essential for the company	1 2 3 4 5
The project is strategically appropriate	1 2 3 4 5
The company management is committed to the goals of the development project	1 2 3 4 5

DEVELOPMENT PROJECT IMPLEMENTATION

The implementation plan is concrete enough	1 2 3 4 5
The implementation plan is detailed enough	1 2 3 4 5
The development timetable is realistic	1 2 3 4 5
It is good to have expertise from outside the organisation in the project	1 2 3 4 5

What thoughts have you had of the development project since its early exploration stage in spring 2007?

What are your expectations and attitude regarding the actual development stage of the project?

What are your wishes regarding the implementation of the development stage?

THANK YOU!

Questionnaire conducted at the evaluation of the second development project at case study company A (names of the development project and the company deleted).

The purpose of this questionnaire is to investigate the progress of the second development project, during which the focus was on developing the technology strategy and the technology strategy process. The project is also evaluated as a whole.
_____
Please indicate whether you disagree or agree with the following statements on a scale from 1 to 5; circle the appropriate alternative.

   1 = I disagree completely

   2 = I disagree somewhat

   3 = I neither agree nor disagree

   4 = I agree somewhat

   5 = I agree completely

TECHNOLOGY STRATEGY WORKSHOPS, AUTUMN 2007 AND SPRING 2008
We managed to outline the target state of the technology strategy	1 2 3 4 5
We managed to collect pieces we need for the technology strategy	1 2 3 4 5
I myself participated actively in the development of the technology strategy process and pilot	1 2 3 4 5
The composition of the project group was successful	1 2 3 4 5
I felt that the matters discussed in the workshops were important and relevant	1 2 3 4 5
The atmosphere in the workshops was open and positive	1 2 3 4 5

LEARNING IN THE DEVELOPMENT OF THE TECHNOLOGY STRATEGY PROCESS
During the development project I learned which things are important to take into account when developing the technology strategy	1 2 3 4 5
During the project I learned how the company's technology strategy process should be developed	1 2 3 4 5
I have talked about technology strategy matters more than before even with colleagues who did not participate in the workshops	1 2 3 4 5

DEVELOPMENT PROJECT GOALS (on the reverse)
The project goals were appropriate for the company	1 2 3 4 5
Success in this project was essential for the company	1 2 3 4 5
The project was strategically appropriate	1 2 3 4 5
The company management was committed to the goals of the development project	1 2 3 4 5

DEVELOPMENT PROJECT IMPLEMENTATION
The development timetable was realistic	1 2 3 4 5
The project was a great success	1 2 3 4 5
The project achieved permanent results	1 2 3 4 5
It was good to have expertise from outside the organisation in the project	1 2 3 4 5

What thoughts have you had of the second development project – the technology strategy pilot?

What thoughts have you had of the project in general?

What are your wishes regarding innovation management and technology strategy development in the company after the development project?

THANK YOU FOR YOUR TIME!

Appendix C: Checklist for innovation management

1 = hardly at all
2 = not a lot
3 = to some extent
4 = rather well
5 = extremely well

Innovation process

The innovation process has been described
The innovation process is understood in the same way everywhere in the organisation
The innovation process covers the conducting of product projects
The innovation process covers innovation strategy and concept design
Innovations are principally implemented according to the innovation process
The innovation process covers the systematic searching for, evaluation of and further processing of new ideas
All of the company's functions participate in the innovation process
Network partners participate in the innovation process
(Major) customers participate in the innovation process
Goals have been set for the innovation process
The performance of the innovation process is evaluated
The innovation process is continuously evaluated and developed
The innovation process has a designated manager

Innovation culture

Innovation is a corporate value
Employees are encouraged to come up with new ideas and approaches
Employees are encouraged to share their knowledge and information
Change is seen as a positive opportunity
Communication happens at and across several levels
Employees are provided with time and space for free innovation
Learning is encouraged
Failures are seen as learning opportunities for the organisation
The company is willing to help customers by offering better solutions
Incentives for innovations are conducive to group work

Innovation structure

Flexible process organisation
Cross-functional teams implement projects
Innovation process participants are in constant interaction
Project and solution knowledge is compiled and leveraged
Innovation is a concern for the whole company
Senior management has a clear responsibility for innovation management
The organisation does not place limitations on the progress of innovation
The organisation is an active member of the innovation network
The company evaluates innovation capabilities when selecting strategic networking partners
Some cooperation with competitors

Innovation strategy

There is an innovation strategy in place
The innovation strategy has been taken on board throughout the organisation
The innovation strategy governs day-to-day innovation management
The innovation strategy is continuously updated in line with the business strategy
The company uses platforms
Core competences are developed in a feasible way
The innovation strategy determines the innovativeness level of the company
Technology programmes are used to collect strategic development projects into larger entities
Roadmaps are used to chart the future
Portfolio management (R&D) is used to allocate development needs and resources
Planned and emergent progress are balanced
New opportunities are constantly sought

Innovation resources

Continuous personnel development is supported
Knowledge is managed
The aim is to recruit employees with diverse training and experience
Employees are trained to be creative and innovative
The company makes use of the innovation network
The company networks with research institutions (also internationally)
The innovation budget is distributed according to the risk and innovativeness level of the R&D portfolios
A wide variety of funding sources is employed

Appendix D: Self-assesment tool for innovation management

1 = hardly at all
2 = not a lot
3 = to some extent
4 = rather well
5 = extremely well

Innovation process

The innovation process is understood in the same way everywhere in the organisation and innovation network
Everyone has a role in innovation process
The innovation process covers idea generation, idea evaluation, concept design and implementation
Efficiency is sought through routines and practices at the implementation stage
Capacity and space for experimentation and radical experiments
Cross-functional teams implement projects in the innovation process
The innovation process is continuously evaluated and developed

Innovation culture and structure

Renewal through innovation is a corporate value
Employees are encouraged to come up with new ideas and approaches to help customers by offering better solution
Overlapping and conflicting information is produced, tolerated and leveraged
Unnecessary rush and routines will be eliminated
Failures are seen as learning opportunities for the organisation
Flat, team based and flexible process organisation
Incentives for innovations are conducive to group work

Innovation strategy

Innovation strategy steer corporate renewal
Means for renewal are sought by identifying change needs and opportunities simultaneously
The innovation strategy and business strategy are updated continuously, in dialectic learning process
Portfolio management is used to allocate development needs and resources and programmes are used to collect strategic development projects into larger entities
Roadmaps are used to chart the future
Foresight activities, scenario work and small-scale experiments are conducted to outline the future
The innovation strategy determines the means and the innovativeness level of the company

Innovation resources and capabilities

Employees are encouraged to continuous learning and personnel development
The organisation is an active member of the innovation network (including research partners, suppliers, users, customers)
Innovation network is seen as a risk minimiser and a facilitator
Innovation capabilities are developed all the time
Project and solution knowledge is compiled and leveraged
The aim is to recruit employees with diverse training and experience
A wide variety of funding sources is employed

Author(s)
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Title
A model for corporate renewal
## Requirements for innovation management

Abstract

The main object of this study is to increase the understanding of continuous corporate renewal. In this study, renewal refers to the process of companies aiming to reach a competitive edge through innovation. A broad definition of innovation includes product and service innovation as well as business model, management and organisational innovations.

The study deals with innovation management, strategic renewal, organisational learning and organisational change and adaptation. It aims to provide an integrated view of these four distinct approaches related to corporate renewal. An ambidextrous corporate renewal model is then built on the basis of a theoretical framework where it is considered both possible and necessary to implement exploitation and exploration simultaneously and in the same organisation.

The study was conducted as participatory action research simultaneously with a theoretical conceptual analysis during the research process. The empirical data were collected in the innovation management system and innovation strategy process development projects of the case study company. Furthermore, the innovation management system of the case study company was compared with the systems of four other companies in a multiple case study.

Based on the theoretical framework and empirical requirement specifications, a new model of continuous corporate renewal was built. In this model, the exploitation and exploration approaches form the core of the front end of the innovation process. Both approaches share the same implementation stage. The model also features a continuously created shared understanding of vision and leveraging of the knowledge and resources of the organisation and its innovation network.

Tekijä(t)
Tiina Apilo

Nimeke
Yrityksen uusiutumisen malli
Vaatimukset innovaatiojohtamiselle

Tiivistelmä

Tutkimuksen tavoitteena on lisätä ymmärrystä yritysten jatkuvasta uusiutumisesta. Uusiutuminen käsitetään tässä kilpailuedun tavoitteluksi yrityksessä innovaatioiden avulla. Laaja innovaatiomääritelmä kattaa tuote- ja palveluinnovaatioiden lisäksi esimerkiksi liiketoimintamalli-, johtamis- ja organisaatioinnovaatiot.

Tutkimuksen teoriataustan muodostavat toisiaan sivuavat innovaatiojohtamisen, strategisen uusiutumisen sekä organisaation oppimisen ja muutoksen keskustelut. Tutkimuksessa pyritään integroimaan näitä osin samaa uusiutumisen ilmiötä käsitteleviä ja varsin fragmentoituneita tutkimussuuntia. Teoreettinen viitekehys muodostuu yrityksen kaksikätisestä uusiutumisen mallista, jossa yrityksen olemassa olevan tietämyksen tehokas hyödyntäminen ja uutta luova uusiutuminen katsotaan mahdolliseksi ja tarpeelliseksi toteuttaa yhtä aikaa ja samassa organisaatiossa.

Osallistava toimintatutkimus ja teoreettinen käsitteiden tarkastelu toteutettiin rinnakkaisina tutkimusprosessin aikana. Tutkimusaineisto koottiin tapausyrityksen innovaatiojohtamisen järjestelmän ja innovaatiostrategiaprosessin kehittämisen hankkeissa. Tapausyrityksen innovaatiojohtamisen järjestelmää verrattiin lisäksi monitapaustutkimuksessa neljän muun yrityksen vastaavaan järjestelmään.

Tutkimuksen tuloksena syntyi teoreettisen viitekehyksen ja empiirisen aineistosta nousseiden vaatimusmäärittelyjen pohjalta yrityksen jatkuvan uusiutumisen malli. Mallissa olemassa olevaa tehokkaasti hyödyntävä ja uutta luova lähestymistapa muodostavat uusiutumisen ytimen innovaatioprosessin alkupäässä. Innovaatioprosessin toteutusvaihe jatkuu näillä molemmilla yhteisenä. Lisäksi mallissa keskeisessä osassa ovat organisaation jatkuvan yhteisen ymmärryksen muodostaminen tavoitetilasta sekä organisaation ja innovaatioverkoston osaaminen ja resurssit.

The study approaches continuous corporate renewal as a process in which companies seek competitive advantage through innovation in a rapidly changing global operating environment. Innovation is defined very broadly including not only product and service innovations but also business, organisation and management innovations. The study provides an integrated view of four distinct approaches: innovation management, strategic renewal, organisational learning and organisational change. These four aspects are reviewed in more detail from the perspective of ambidexterity to clarify how companies can implement 'both-and' management.

An ambidextrous corporate renewal model is built on the basis of a theoretical framework where it is considered both possible and necessary to implement exploitation and exploration simultaneously and in the same organisation. In this model, the exploitation and exploration approaches form the core of the front end of the innovation process. Both approaches share the same efficient implementation stage. The model also features a continuously created shared understanding of vision and leveraging of the knowledge and resources of the organisation and its innovation network.

VTT