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THE PROCESS OF ORGANISATIONAL ADAPTATION THROUGH INNOVATIONS, AND ORGANISATIONAL ADAPTABILITY

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Abstract

This study is about the process of organisational adaptation and organisational adaptability. The study generates a theoretical framework about organisational adaptation behaviour and conditions that have influence on success of organisational adaptation. The research questions of the study are: How does an organisation adapt through innovations, and which conditions enhance or impede organisational adaptation through innovations?

The data were gathered from five case organisations within one industrial service company. The study applied the case study approach and grounded theory as research methodologies. Primary data were acquired through group and individual interviews. The themes of the interviews were constructed on the basis of outcomes of a pilot study. Other data sources included participant observations, direct observations, discussions, and documents of the organisations.

The theoretical domain covered by the study includes resource dependence theory, contingency theories, evolutionary theories of change, and theories of organisational adaptation, organisational innovation, organisational learning, and organisational creativity.

The study suggests that organisational adaptation behaviour can be conceptualised as a circular phase model consisting of phases of triggering, search, implementation, change, and retention. The triggering phase has sub-phases of scanning, performance monitoring, innovation institutionalisation, and coping. The study suggests that organisational adaptation can take place at multiple levels in the organisational hierarchy and it can be carried out through balanced or unbalanced adaptations. The study recognised 20 categories of conditions that can enhance or impede organisational adaptation through innovations.

The results of the study contribute to the understanding of organisational adaptation behaviour and adaptability and they offer a conceptual framework through which phenomena can be studied further. The results can be utilised in development of organisational adaptability in business organisations.

Keywords organisational adaptation, organisational adaptability, organisational innovation, organisational learning, organisational memory

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Tiivistelmä

Tutkimuksen kohteena on prosessi, jossa organisaatio adaptoituu innovaatioiden avulla sekä organisaation adaptoitumiskyky. Tutkimuksessa luodaan teoreettinen viitekehys organisaation adaptoitumiskäyttäytymisestä ja olosuhteista, jotka vaikuttavat adaptoitumisen onnistumiseen. Tutkimus pyrkii vastaamaan kysymyksiin: ”Miten organisaatio adaptoituu innovaatioiden kautta ja mitkä tekijät edistävät tai ehkäisevät organisaation adaptoitumista innovaatioiden kautta?”

Tutkimusaineisto kerättiin teollisen palveluyrityksen viidestä eri organisaatiosta. Tutkimusmenetelminä käytettiin tapaustutkimusta ja ankkuroidun teorian menetelmää. Primäärinen tutkimusaineisto hankittiin ryhmä- ja yksilöhaastatteluilla. Haastatteluiden teemat luotiin esitutkimuksen kautta. Muina tiedonkeruumenetelminä käytettiin osallistuvaa havainnointia, suoraa havainnointia, keskusteluita ja organisaatioiden dokumentteja.

Tutkimukseen liittyviä teorioita ovat resurssiriippuvuusteoria, kontingenssiteoria, muutoksen evoluutioteoriat ja teoriat liittyen organisaation adaptoitumiseen, organisaation innovointiin, organisaation oppimiseen ja organisaation luovuuteen.

Tutkimuksen perusteella organisaation adaptoitumiskäyttäytyminen voidaan esittää kehämäisenä vaihemallina, jossa vaiheina ovat käynnistäminen, etsintä, täytäntöönpano, muutos ja säilyttäminen. Käynnistämisvaihe sisältää osavaiheet skannaus, suorituskyvyn seuranta, innovoinnin institutionalisointi ja coping. Organisaation adaptoituminen voi tapahtua usealla organisaatiohierakian tasolla. Adaptoituminen voi toteutua tasapainoisten tai epätasapainoisten adaptaatioiden kautta. Tutkimus kuvaa organisaation adaptoitumisprosessin vaiheiden ominaisuuksia ja tunnistaa 20 luokkaa olosuhteille, jotka edistävät tai ehkäisevät organisaation adaptoitumista innovaatioiden kautta.

Tutkimuksen tulokset lisäävät tietämystä organisaation adaptoitumiskäyttäytymisestä ja adaptoitumiskyvystä ja ne tarjoavat teoreettisen viitekehyksen, jonka avulla näitä ilmiöitä voidaan tutkia edelleen. Tuloksia voidaan hyödyntää organisaation adaptoitumiskyvyn kehittämisessä yritysorganisaatioissa.

Asiasanat organisaation adaptoituminen, organisaation adaptoitumiskyky, organisaation innovointi, organisaation oppiminen, organisaation muisti.

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Vantaa, March 2010

Tommi Tikka

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1 INTRODUCTION

1.1 Background

Business organisations compete in constantly changing environments. As the firms grow internationally, they face new competition environments with new demands and opportunities. At the same time, the firms have to take care of their competitiveness in the already established but changing business environments. Success in the new or changing environments requires that a firm can recognise demands and opportunities in its environments. It also requires that a firm is able to develop itself to meet the demands and utilise the opportunities.

An organisation is an "open system" in that it has exchanges with its environment (Katz and Kahn, 1978; Aldrich, 1979; Nelson and Winter, 1982; Pfeffer and Salancik, 2003). The environment with which organisation has exchanges is comprised of "stakeholders." According to Freeman (1984), "stakeholder" is any group or individual who can affect, or is affected by the achievement of a corporation's purpose. Stakeholders include employees, customers, suppliers, stockholders, banks, environmentalists, government, and other groups who can help or hurt the corporation. Barnard (1968) and March and Simon (1958) have called the contents of exchange between an organisation and its stakeholder environment as "inducements" and "contributions." March and Simon (1958) define inducements as "payments made by (or through) organisation to stakeholders (e.g., wages to a worker, service to a client, income to an investor)" and contributions as "payments made by stakeholder to organisation (e.g., work from the worker, fee from the client, capital from the investor)." Cyert and Match (1992) have called the outcomes by which an organisation satisfies the demands of stakeholders as "side payments." Side payments can be in the form of money, personal treatment, authority, organisation policy, and so forth.

Freeman (1984) and Pfeffer and Salancik (2003) have argued that an organisation's survival and success depends on its ability to satisfy the demands of stakeholders who provide the organisation with resources and legitimacy. An organisation's dependence on resources and legitimacy motivates it to be responsive to the demands of stakeholders (Pfeffer and Salancik, 2003). Norman (1971), Zaltman, Duncan, and Holbek (1974), and Duncan and Weiss (1979) propose that for an organisation to remain viable over time it must be able to develop its outcomes in line with the demands of its environment. The study by Lawrence and Lorsch (1969) showed that effective organisations were able to develop their organisational characteristics and behaviour patterns to fit the environment. Correspondingly, low-performing organisations were unable to introduce and market new products to environment.

In the literature several different concepts have been used to describe aspects of development carried out by organisations. The concepts include organisational innovation (Wilson, 1966; Thompson, 1965; Evan and Black, 1967; Knight, 1967, etc.), organisational learning (Cyert and March, 1992; Argyris and Schön, 1978; Duncan and Weiss, 1979; Hedberg, 1981, etc.), action learning (Marquartd, 1999), organisational development (Beer, 1980; Burke, 1982; French and Bell, 1984; Pettigrew, 1985), planned change (Lippit, Watson and Westley, 1958), organisational transformation

(Levy and Merry, 1986), and organisational adaptation (March and Simon, 1958; Duncan and Weiss, 1979; Edmonson and Moingeon, 2004). According to the definitions for these concepts, the concept of organisational adaptation most closely corresponds to the idea that an organisation develops its characteristics and behaviour patterns as a response to changes in its stakeholder environment. Edmonson and Moingeon (2004), for example, have defined organisational adaptation as a change by an organisation in response to external changes – both problems and opportunities. Correspondingly, the capability of adaptation has been called "adaptability" (Trott, 2002; Jasphara, 2004).

Though organisational adaptation and organisational adaptability are critical for an organisation's success and survival, under either title it is not possible to recognise any "broader" theory. Instead, scientific knowledge related to organisational adaptation and adaptability is fragmented to several fields and works.

Contingency theories from Thompson (2004) and Lawrence and Lorsch (1967), resource dependency theory from Pfeffer and Salancik (1978), and institutional theory-related arguments from Meyer and Rowan (1983) explain the motives for organisational adaptation and describe some of the structures an organisation may produce as responses to adaptation pressures. The theories do not describe the processes of organisational adaptation or the capabilities required to carry out the processes.

March and Simon's theory (1958) on organisational behaviour and Cyert and March's theory (1992) on organisational decision making describe specific parts of organisational adaptation process, but not the whole process. Through the notion that an organisation adapts iteratively based on feedback, the theories relate the concept of organisational learning to organisational adaptation.

The field of strategic management (Porter, 1980; Ansoff, 1988) has studied motives for organisational adaptation, generic features that organisations may produce as strategic responses to generic adaptation pressures, rationales for organisational strategies, and the process of strategic planning. The literature on strategic management does not describe in what kind of processes an organisation produces the structural features required for achieving goals for outcomes; nor does it describe capabilities required for organisational adaptation.

Organisational innovation has been considered a means for organisational adaptation (March and Simon, 1958; Wilson, 1966; Thompson, 1965; Evan and Black, 1967; Zaltman, Duncan, and Holbek, 1973; Daft and Becker, 1978; Stata, 1989; Eisenhardt and Tabrizi, 1995). In the literature the concept of "innovation" has occurred in the context of business organisations at least since Schumpeters' "The Theory of Economic Development," published in 1934. In his work the author explained how innovation acts as an engine for economic growth. Till date, the research on organisational innovation has not led to a commonly accepted theory for organisational innovation. Scientific knowledge is fragmented and inadequate on how organisational innovation takes place and what are the constituents of capability of organisational innovation. The accumulation of knowledge on organisational innovation since Schumpeter can be traced from following chronologically arranged statements:

> "Not only can little be spoke about the effect of market structure on innovation, but little can be spoke about the correlation between firm characteristics and innovation" (Wilson, 1966).
>
> "There is very little data in the innovation literature on organisational activity prior to adoption. Little is known about where ideas enter the organisation, who proposes them and why" (Daft and Becker, 1978).
>
> "However, present knowledge and understanding of the innovation process remains at a relatively undeveloped state" (Bigoness and Perrault, 1981).
>
> "There is no universally accepted theory of innovation, since many studies have not been systematically related to and built upon one another" (Van Gundy, 1987).
>
> "…researchers have typically treated innovation as a discrete phenomenon, neglecting to examine variation in the form of adoption itself or in implementation" (Westphal, Gulati and Shortell, 1997).
>
> "As the twentieth century drew to a close there was probably as much debate and argument concerning innovation and what contributes to innovative performance as a hundred years ago" (Trott, 2002).

According to Cyert and March (1992), a firm adapts to its environment by learning from experience in the organisational learning processes. In the literature the first use of the term "organisational learning" was found in March and Simon (1958). Authors used the term when they cited Mertons' work "Bureaucratic structure and personality" published in 1940. The next broader use of term was found in Cyert and March (1992) whose first edition was published in 1963. At the moment, scientific knowledge is scarce on how organisations learn from experience and which conditions enhance or impede this learning. Starting from Cyert and March indications on accumulation of knowledge on organisational learning are as follows:

> "Since little or nor research has been carried out on organisational learning…" (Cyert and March, 1992).
>
> "Relatively little is known about the details by which organisational experience is accumulated into a structure of routines…" (Levitt and March, 1988).
>
> "With very few exceptions (e.g., the work on organisational self-appraisal and on media richness), work on organisational learning has not led to research-based guidelines for increasing the effectiveness of organisational learning" (Huber, 1991).
>
> "Unfortunately, the literature provides no systematic analysis of barriers to organisational learning. Explicit references to impediments to learning are thinly dispersed in the publications of the last twenty-five years" (Berthoin Antal, Lenhardt and Rosenbrock, 2002).

In sum, the existing scientific knowledge on organisational adaptation and adaptability is inadequate. It does not describe how organisations adapt and which conditions contribute to the success of organisational adaptation. The current knowledge is fragmented to several fields and the literature does not offer any theoretical framework to express this knowledge in integrative manners. The present study contributes to the understanding on organisational adaptation and adaptability. It tries to generate a theoretical framework on organisational adaptation and conditions that have influence

on success of organisational adaptation. The study is an effort to create a framework of categories through which the phenomena of organisational adaptation and adaptability can be conceptualised and understood. The better understanding on the phenomena can potentially help organisations develop their adaptability and increase their prospects of success and survival. The knowledge created in this study can be utilised in developing organisational adaptation processes and conditions that facilitate these processes.

1.2 Scope of the study

According to the literature, an organisation can adapt through innovations (March and Simon, 1958; Wilson, 1966; Thompson, 1965; Evan and Black, 1967; Zaltman, Duncan, and Holbek, 1973; Daft and Becker, 1978; Stata, 1989; Eisenhardt and Tabrizi, 1995) or by evoking alternative behaviours from its existing repertoire according to programmed switching rules (March and Simon, 1958). The present study focuses only on organisational adaptation through innovations as it is the renewal aspect which is the object of interest. The goal adopted for the study was describing and explaining organisational adaptation behaviour and adaptability by answering to questions:

- how does an organisation adapt through innovations?
- which conditions enhance or impede organisational adaptation through innovations?

The study does not focus on any specific type of innovation such as product or managerial innovation or small or large innovation as a means for organisational adaptation. Instead, all kinds of innovations are included in the scope of the study. This selection is rationalised by the assumption that organisation produces innovation only for the purposes of organisational adaptation; excluding some innovation types from scope of the study means also excluding some adaptation behaviours of the organisation.

The study is focused on one case company and five case organisations within it. An opportunity for carrying out the study in the case company arose when the company started a three-year development project where the goal was to develop organisational adaptability of the case company. The project aimed at developing an organisational design consisting of structural, behavioural, and technological arrangements required for high-performance organisational adaptation. The design was called “Learning Way of Doing” (later LWOD). The project started in 1999 and was led by the researcher of this study. The project involved a task where selected organisations of the case company would be studied to gain better understanding on the domains of the development. It was agreed that the study would be carried out by the researcher and that the results of the study would be reported as a doctoral thesis.

All the organisations studied are located in Finland. The study was focused on one company because the study was carried out as a fixed part of strategic development of the case company aimed at increasing understanding of organisational adaptation behaviour and adaptability specifically in the case company. Focusing the study on one company restricts the industries covered by the study to those represented by the case company. The case company produced operation and maintenance services for the

plants of industrial customer organisations. Customers for the operation services represented one industry only while customers for the maintenance services represented several different industries.

The literature suggests that an organisation has several different stakeholder environments to which it adapts (Cyert and March, 1992; Freeman, 1984; Pfeffer and Salancik, 2003). In the present research, environments external to the case organisations are studied as they are perceived by the case organisations. The data is not acquired from the organisations that comprise the case organisations' environment; only the case organisations' own descriptions about the environments are used as data. The rationale for the restriction is the assumption that instead of objective environment it is the "subjective environment" that has influence on the behaviour of an organisation (Weick, 1979). In the above constraint the term "external environments" refers to environments other than the employee environment of the organisation. In the organisation-environment dichotomy, the organisation has a dual role because it represents both an organisation which adapts and an employee environment to which an organisation adapts. Studying the case organisations as adapting behavioural units also produced some "objective" data about the employee environments as a by-product. In interviews employees expressed demands on their organisations as stakeholders. This data was also utilised in the study as it offered additional depth for the analysis of organisational adaptation in the employee environment.

Organisational adaptation behaviour of the case organisations was studied between 1999 and 2001. To offer historical perspective to the findings some older incidents of organisational adaptation behaviour are included in the analysis. The selected main time frame was rationalised by the duration of the LWOD project.

1.3 Structure of the dissertation

The first chapter introduced the motive for the study and set the research questions to be answered within the defined scope for the study. Chapter 2 reviews the literature on organisational adaptation, organisational adaptability, and the related topics. Chapter 3 presents the research design and methods applied in the study. Chapter 4 introduces background information about each case organisation and the rationale for the selection of the case organisations. Then, Chapter 5 introduces the research findings. In the last chapter the findings are discussed in relation to previous research findings and literature, the research is evaluated, and issues for future research and managerial implications are suggested.

As answers to the research questions, the present study develops a theoretical framework of organisational adaptation behaviour and organisational adaptability. In the present study organisational adaptation behaviour is conceptualised as a process model consisting of sequential phases. Organisational adaptability is theorised through conditions that enhance or impede organisational adaptation. The theoretical framework developed in the study is applied both in structuring parts of the literature review (chapters 2.4 and 2.5) and the empirical part of the study (chapters 5.3 and 5.4). Chapters 2.4 and 5.3 have sub-chapters that stand for the phases in the process of

organisational adaptation. Chapters 2.6 and 5.4 have dedicated sub-chapters for the conditions that enhance or impede organisational adaptation.

The development of the concepts to describe and explain the phenomena studied was a central part of the theory development in the present study. The concepts used in the study originate from the literature or the findings of the study. When the reviewed literature suggested a concept that could be used to represent a phenomenon detected in the research data, the concept was adopted from the literature and it was used throughout the study. When the reviewed literature did not offer a concept for a phenomenon detected in the research data, this study developed a concept to represent the phenomenon. If the literature involved a concept that was closely related to the phenomena identified in the research data but according to the data, the definition for the concept could not capture the essence of the phenomenon, this study developed a different definition for the concept and used it.

2 LITERATURE REVIEW

Strauss and Corbin (1998) argue that in a research approach where theory is derived from data there is no need to carry out a thorough literature review in the field before data gathering and analysis. According to them, it is impossible to know prior to the research what theoretical concepts will emerge. Therefore, it is difficult to select relevant literature for the review beforehand. In the present study, a through literature review was carried out only after the empirical part of the study. The review was guided by the findings of the study and the findings were utilised in structuring the literature review.

Though the theoretical foundation of the present study is fragmented and immature, some advances in knowledge have been achieved in the fields related to organisational adaptation and adaptability. The following four chapters aim at drawing together this knowledge and structure it under the framework that emerged in the empirical part of the study. Chapter 2.1 concentrates on analysis of the central concepts in the studied domain. Chapter 2.2 presents literature on organisational adaptation process and Chapter 2.3 on conditions of organisational adaptation.

2.1 ANALYSIS OF KEY CONCEPTS OF THE STUDY

This chapter reviews the existing definitions for the key concepts in the domain of the present study. The key concepts involved in the review are organisational adaptation, organisational innovation, organisational learning, and organisational memory. At first, each concept is reviewed alone. Then, relationships between concepts are clarified and finally concepts that will be adopted for the study are introduced and defined.

2.1.1 Organisational adaptation

The concept of "organisational adaptation" as a process was broadly used in the reviewed literature but only few explicit definitions were given to the concept. According to March and Simon (1958), organisational adaptation is a process where, after conditions in organisation or in its environment have changed in such a way as to affect adversely an organisation's inducements-contributions balance and endanger its survival, members of organisation initiate changes in activities to restore a favourable balance. Duncan and Weiss (1979) define "adaptation" as a deliberate change in organisational actions by decision makers in response to changed organisation-environment conditions. Adaptation occurs when change in conditional context for action changes the action-outcome relationship in such a way that current action will not produce the desired outcome any more. Fiol and Lyles (1985) define adapting as an ability to make incremental adjustments as a result of environmental changes, goal structure changes, or other changes. Behavioural adaptation can be measured by changes in management systems, decisions, and the allocation of resources. Rollinson and Broadfield (2002) define adaptation as an incremental change that occurs as an organisational reaction to a change in its environment. According to Edmonson and Moingeon (2004), adaptation is change by an organisation in response to external changes – both problems and opportunities.

The reviewed definitions view adaptation as a one-way process where an organisation makes adjustments as a response to change in the environment and/or organisation. In contrast to these definitions, Aldrich (1979), Levy and Merry (1986), Veen and Korver (1998), and Pfeffer and Salancik (2003) argue that adaptation is a mutual process between actor and environment. An organisation can adapt to its environment by changing itself to fit the environment or it can change the environment to fit the organisation. The initiative for adapting may come from environment to organisation or from organisation to environment (Aldrich, 1979). Hedberg (1981) calls the process by which an organisation adjusts its environment to fit the organisation as "manipulation." He constrains the meaning of the term "adaptation" to a process through which an organisation adjusts itself to fit the environment. According to Pfeffer and Salancik (2003), mutuality of adaptation extends the developmental domain of an organisation to its external environment. An organisation can contribute to the development of its environment in ways that support survival and success of an organisation.

According to March and Simon (1958), adaptation does not necessarily expect that an organisation represents new behaviours. An organisation can adapt to changed conditions also by evoking alternative ways of behaviour from its existing repertoire according to programmed switching rules. Contrastingly, Evan and Black (1967) argue that adapting to a changing environment entails the development of new ideas or procedures.

Organisational adaptation may take place at multiple levels in the organisational hierarchy (Cangelosi and Dill, 1965; Duncan and Weiss, 1979; Freeman, 1984; Scott, 1998). Therefore, all hierarchy levels where an organisation interacts with its stakeholders have to be taken into account when that organisation analyses and develops its ability to deal with its stakeholders (Freeman, 1984).

2.1.2 Organisational innovation

The literature suggests several definitions for the concept of innovation both as a process and an outcome. According to the "process definitions," innovation is an organisational process of 1) bringing programmes which are new for an organisation into existence and modifying them (March and Simon, 1958); 2) generating, accepting, and implementing new ideas, processes, products, or services (Thompson, 1965); 3) implementing new ideas or procedures, whether a product of invention or discovery (Evan and Black, 1967); 4) adopting a change which is new to an organisation and to the relevant environment (Knight, 1967); 5) bringing invention into use (Schon, 1967); 6) successful introduction of new means or ends into an applied situation that are new to that situation (Mohr, 1969); 7) utilising successfully processes, programmes, or products which are new to an organisation and which are introduced as a result of decisions made within that organisation (Rowe and Boise, 1974); 8) adopting means or ends that are new to the adopting unit (Downs and Mohr, 1976); 9) the earliness or extent of use by a given organisation of a given new idea, where "new" means only new to the adopting agent, and not necessarily to the world in general (Downs and Mohr, 1979); 10) creating and introducing original solutions for new or already identified needs (Quinn, 1979); 11) deliberately importing across organisational boundaries an identifiable package of technological information and putting this information to use in the activities the organisation undertakes (Dill and Friedman, 1979); 12) bringing any

new, problem-solving, or opportunity-addressing idea into use (Kanter, 1984); and 13) successful implementation of creative ideas within an organisation (Amabile, 1988).

Innovation as an outcome has been defined as 1) a new solution to a problem that currently faces the organisation (Cyert and March, 1992); 2) a "fundamental" change in a "significant" number of tasks (Wilson, 1966); 3) the first or early use of an idea by one of a set of organisations with similar goals (Becker and Whisler, 1967); 4) an invention which has reached market introduction in the case of a new product, or first use in a production process, in the case of a process innovation (Utterback, 1971); 5) any idea, practice, or material artifact perceived to be new by the relevant unit of adoption (Zaltman, Duncan and Holbek, 1973); 6) an adopted change considered new to the organisation's environment (Daft and Becker, 1978); and 7) an idea, practice, or object perceived as new by an individual or other unit of adoption (Rogers, 1983).

Most of the definitions above (March and Simon, 1958; Cyert and March, 1992; Thompson, 1965; Evan and Black, 1967; Schon, 1967; Mohr, 1969; Utterback, 1971; Zaltman, Duncan and Holbek, 1973; Rowe and Boise, 1974; Downs and Mohr, 1976, 1979; and Rogers, 1983) agree that innovation as a process produces or as an outcome is something new for the adopting organisation. Newness implies that innovation produces or has the potential to produce change by shifting an organisation from its initial state to a state where it has not been before. Definitions of innovation from Becker and Whisler (1967), Knight (1967), and Daft and Becker (1978) extend the organisational domain to which innovation represents something new to the environment of the adopting organisation. In Becker and Whisler's definition (1967), the environment consists of organisations having similar goals with the adopting organisation. Knight (1967) refers to the environment that has relevance to organisation. Daft and Becker (1978) do not give any specifications for the environment to which innovation represents something new.

The definitions of Zaltman, Duncan and Holbek (1973), Daft and Becker (1978) and Rogers (1983) hold that to be called an innovation, the new object does not need to be implemented. The new object becomes an innovation when an organisation has sufficient information about it. From the process point of view, innovation is not a final outcome but emerges in the forepart of the process. In contrast, the definitions of Wilson (1966), Daft and Becker (1978), Becker and Whisler (1967), Utterback (1971), Mohr (1969), Rowe and Boise (1974), and Amabile (1988) contain the idea that the new object can be called an innovation only after it has been implemented and become an actual feature of its "host domain."

The term "adoption" has frequently been used in the context of innovation. According to Daft and Becker (1978), Daft (1978), and Rogers (1983), "adoption" is an act of making an implementation decision. In contrast, Wilson (1966), Knight (1967), Zaltman, Duncan, and Holbek (1973), and Downs and Mohr (1976, 1979) argue that "adoption" has taken place only after implementation. According to the latter definition, the outcome of adoption is change, while in the former definition adoption produces only the acceptance of efforts to make change. Rowe and Boise (1974) argue that a new organisational feature is not an innovation if an external actor such as a legislator has forced an organisation to adopt it.

It has been suggested that organisational innovations may occur in clusters where one innovation triggers another. According to Wilson (1966), clusters occur because the price of obtaining the consent of members to one innovation is often to adopt other innovations that benefit them or because successful adoption of one change encourages organisation members to think that additional changes are not as costly as they believed. The limited resources available for innovations prevent chain-reactions from continuing without end. Innovation clusters can also occur when change in an organisation's physical environment (e.g. tools, machines, etc.) requires adaptation of other aspects of an organisation (Barnard, 1968).

If innovation is defined as a new object for an organisation, removing previously adopted innovation can be considered one special type of innovation. Kimberly (1981) called the process of removing existing innovation as "exnovation." Exnovation may occur when 1) newer better performing innovation is developed; 2) adopted innovation does not perform well enough to justify its continued use; or 3) environment changes in a way that forces exnovation.

2.1.3 Organisational learning

Cyert and March (1992) have not given an explicit definition for the concept of "organisational learning" but its meaning is possible to conclude from their work. According to them, an organisation learns by experience which behaviours are successful and which are not. If behaviour is unsuccessful, conditions that govern behaviour are adjusted toward a state where behaviour produces expected outcomes.

Since the work of Cyert and March, several definitions of "organisational learning" have been suggested. In addition to Cyert and March, definitions considering "experience" of organisational action as one central condition for organisational learning have been suggested by Argyris and Schön (1978), Duncan and Weiss (1979), Hedberg (1981), Fiol and Lyles (1985), Levitt and March (1988), Stata (1989), DiBella and Nevis (1998), and Edmonson and Moingeon (2004). According to Argyris and Schön (1978), organisational learning occurs when members of the organisation act as learning agents for the organisation, responding to changes in the internal and external environments of the organisation by detecting and correcting errors in organisational "theory-in-use," and embedding the results of their inquiry in private images and shared maps of organisation. Theory-in-use consists of norms, strategies, and assumptions that guide organisational action. Duncan and Weiss (1979) define organisational learning as a process within the organisation by which knowledge about action-outcome relationships and the effect of the environment on these relationships is developed. Hedberg (1981) argues that organisational learning takes place when organisations interact with their environments—organisations increase their understanding of reality by observing the results of their acts. Often the acts are experimental. In other instances, organisations learn by imitating another organisation's behaviour, or by accepting other organisations' experiences and maps of the environment. According to Fiol and Lyles (1985), organisational learning means the development of insights, knowledge, and associations between past actions, the effectiveness of those actions, and future actions. Levitt and March (1998) see organisations learning by encoding inferences from history into routines that guide behaviour. According to Stata (1989), organisational learning

entails new insights and modified behaviour. Organisational learning occurs through shared insights, knowledge, and mental models. Learning builds on past knowledge and experience—that is, on memory. DiBella and Nevis (1998) define organisational learning as the capacity or processes within an organisation to maintain or improve performance based on experience. Edmonson and Moingeon (2004) define organisational learning as a process in which an organisation's members actively use data to guide behaviour to promote the ongoing adaptation of the organisation. To use data is to seek and attend to task-relevant information, in particular for assessing collective performance and progress against goals. Guiding behaviour involves choosing actions based on data-driven observations, including actions designed to test inferences (Edmonson and Moingeon, 2004).

According to Argyris and Schön (1978), Duncan and Weiss (1979), Hedberg (1981), Senge (1990), March (1991), Kim (1993), and Steensma (1996), an organisation learns via its individual members, but individual learning is not sufficient for organisational learning to occur. However, an individual can act as an agent for organisational learning (Argyris and Schön, 1978; Duncan and Weiss, 1979; Hedberg, 1981; March, 1981; Kim, 1993; Glynn, Lant, and Milliken, 1994; and Crossan, Lane, and White, 1999). In the literature, two different approaches can be detected concerning how individual learning contributes to organisational learning. The "diffusion" approach (Glynn, Lant and Milliken, 1994), holds the idea that individual learning results are shared with other members of an organisation, and as a result more than one individual in an organisation has the same knowledge. Individual learning results are embedded in shared maps (Argyris and Schön, 1978), shared action-outcome knowledge (Duncan and Weiss, 1979), shared world views, ideologies, mental maps, behaviours, norms and values (Hedberg, 1981), and shared mental models (Kim, 1983). The "experiential" approach holds the idea that individual learning results are embedded in constructs that guide collective organisational behaviour. Construct knowledge or knowledge utilised in creation of constructs need not be shared in such a way that more than one individual has the same knowledge. Individual learning results are embedded in procedures, norms, rules, and forms (March, 1981), institutionalised ways of action (Glynn, Lant, and Milliken, 1994), and institutionalised artefacts such as systems, structures, strategy, routines, prescribed practices of organisation, and investments in information systems and infrastructure (Crossan, Lane, and White, 1999). According to Crossan, Lane, and White (1999), institutionalisation includes that tasks are defined, actions specified, and organisational mechanisms put in place to ensure that certain actions occur. They argue that institutionalisation of artefact is a necessary condition for organisational learning to occur.

2.1.4 Organisational memory

According to Walsh and Ungson (1991), most of the early references to organisational memory have been raised in the context of a discussion of organisational adaptation or organisational learning. The term "organisational memory" was used in Simon and March (1958) and Cyert and March (1992). Cyert and March (1992) argue that "standard operating procedures" are the organisational memory. According to them, standard operating procedures store knowledge that an organisation has created through experience. As used by Cyert and March (1992), the definition of organisational

memory holds that an organisational artefact has a capacity to store knowledge that has been utilised in constructing the artefact. Similar views have been offered by March (1981), Levitt and March (1988, 1990), Cohen, (1991), Walsh and Ungson (1991), and Moorman and Miner (1997). According to Walsh and Ungson (1991), knowledge, as interpretations of past, can be embedded within individuals, as well as in organisational artefacts. Moorman and Miner (1997) define organisational memory as collective beliefs, behavioural routines, or physical artefacts that vary in their content, level, dispersion, and accessibility.

Argyris and Schön (1978) and Kim (1983) have used the term "organisational memory" to imply that organisational artefacts are the content of organisational memory, not the memory itself. According to Argyris and Schön (1978), images and maps that encode organisational theory-in-use are the media of organisational memory. Kim (1983) argues that the contents of organisational memory include everything that is somehow retrievable from external recording devices and individual minds. Orr (1990) has used the term "community memory" to refer to things known in common by all or most competent members of the community in question.

According to Walsh and Ungson (1991) and Cohen and Bacdayan (1994), organisational memory enables the creation and implementation of responses every time a specific stimulus emerges with no cost. Through organisational memory, organisational behaviour can be controlled without incurring expensive monitoring costs (Walsh and Ungson, 1991). In the control function organisational memory shapes desired behaviours in an organisation through "whats" (Walsh and Ungson, 1991) and "hows" (Cyert and March, 1992; Walsh and Ungson, 1991) stored in memory.

2.1.5 Relationships between concepts

All the reviewed definitions of organisational adaptation (March and Simon, 1958; Duncan and Weiss, 1979; Fiol and Lyles, 1985; Rollinson and Broadfield, 2002; Edmonson and Moingeon, 2004) agree that adaptation produces externally observable change. According to March and Simon (1958), Duncan and Weiss (1979), and Fiol and Lyles (1985), this change is behavioural. Hedberg (1981) and Fiol and Lyles (1985) call behavioural adaptations of an organisation as "organisational changes." Another domain of substantial agreement is the relationship between the concepts of organisational adaptation and organisational innovation. March and Simon (1958), Wilson (1966), Thompson (1965), Evan and Black (1967), Zaltman, Duncan, and Holbek (1973), Daft and Becker (1978), Stata (1989), and Eisenhardt and Tabrizi (1995) consider innovation a means for adaptation. However, two different views were detected concerning whether adaptation always involves innovation. According to March and Simon (1958), not every adaptive change in behaviour implies innovation because an organisation may adapt by evoking alternative ways of behaviour from its existing repertoire according to programmed switching rules. In contrast, Evan and Black (1967) argue that adapting to a changing environment entails the development of new ideas or procedures.

In the literature reviewed only Stata (1989) used the concepts of organisational learning and innovation in the same context. He argues that organisational learning is a principal process by which management innovation occurs. The text of the author implicitly

suggests that an organisation's adaptation through organisational learning and innovation is a means for organisational learning.

The literature on the relationship between organisational adaptation and learning suggests that the two processes may occur together when an organisation adjusts its fit to the environment. Definitions have differences in whether they call the process of adjusting the fit organisational adaptation or organisational learning. Hedberg (1981), Cyert and March (1992), Rosenstiel and Koch (2001), and Edmonson and Moingeon (2004) see organisational adaptation and learning as two intertwined processes. Hedberg (1981) treats organisational learning as the "frame process" through which an organisation adjusts its fit with the environment. According to him, organisational learning includes the processes of adaptation and manipulation. In adaptation, an organisation adjusts itself to fit the environment; in manipulation, an organisation adjusts the environment to fit the organisation. In contrast, Cyert and March (1992), Rosenstiel and Koch (2001), and Edmonson and Moingeon (2004) view adaptation as a "frame process" for organisational learning. Cyert and March (1992) state that a firm adapts to its environment by learning from experience in the organisational learning processes. Duncan and Weiss (1979) consider organisational adaptation and learning as two different processes which may or may not occur together. According to them, learning changes the organisation's knowledge base, while adaptation changes its behaviour. For example, adaptation may occur without learning when management observes that some new structures are successful but they don't understand why. Correspondingly, learning may exist without any change in behaviour. However, developed and learned knowledge may be one enabling condition for adaptation.

Cyert and March's approach (1992) to organisational learning has been called an "adaptive learning approach" (Aldrich, 1999; Crossan, Lane, and White, 1999), "adaptive learning perspective" (Levinthal, 1991; Aldrich, 1999), and "adaptive view of learning" (Shrivastava, 1983). According to Crossan, Lane, and White (1999), the adaptive learning approach views organisational learning as the process of adjusting behaviour in response to experience. Aldrich (1999) argues that the adaptive learning approach was pioneered by Cyert and March (1963). According to Cyert and March (1992), a business organisation is an adaptive institution because it learns from its own experience. Learning takes place by encoding inferences from history into routines that guide behaviour. Routines adapt to experience incrementally in response to feedback about outcomes and organisational learning depends on the evaluation of outcomes as successes or failures (Levitt and March, 1988). The likelihood that a routine will be used is increased when it is associated with success in meeting a target and decreased when it is associated with failure (Cyert and March 1992). As an amendment to Aldrich (1999), the adaptive learning approach was developed already by March and Simon (1958). According to March and Simon (1958), an organisation can achieve long-run adaptiveness through processes by which the organisation adds programmes to its repertory or modifies programmes that exist in its repertory. Over time an organisation adjusts its aspiration levels of satisfaction criteria toward levels that the organisation has been able to achieve in the past. Programs used for achieving aspiration levels are generated by past experience and in expectation of future experience in a given situation. "Routinised" behavioural response to specific stimuli has been developed and learned at some previous time as an appropriate response for a stimulus of this class.

Long-run adaptiveness corresponds to learning. Senge (1990) has defined adaptive learning as learning how to adapt to environmental change. In their study on adaptive organisational learning of team during a management simulation game, Cangelosi and Dill (1965) found that learning is sporadic and stepwise rather than continuous and gradual.

The concept of organisational memory relates to organisational adaptation through the concept of organisational learning. Definitions for the relationship between organisational learning and organisational memory have been suggested by Cyert and March (1992), Argyris and Schön (1978), Cohen (1991), and Levitt and March (1988). According to them, organisational memory stores results of experiential learning. Stored knowledge is the result of individual learning (Argyris and Schön, 1978; Levitt and March, 1988) and it may have the form of tacit knowledge or formal rules (Levitt and March, 1988). Walsh and Ungson (1991) don't use the term "learning" in the context of organisational memory but they agree that the contents of memory are constructed by individual members of an organisation. According to Cohen (1991), building and modifying the repertoire of routines are fundamental activities because they embody learning in routines, thus constituting a major form of organisational memory.

2.1.6 Summary

The literature reviewed suggests that organisational adaptation, organisational learning, and organisational innovation can represent different expressions of the same organisational process and different phases or phase sequences within the same process. According to the literature, the process of organisational adaptation produces an observable change. An organisation adapts either through organisational innovation or by evoking alternative features from its existing repertoire. Organisational adaptation and learning may occur together when an organisation adjusts its fit with the environment. The two processes are independent in that the organisational adaptation can occur without learning, and learning can occur without organisational adaptation. Organisational learning occurs as part of adaptation when an organisation learns about its environment and attributes the successes or failures of the new features. Learning may involve that the created knowledge is shared within the organisation. Interestingly, the phenomenon of organisational learning has seldom been mentioned in the context of organisational innovation. Logically, the process of organisational adaptation involves the creation and learning of new knowledge only when organisational adaptation takes place through the features that are new for an organisation. Both the concept of organisational adaptation and organisational learning has been used to refer to a process by which an organisation adjusts its fit with the environment.

In the present study the concept of "**organisational adaptation**" refers to carrying out organisational innovation as a response to a detected demand or opportunity to increase the "fit" between an organisation and its stakeholder environment. The term "fit" refers to how well an organisation can, in a stakeholder's opinion, satisfy the demands of the stakeholder. The definition used differs from those of Rollinson and Broadfield (2004) and Fiol and Lyles (1985) because it does not restrict organisational adaptation to incremental changes. The definition differs from those of March and Simon (1958) and Duncan and Weiss (1979) and is consistent with that of Edmonson and Moingeon

(2004) because it sees both problems and opportunities as potential motivating conditions for organisational adaptation. The definition involves the idea that organisational innovation is a means for organisational adaptation. This is consistent with the views of March and Simon (1958), Wilson (1966), Thompson (1965), Evan and Black (1967), Zaltman, Duncan, and Holbek (1973), Daft and Becker (1978), Stata (1989), and Eisenhardt and Tabrizi (1995).

In the present study, the concept of "**innovation**" as an outcome refers to a feature that is new for its "host" organisation but is not necessarily new for other organisations. This way of using the term is consistent with how it has been used by March and Simon (1958), Cyert and March (1992), Thompson (1965), Evan and Black (1967), Schon (1967), Mohr (1969), Utterback (1971), Zaltman, Duncan, and Holbek (1973), Rowe and Boise (1974), Downs and Mohr (1976, 1979), and Rogers (1983). The new organisational feature gets "innovation" status only after the blueprint of the new feature has been implemented and the organisation has changed to express the new feature. Also, this term is consistent with how it has been used by Wilson (1966), Daft and Becker (1978), Becker and Whisler (1967), Utterback (1971), Mohr (1969), Rowe and Boise (1974) and Amabile (1988). The study treats organisational change as an outcome of organisational innovation.

In the present study the concept "**organisational memory**" refers to stores of knowledge that reside in an organisation. The two types of storage are memories of individuals and external recording devices. The definition differs from that of Cyert and March (1992), March (1981), Levitt and March (1988, 1990), Cohen, (1991), Walsh and Ungson (1991), and Moorman and Miner (1997) because it does not treat organisational artefacts as organisational memory. Instead, organisational artefacts that can be expressed in the form of knowledge are contents that can be stored in organisational memory. This approach is consistent with Argyris and Schön (1978) and Kim's views (1983) on organisational memory.

The present study adopts a view that knowledge is stored into organisational memory through the process of "**organisational learning.**" Organisational learning can take place in the process of organisational adaptation. The storage of knowledge can also be external recording device, so organisational learning does not necessarily require that knowledge is stored in individual memories. However, the individual agents of organisation create or receive the knowledge that is stored into organisational memory. The view that individuals act as the agents of organisational learning is consistent with the views of Argyris and Schön (1978), Duncan and Weiss (1979), Hedberg (1981), March (1981), Kim (1993), Glynn, Lant, and Milliken (1994), and Crossan, Lane, and White (1999). That organisational learning changes the contents of organisational memory is supported by the view of Argyris and Schön (1978). Cyert and March (1992), Rosenstiel and Koch (2001) and Edmonson and Moingeon (2004) have considered organisational adaptation a "frame process" for organisational learning.

2.2 ORGANISATIONAL ADAPTATION PROCESS

This chapter reviews literature on how an organisation adapts through innovations. The literature on process models for organisational adaptation is reviewed in Chapter 2.2.1. Chapters 2.2.2, 2.2.3, and 2.2.4 have been structured according to the findings of the present study. The chapters and their sub-chapters represent the phases of the organisational adaptation process suggested by the findings of the present study. Chapter 2.2.2 on "Triggering" concentrates on processes that have been suggested to detect conditions which may trigger organisational adaptation. Chapter 2.2.3 focuses on the literature on the process of organisational innovation. Chapter 2.2.4 on "Retention" is about processes through which an organisation retains the features it has produced through organisational innovation. The chapter 2.2.5 summarises the literature on the organisational adaptation process and introduces concepts that will be adopted for the empirical part of this study to conceptualise the process of organisational adaptation.

2.2.1 PHASE MODELS FOR ORGANISATIONAL ADAPTATION

The phase models for the process of organisational adaptation have been suggested by Aldrich (1979), Duncan and Weiss (1979), Nelson and Winter (1982), Schein (1994), and Nelson (1995). According to Duncan and Weiss (1979), the process of adapting organisational activities has the phases of 1) identifying problems in the environment; 2) generating information about these problems and transferring this information to that part of the organisation that can do something about the problems; 3) taking corrective action; and 4) getting feedback on the corrective action to determine if the problem was solved. For adapting to change in internal or external environments, Schein (1994) suggests a phase model with the phases of 1) sensing a change in organisation or in environment; 2) importing the relevant information about the change into those parts of the organisation that can act upon it, and digesting the implications of that information; 3) changing production or conversion processes inside the organisation according to the information obtained while reducing or managing undesired side effects in related systems, and stabilising the change; 4) exporting new products, services, etc., which are more in line with the originally perceived changes in the environment; and 5) obtaining feedback on the success of the change through further sensing the state of the external environment and the degree of integration of the internal environment. All stages are carried out more or less simultaneously since the organisation is in a constant dynamic interaction with its multiple environments.

Aldrich (1979), Nelson and Winter (1982), and Nelson (1995) have conceptualised the process of adapting through evolutionary models using analogies to biological evolution. Aldrich (1979) explains changes in organisational structures and processes through a "population ecology model" based on a natural selection model of biological ecology. In the model, the process has three phases: 1) variation, 2) selection, and 3) retention. Variation generates new forms of structures and processes. The outcomes of variation are raw material from which selection is made on the basis of environmental or internal criteria. Retention mechanisms preserve selected structures and processes. Expressed as a learning process of an individual organism, variation occurs in exploratory responses to stimuli, selection takes place through differential reinforcement of particular exploratory responses, and retention occurs when the memory system ensures positively selected responses can be recalled for future use. Aldrich (1979)

argues that the population ecology model completely describes trial and error learning and socio-cultural and organisational evolution. In addition, the model offers a framework for explaining how organisations change in ways that make them more fit for the environment they face.

In their evolutionary theory of capabilities and the behaviour of business firms, Nelson and Winter (1982) describe the organisational change process with two phases: 1) search and 2) selection. According to Nelson and Winter, the evolution of a firm is motivated by profit. In the search phase the firm searches for ways to improve its profits through innovation or imitation. Innovation or imitation is employed by changing the routine. Selection carried out by the market environment determines which firms are profitable and which are not. They also recognise the phases of choice and implementation as forms of organisational behaviour, but do not connect the phases explicitly to search or selection. In evolutionary theory, adaptation is a process of learning from experience which "search products" are viable and which are not (Nelson, 1995).

It has been suggested that the process of organisational adaptation possesses a circular shape. Organisational adaptation takes place iteratively through a circular process where "fit" is achieved by making adjustments on the basis of feedback (Cyert and March, 1992; Duncan and Weiss, 1979; Schein, 1994; Edmonson and Moingeon, 2004). Schein (1994) calls the circular process which begins with a change in organisation or environment and ends with a more adaptive, dynamic equilibrium for dealing with the change, as "organisation's adaptive coping cycle." According to Barnard (1968), the similar pattern of iterative adaptation occurs in organisations also at the level of an individual employee.

Circularity as a process character has also been recognised in organisational innovation. According to Attewell (1992), modifications or "re-inventions" of innovation are triggered by results from learning by doing. In his study on transferring best practices between organisations of the firm, Szulanski (1994) found that after an organisation adopted a practice, it started to use and improve it gradually until satisfactory results were achieved. In a study on sharing good practices between the plants of multi-plant firm Chew, Bresnahan and Clark (1990) found that new equipment may have negative influence on plant performance because equipment requires a lengthy period of debugging and adjustment and high personnel turnover may lengthen this period. In their study on innovation adoption in footwear manufacturers Duchesneau, Cohn and Dutton (1979) found that firms used a trial period to reduce the uncertainties and risks associated with 1) the ability of the new machine to be integrated into the existing production process, and 2) the likelihood that it will achieve its performance expectations. In the trial stage firms also utilised the experiences of other firms using the innovation.

Circularity has been explained by that the primary innovation does not fit perfectly to the adopting environment (Wilson, 1966; Hage and Aiken, 1970; Rogers, 1983). Hage and Aiken (1970) explain the lack of fit by that organisational innovation cannot be planned completely in advance. Incompleteness causes unanticipated consequences that create a need for re-adjustments. Nelson and Winter (1982) argue that the consequences of employing an innovation will become more predictable only after a reasonable

amount of actual operating experience has accumulated. According to Wilson (1966) and Rogers (1983), the lack of fit exists due to the diversity of individuals or organisations facing the same innovation. Individuals and organisations can have different needs, problems, and situations, and through modifications each adopter can accommodate innovation to its own local conditions (Rogers, 1983). Attewell (1992) argues that adjustments occur because a supplier of innovation does not deliver all the knowledge needed for using innovation; consequently user organisations must recreate knowledge by themselves. According to Rogers (1983), re-invention can occur especially when 1) innovations are complex and difficult to understand, 2) the adopter lacks detailed knowledge about the innovation, 3) innovation is a general concept or a tool with many applications, 4) innovation is implemented to solve a wide range of problems, 5) there exists local pride of ownership of an innovation, and 6) change agency influences its clients to modify or adapt an innovation.

2.2.2 TRIGGERING

The literature suggests that the process of organisational innovation may be triggered by 1) change in the environment (March and Simon, 1958; Mohr, 1969; Daft and Becker, 1978) or organisation (March and Simon, 1958); 2) opportunity for a new organisational feature (March and Simon, 1958; Utterback, 1971; Daft and Becker, 1978; March, 1981; Rogers, 1983); 3) institutionalisation of innovation (March and Simon, 1958; Knight 1967); or 4) a gap in organisational performance (March and Simon, 1958; Knight, 1967; Daft and Becker, 1978; Rogers, 1983).

The environmental change that triggers organisational innovation may concern 1) a demand for organisational outcomes (Mohr, 1969; Daft and Becker, 1978; Nelson and Winter, 1982); 2) the availability of resources from the environment (Pfeffer and Salancik, 2003; Nelson and Winter, 1982); or 3) the technological environment (Daft and Becker, 1978). An opportunity for a new organisational feature motivates the innovation process when the feature enables more satisfactory performance (March and Simon, 1958; Daft and Becker, 1978). Institutionalisation of innovation occurs when organisational criteria of satisfaction have been stated in terms of rate of change of performance or rate of innovation (March and Simon, 1958). The organisational performance gap is a consequence of changes in an organisation (March and Simon, 1958) or environment (March and Simon, 1958; Daft and Becker, 1978) and in this sense, it can be considered a “reactive” response to change. An organisation can also respond proactively to environmental changes before they have influence on organisational performance (Duncan and Weiss, 1979). Cohen and Levinthal (1990) argue that an organisation operating in a proactive mode is sensitive to emerging technological opportunities in its environment, while in reactive mode it searches for new alternatives in response to failure on performance criterion such as profitability, market share, etc.

Organisations can acquire information about potential triggering conditions by 1) **scanning** (Daft and Becker, 1978; Weick, 1979; Hedberg, 1981; March, 1981; Rogers, 1983; Daft and Weick, 1984; Pfeffer and Salancik, 2003; Huber, 1991) and 2) **performance monitoring** (Huber, 1991).

2.2.2.1 Scanning

An organisation acquires information about its environment for adapting purposes (Knight, 1967; Pfeffer and Salancik, 2003). The process through which information is acquired about an organisation's external environment has been called "scanning" (Daft and Becker, 1978; Weick, 1979; Hedberg, 1981; March, 1981; Rogers, 1983; Daft and Weick, 1984; Pfeffer and Salancik, 2003; Huber, 1991). Acquired information may describe 1) the demands of stakeholders (Pfeffer and Salancik, 2003); 2) new scientific and technological developments (Knight, 1967); 3) features of competitor organisations (Knight, 1967; Nelson and Winter, 1982); or 4) innovation (March and Simon, 1958; Daft and Becker, 1978; Rogers, 1983). Thompson (2004) has called scanning the environment for new opportunities "opportunistic surveillance." According Schein (1994), organisational adaptation also requires the acquisition of information about changes in an organisation's "internal environment." The internal environment refers to an organisation itself.

According to Pfeffer and Salancik (2003), information about the demands of stakeholders is acquired through market research and surveys of attitudes among employees, stockholders, customers, and suppliers. The methods recognised by Nelson and Winter (1982) for acquiring information about competitor organisations include 1) buying and studying their products; 2) hiring away their technically expert employees; 3) reading accounts of their activities in trade journals, reports of securities analysts, and their mandatory filings with government agencies; 4) hiring consultants who work with other firms in the industry as well; 5) reading copies of their patents or the publications of their research scientists; 6) overt purchase or exchange; and 7) covert schemes of industrial espionage. External knowledge for R&D purposes can be acquired by 1) reading research publications; 2) participating in public R&D activities and learning from customers and suppliers; and 3) acquiring another firm or merging with it (Nelson and Winter, 1982).

According to Daft and Weick (1984), the process of scanning is followed by "interpretation" where observed events are translated, and shared understanding and conceptual schemes are developed among members of upper management. The qualities of organisational response to events in an environment depend on how key decision makers have interpreted information about the environment. Hedberg (1991) and Pfeffer and Salancik (2003) argue that knowledge created about environment does not necessarily represent objective reality. Instead, the environment becomes known through the process of "enactment" in which knowledge is created by attention, perception, and interpretation. According to Weick (1979), an organisation also produces its environment more concretely in process of enactment. For example, an organisation may unconsciously influence the environment in ways that makes the environment have characteristics that the organisation believed it to have before the influence.

In addition to intentional scanning, an organisation can get information about its environment as a result of the environment's efforts to expose an organisation to information (Cyert and March, 1992; Allen, 1977; Duchesneau, Cohn, and Dutton, 1979). In his study on communication patterns and information flows in R&D-projects and organisations, Allen (1977) found that to get idea generating messages from

vendors an organisation usually did not need to search for messages from vendors; instead, vendors took the initiative and approached the organisation. The study of Duchesneau, Cohn, and Dutton (1979) suggested that in this mode of information acquisition an organisation's motivation to trigger emerged because its suppliers succeeded in creating a need for innovation by showing how innovation can meet particular problems of an organisation.

According to Pfeffer and Salancik (2003), an organisation may not respond to every event in the environment because the organisation 1) is isolated or buffered from effects of the event; 2) does not notice the event; or 3) does not consider the event important enough to require a response. Wilson (1966) argues that environmental changes are likely to lead to innovation only insofar as these changes alter the preferences for incentives of an organisation's members (by changing present or prospective costs or benefits of participation in an organisation).

2.2.2.2 Performance monitoring

According to Huber (1991), an organisation acquires information about its performance by the process of "performance monitoring." Performance monitoring means both focused and wide-ranging perception of the organisation's effectiveness in fulfilling its own pre-established goals or the requirements of stakeholders. Katz and Kahn (1978) argue that operational feedback about ongoing functions of an organisation is the basis for regulation and control in an organisation. According to Edmonson and Moingeon (2004), ongoing organisational adaptation suggests sustained attention to relevant data, especially regarding the results of new actions.

In the context of organisational adaptation, "effectiveness" and "efficiency" have been used to imply two different types of measures of organisational performance. According to Anthony and Govindarajan (1998) and Rollinson and Broadfield (2002), "efficiency" measures the resources used to produce a given level of output. In contrast, Barnard (1968) defines "efficiency" as an organisation's capacity to maintain itself by satifying the needs of its individual members. For organisational effectiveness, according to Rollinson and Broadfield (2002), there is no universally accepted theory or definition and set of criteria that allows effectiveness to be evaluated. Aldrich (1979) and Pfeffer and Salancik (2003) use the term "effectiveness" to indicate fit between an organisation and the stakeholder environment. According to Pfeffer and Salancik (2003), effectiveness is a measure of an organisation's ability to satisfy the demands of its external stakeholders through organisational outcomes and actions. Scott (1998) uses the term "effectiveness" as an overall measure of an organisation's performance. In contrast, Barnard (1968) defined an organisation's "effectiveness" as its ability to achieve its goals. Nelson (1995) argues that because an organisation's environment consists of multiple stakeholders with multiple demands, it is difficult to get an accurate assessment of operative "fitness" criteria and selection mechanism. According to Freeman (1984) and Peffer and Salancik (2003), organisational performance can be evaluated only in relation to the interests of a specific stakeholder. Thus, each stakeholder evaluates the outcomes and actions of an organisation on the basis of its particular set of criteria and preferences (Pfeffer and Salancik, 2003). According to Aldrich (1979), an environment evaluates an organisation in relation to available alternatives; therefore the effectiveness of an organisation is a relative rather than

absolute measure. Pfeffer and Salancik (2003) consider efficiency and effectiveness independent standards for evaluating organisations. Effectiveness is an external standard, while efficiency is an internal standard.

According to Scott (1998), measures for organisational effectiveness have generally been based on outcomes, processes, and structures. Effectiveness refers to an organisation's overall performance. Outcome measures are employed to assess characteristics of an organisation's outcomes. Process measures assess the quantity or quality of activities carried out by the organisation. When the focus is on quality of performance rather than quantity, they assess conformity to a given programme but not the adequacy or correctness of the programmes themselves. Process measures are based on the assumption that it is known what activities are required to ensure effectiveness. Structural measures assess an organisation's capacity for effective performance. Structural measures are based on an organisation's features or participant characteristics presumed to have an impact on organisational effectiveness. Zeithaml and Bitner (2003) argue that an organisation's control system can employ "operational" and "perceptual" performance measures. Perceptual measures are used to measure how a stakeholder perceives an organisation in relation to its demands. Operational measures are translations of perceptual measures to internal standards for an organisation.

Feedback about organisational performance produces an "experience" for an organisation. In the process of organisational adaptation the "experience" has two functions—the first relates to organisational innovation and second to organisational learning. According to March and Simon (1958), Knight (1967), Daft and Becker (1978), and Rogers (1983), the gap between actual organisational performance and desired performance may trigger the innovation process. According to Argyris and Schön (1978) and Duncan and Weiss (1979), experience—as part of the organisational learning process—confirms or disconfirms current knowledge about action-outcome relationships. Duncan and Weiss (1979) and Hedberg (1981) consider the performance gap one trigger for the process of organisational learning.

Since Argyris and Schön (1978), it has been widely accepted than an organisation learns from experience. Organisational learning from experience depends on the evaluation of outcomes as successes or failures. Evaluation takes place when an organisation interprets experience (Levitt and March, 1988). Depending on the result of evaluation, experience either confirms or disproves current knowledge about action-outcome relationships (Argyris and Schön, 1978; Duncan and Weiss, 1979). The match between experienced and expected outcomes of action confirms, and mismatch disproves, current knowledge about action-outcome relationships (Argyris, 1994). According to Argyris (1994), confirming or invalidating knowledge on the basis of feedback is a necessary step for organisational learning. Duncan and Weiss (1978) argue that organisational learning occurs only after the knowledge about action-outcome relationships has been made public and accepted or legitimised by others.

Organisational learning produces knowledge of action-outcome relationships (Argyris and Schön, 1978; Duncan and Weiss, 1979; Hedberg, 1981; Fiol and Lyles, 1985; Levitt and March, 1988; Stata, 1989; Edmonson and Moingeon, 2004) and utilises this knowledge in shaping the behaviour of an organisation (Levitt and March, 1988; Stata, 1989; Edmonson and Moingeon, 2004). Knowledge is utilised in adjusting an

organisation's action to produce expected outcomes (Argyris and Schön, 1978; Fiol and Lyles, 1985; Levitt and March, 1988; Stata, 1989).

In the process of organisational learning mismatch experienced between actual and expected outcomes is followed by discovering the causes of mismatch (Argyris and Schön, 1978; Duncan and Weiss, 1979). According to Duncan and Weiss (1979), detecting the causes of failure as well as the causes of success is a necessary condition for organisational learning. They consider cause detection the initial activity in the process of organisational learning. If the performance gap can be attributed to external factors or the implementation of action, it is not a matter of organisational learning. Otherwise, it must be considered a failure of organisational knowledge. According to Argyris and Schön (1978), the causes of the performance gap are discovered from knowledge that governs action. The authors call the process of revealing and changing assumptions and norms of an organisation's "theory-of-action" as "double-loop learning," while "single-loop learning" involves the production of new behaviours without changing assumptions and norms in theory-of-action.

2.2.3 ORGANISATIONAL INNOVATION PROCESS

Phase models for the organisational innovation process have been suggested by Wilson (1966), Thompson (1965), Evan and Black (1967), Knight (1967), Normann (1971), Utterback (1971), Zaltman, Duncan, and Holbek (1973), Rowe and Boise (1974), Daft (1978), Daft and Becker (1978), Downs and Mohr (1979), Abbey and Dickson (1983), Rogers (1983), Roberts (1987), Gobeli and Rudelius (1987), and Kanter (1988).

The phase structure of the models varies between authors. Models of Wilson (1966), Thompson (1965), Knight (1967), Normann (1971), Utterback (1971), Zaltman, Duncan, and Holbek (1973), Daft (1978), Abbey and Dickson (1983), Roberts (1987), and Gobeli and Rudelius (1987) start with a phase where an idea about the new feature is acquired and end with a phase where the feature is implemented. Rogers' model (1983) ends with the implementation phase but starts with "agenda setting" where general organisational problems are defined and the environment is searched for innovations of potential value to the organisation. According to him, it is this phase where the motivation arises to start the innovation process and carry it out. In the models of Daft and Becker (1978) and Downs and Mohr (1979), the innovation process ends with making the decision to implement the idea. In contrast, Schon (1967) and Evan and Black (1967) define innovation as a process of implementing an invention. The process of invention precedes innovation but is separate from it. However, invention and innovation processes may overlap (Schon, 1967). Rowe and Boise's model (1974) starts with knowledge accumulation and ends with diffusion.

2.2.3.1 Search

The concept of "search" has been suggested to refer to a process where new features are acquired for an organisation (March and Simon, 1958; Cyert and March, 1992; Thompson, 1965; Knight, 1967; Zaltman, Duncan, and Holbek, 1973; Duncan and Weiss, 1979; Kay, 1979; Nelson and Winter, 1982; and Rogers, 1983). March and Simon (1958), Zaltman, Duncan, and Holbek, (1973), Cyert and March, (1992), and

Rogers (1983) argue that when an organisation detects a performance gap or another problem, it may trigger a search for an idea that will close the gap or solve the problem. According to March and Simon (1958), "search" is a process where alternatives of action are invented, evaluated, and elaborated. Nelson and Winter (1982) broaden the definition of search to include all processes needed to produce new "routines" for an organisation. Daft and Becker (1978) and Rogers (1983) have used the term "search" to mean that an organisation looks for innovation from its environment. Roberts (1987) has called a process starting from the creation of ideas and ending with getting ideas to work "invention." Trott (2002) distinguishes between the idea conception and invention. According to him, invention is a process of converting an idea into a tangible new artefact.

Idea acquisition

Innovation process models from Wilson (1966), Thompson (1965), Knight (1967), Normann (1971), Utterback (1971), Zaltman, Duncan, and Holbek (1973), Daft (1978), Abbey and Dickson (1983), Gobeli and Rudelius (1987), Roberts (1987), and Kanter (1988) start when the idea of the new feature is acquired. According to March and Simon (1958), Zaltman, Duncan, and Holbek (1973), Kay (1979), Nelson and Winter (1982), and Van Gundy (1987), the search for ideas may be targeted both to an organisation and its environment. March and Simon (1958) state that a search targeted to an organisation explores that organisation's (collective) memory. Zaltman, Duncan and Holbek (1973) and Kay (1979) have called a search targeted to an organisation an "internal search" and a search targeted to the environment an "external search." Using this typology, according to Kay (1979) and Nelson and Winter (1982), innovation is a product of internal search and imitation is a product of external search. As two different tactics for acquiring innovations, Kay (1979) calls internal search "innovation generating" and external search "imitative behaviour."

The appropriate use of terms "innovation" and "imitation" in the same context depends on how the concept of "innovation" has been defined. When innovation is defined as a feature new to a group of organisations (Becker and Whisler, 1967; Knight, 1967; Daft and Becker, 1978), innovation and imitation can be treated within this group as two different tactics for acquiring ideas for new features. The first or early use of a feature is an innovation and later uses are imitations. If innovation is defined as a feature that is new to the adopter (March and Simon, 1958; Cyert and March, 1992; Thompson, 1965; Evan and Black, 1967; Schon, 1967; Mohr, 1969; Utterback, 1971; Zaltman, Duncan, and Holbek, 1973; Downs and Mohr, 1976; Rogers, 1983), innovation and imitation cannot be treated as two different tactics for acquiring new features because, according to the definition, an organisation may innovate by imitating. In this definitional context the term "imitating" can be used to represent only one possible tactic for innovating, or more precisely, as one tactic for search.

According to the literature an organisation may acquire ideas through "creation." Daft and Becker (1978) define "creation" as a process where new ideas, processes or technology are invented in organisation. Amabile (1997) argues that creation serves as a primary source for organisational innovation. The act of creating new ideas has also

been called “invention” (March and Simon, 1958; Wilson, 1966; Schon, 1967; Becker and Whisler, 1967; Rogers, 1983). Schon (1967), Mohr (1969), and Roberts (1987) distinguish between invention and innovation by stating that invention implies bringing something new into being while innovation implies bringing invention into use. According to Lumsden (1999), an outcome of the creation process becomes innovation when it attains a level of adoption in the organisation. In the task of creation an organisation may utilise heuristics such as “brainstorming” (Nickerson, 1999).

As a phenomenon, interorganisational imitation has been studied in the domains of organisational learning (Herriot, Levinthal, and March, 1985; Levitt and March, 1988), population level learning (Miner and Haunschild, 1995; Baum and Berta, 1996), and organisational innovation (Kay, 1979; Nelson and Winter, 1982; Bolton, 1993). Though the phenomenon of interorganisational imitation has been recognised in these domains, definitions for the concept were rare in literature. According to Haunschild (1993), a practice can be said to have been imitated by an imitator organisation if (1) a model firm exhibits the practice at time t; (2) representatives from the imitating firm are exposed to the model; and (3) the imitating firm exhibits the practice at time t + x, where x is some positive but unknown period of time. Haunschild and Miner (1997) propose that interorganisational imitation occurs when one or more organisation’s use of a practice increases the likelihood of that practice being used by other organisations. Organisations have been suggested to imitate ideas from their environment through direct modelling or recruiting (March and Simon, 1958; DiMaggio and Powell, 1983; Baum and Berta, 1996). DiMaggio and Powell (1983) claim that organisations tend to imitate other organisations they perceive to be more legitimate or successful.

One special form of interorganisational imitation studied is the transfer of “best practices” between organisations of a firm. Szulanski (1994) defines “best practice” as an important practice within the purview of the organisation for which there exists reasonable proof of superiority both with respect to other internal alternate practices and to known alternatives outside the company. The transfer of best practices inside the firm refers to a firm’s replication of an internal practice that is performed in a superior way in some part of the organisation and is considered superior to internal alternate practices and known alternatives outside the company. Transfers are dyadic exchanges of organisational knowledge between a source and a recipient unit in which the identity of the recipient matters.

An organisation can also acquire ideas for new features from organisations that do not represent a model organisation for a focal organisation. These idea sources may involve customers (Allen, 1977; von Hippel, 1988), suppliers (Allen, 1977; Duchesneau, Cohn, and Dutton, 1979; von Hippel, 1988; Cyert and March, 1992), legislators (DiMaggio and Powell, 1983), and professional institutions (DiMaggio and Powell, 1983).

After an idea has been acquired, it is proposed to an actor who decides about its further development and funding (Gobeli and Rudelius, 1987) or implementation (Daft and Becker, 1978; Daft, 1978). According to Daft and Becker (1978), proposing requires that an idea is conceptualised to a form of proposal. Conceptualisation and proposal formation takes place whether an idea originates in an organisation or environment. The phase of proposing is included in the innovation process models of Wilson (1966),

Becker and Whisler (1967), Evan and Black (1967), Daft (1978), Daft and Becker (1978), and Gobeli and Rudelius (1987).

Idea evaluation

The decision to implement or reject a suggested idea depends on how it is evaluated by a decision maker. March and Simon (1958) call the evaluation of outcomes of the search process "screening." In "screening," the products of a search are examined to gauge their feasibility as solutions to a problem. A proposed idea is evaluated against the goals of the organisation (Evan and Black, 1967; Cyert and March, 1992) or against the inducements-contributions balance between the organisation and its stakeholders (Wilson, 1966). According to Wilson (1966), the expected utility of an organisational innovation is a function of the amount by which it will enhance the supply of inducements and probability of this enhancement. The evaluation phase is included in the innovation process according to March and Simon (1958), Wilson (1966), Cyert and March (1992), Zaltman, Duncan, Holbek, (1973), Downs and Mohr (1979), Rogers (1983) and Gobeli and Rudelius (1987).

Models of Thompson (1965), Evan and Black (1967), Zaltman, Duncan, and Holbek (1973), Daft and Becker (1978), Daft (1978), Rogers (1983), and Gobeli and Rudelius (1987) include a phase where a decision is made to implement an idea. In Gobeli and Rudelius's model (1987), a decision also concerns developing an idea further to its final design and funding development and implementation. Daft and Becker (1978), Daft (1978), and Rogers (1983) call the phase of decision making "adoption." Rogers (1983) defines "adoption" as a decision to make full use of an innovation as the course of action available. Cyert and March (1992) and Nelson and Winter (1982) have called the phase of making an implementation decision "choice."

Idea elaboration

According to March and Simon (1958), Knight (1967), and Gobeli and Rudelius (1987), an idea may be developed further after it has been acquired. March and Simon (1958) call this phase "elaboration," Knight (1967) as "idea development," and Gobeli and Rudelius (1987) as "development." In Gobeli and Rudelius's innovation process model, the development phase occurs after an acquired idea has been evaluated by management and the decision has been made to fund its further development and exploitation. Development includes final design, production, and marketing the new concept. Based in their literature review on organisational innovation, Zaltman, Duncan, and Holbek (1974) concluded that once the organisation has obtained the idea for innovation, the majority of innovations are developed, tested, marketed, or incorporated in the existing operations by the firm itself.

2.2.3.2 Implementation

Implementation is the last phase in the innovation process models of Wilson (1966), Thompson (1965), Knight (1967), Schon (1967), Evan and Black (1967), Normann (1971), Utterback (1971), Zaltman, Duncan and Holbek (1973), Daft (1978), Abbey and Dickson (1983) and Rogers (1983). Models of Daft and Becker (1978) and Downs and Mohr (1979) do not include the implementation phase. Instead, according to these authors, the innovation process ends with the phase of making the decision to implement. In contrast, according to Schon (1967) and Evan and Black (1967), the implementation phase constitutes the whole innovation process. They recognise the invention phase preceding innovation but consider it separate from the innovation phase. However, according to Schon (1967), the invention and innovation phases may overlap.

Implementation can be carried out through various strategies (Daft and Becker, 1978). Strategies are shaped by input scarcity and the current state of implementation technology (Nelson and Winter, 1982). According to Utterback (1971), implementation of technological innovation consists of manufacturing, engineering, tooling, and plant start-up required to bring the original solution or invention to its first use or market introduction. According to March and Simon (1958), implementation is carried out through "instituting."

2.2.3.3 Change

The phase models of Thompson (1965), Schon (1967), Knight (1967), Normann (1971), Utterback (1971), Zaltman, Duncan, and Holbek (1973), and Rogers (1983) hold either explicitly or implicitly that the innovation process also involves the change resulting from taking innovation outcomes into use. In these models change is part of the implementation phase. According to Wilson (1966), Knight (1967), Zaltman, Duncan, and Holbek (1973), and Downs and Mohr (1976, 1979), the innovation has been "adopted" when it has been put into use. In the phase model of Hage and Aiken (1970) on organisational change, the change phase is included in the implementation phase.

2.2.4 RETENTION

Hage and Aiken (1970) argue that at some point after a new organisational feature has been produced, an organisation has to decide if that feature contributes to its fit to the environment sufficiently to rationalise the feature's retention. According to Aldrich (1979, 1999), retention occurs when selected variations are preserved, duplicated, or otherwise reproduced so the selected behaviour is repeated on future occasions or the selected structure appears again in future generations. Retention of successful adaptations in social systems depends upon the retention and transmission of knowledge from one generation to the next. According to Argyris and Schön (1978), the persistence of an organisation in conditions of personnel turnover requires the retention of rules that govern behaviour of individuals in an organisation. Unless the implications of experience can be transferred from those who experienced it to those who did not, the lessons of history are likely to be lost through personnel turnover (Levitt and March, 1988). Nelson and Winter (1982) emphasise that memories of individual organisation members are a primary repository of the operational knowledge of the organisation.

Some part of the knowledge may be replaced if the member storing it leaves the organisation. The loss of an employee with important knowledge poses a major threat to the continuity of organisational routine.

The literature suggests that retention can take place through socialisation, institutionalisation, controlling, and recording to organisational memory. According to Aldrich (1979), Nelson and Winter (1982), and Levitt and March (1988), knowledge about organisational artefacts is transmitted between "generations" through the process of socialisation. According to Hage and Aiken (1970), Stata (1989), and Crossan, Lane, and White (1999), it is institutionalisation of organisational artefacts which enables retention of the artefacts. Institutionalisation includes that tasks are defined, actions specified, and organisational mechanisms put in place to ensure that certain actions occur (Crossan, Lane, and White, 1999). Hage and Aiken (1970) argue that a new feature can be socialised through training only after it has been institutionalised. Levitt and March (1988) consider control as one mechanism for conserving organisational artefacts and knowledge. According to Aldrich (1999), retention through control can be enhanced by the centralisation of authority and formalisation of duties. Centralisation and formalisation make the retention of routines, structures, and procedures more controllable to management. In the learning process, the memory system ensures that positively selected responses can be recalled for future use (Aldrich, 1979). According to Cyert and March (1992), March (1981), Levitt and March (1988, 1990), and Walsh and Ungson (1991), organisational memory retains a portion of knowledge the organisation has acquired. The learning results are embedded in standard operating procedures (Cyert and March, 1992), procedures, norms, rules, and forms (March, 1981), documents, accounts, files, standard operating procedures, and rule books; in the social and physical geography of organisational structures and relationships; in standards of good professional practice; in the culture of organisational stories; and in the shared perceptions of "the way things are done around here" (Levitt and March, 1988). According to Cyert and March (1992), an organisation's rules permit the transfer of previous learning. Levitt and March (1990) argue that routines recorded in a collective memory of an organisation are independent of the individual actors who execute them and are capable of surviving a considerable turnover of individuals.

Failures in retention offer an additional source of organisational variation. Experimentation in learning may result from failures of memory, socialisation, or control (Levitt and March, 1990). Brown and Duguid (1991) propose that the behaviour of an organisation may change as newcomers replace old-timers. Nelson and Winter (1982) argue that when a new person is hired to fill a role, it is highly unlikely that a near replica of the predecessor's role performance will result. This is because 1) those in adjacent positions may take the opportunity to attempt to redefine the newcomer's organisational role in their own interest; 2) the newcomer may differ in significant and durable ways from his predecessor; and 3) there may be other contingencies affecting the role-learning process.

2.2.5 Summary

In terms of process models the reviewed literature offers a fragmented and ambiguous answer to the the research question "How does an organisation adapt through innovations?" It suggests that organisational adaptation behaviour can be conceptualised

as a process that consists of sequential phases. However, the phase structure of the organisational adaptation process, phases included in the process, contents of the phases, and names of the phases vary. Table 1 summarises the phases of organisational adaptation process that were detected in the reviewed literature. The column structure on phases of implementation and change implies that Wilson (1966), Evan and Black (1967), Daft (1978), and Abbey and Dickson (1983) have recognised the phase of implementation but not the phase of change while the authors from Thompson (1965) to Rogers (1983) suggest "change" to be involved in the implementation phase.

PHASES OF ORGANISATIONAL ADAPTATION PROCESS					
TRIGGERING		ORGANISATIONAL INNOVATION			
Scanning	**Performance monitoring**	**Search**	**Implementation**	**Change**	**Retention**
Daft and Becker (1978); Weick (1979); Hedberg (1981); March (1981); Rogers (1983); Daft and Weick (1984); Pfeffer and Salancik (2003); Huber (1991)	Huber (1991)	March and Simon (1958); Cyert and March (1992); Thompson (1965); Knight (1967); Zaltman, Duncan, and Holbek (1973); Duncan and Weiss (1979); Kay (1979); Nelson and Winter (1982); Rogers (1983)	Wilson (1966), Evan and Black (1967), Daft (1978), Abbey and Dickson (1983) Thompson (1965); Schon (1967); Knight (1967); Normann (1971); Utterback (1971); Zaltman, Duncan and Holbek (1973); Rogers (1983)		Aldrich (1979, 1999)

Table 1. The literature on the phases of the organisational adaptation process.

In the literature the concept of "**scanning**" has been used to refer to a process through which information is acquired about an organisation's external environment (Daft and Becker, 1978; Weick, 1979; Hedberg, 1981; March, 1981; Rogers, 1983; Daft and Weick, 1984; Pfeffer and Salancik, 2003; Huber, 1991). In the present study, the term is broadened also to cover information acquisition about the organisation itself and its technologies.

The concept of "**performance monitoring**" is used as it has been used by Huber (1991) to refer to the process by which information about organisational performance is acquired.

Argyris and Schön (1978) and Duncan and Weiss (1979) argue that in the process of organisational learning mismatch experienced between actual and expected outcomes is followed by discovering the causes of mismatch. In social psychology the process of assigning causes to behaviour has been called "**attribution**" (Hogg and Vaughan,

2002). The present study adopts the concept of attribution to refer to the process where an organisation detects the causes of gaps in the organisational performance.

For the concept of "**institutionalisation of innovation**" the present study will use March and Simon's definition (1958). They state that the process of institutionalisation of the innovation process occurs when organisational criteria of satisfaction has been stated in terms of 1) rate of change of performance or 2) rate of innovation.

According to the "evolutionary" approach of Aldrich (1979, 1999), "retention" occurs when selected variations are preserved, duplicated, or otherwise reproduced so that the selected behaviour is repeated on future occasions or the selected structure appears again in future generations. In the present study, the concept of "**retention**" refers to the processes through which an organisation or its stakeholder tries to ensure that the organisation possesses selected features until they are purposefully removed or replaced through the process of organisational innovation.

March and Simon (1958) have used the term "**search**" to refer to a process where alternatives of action are invented, evaluated, and elaborated. These three phases of the search are adopted for the present study but the domain of "alternatives" is broadened from "action" to cover all kinds of new features that an organisation may produce through organisational innovation. Search may be targeted both to an organisation and environment as suggested by March and Simon (1958), Zaltman, Duncan, and Holbek (1973), Kay (1979), Nelson and Winter (1982), and Van Gundy (1987). The present study uses the terms "search product" and "blueprint of a new feature" to refer to outcomes of the search phase. "Ideas" are building blocks of a search product.

Meyer and Goes (1988) define "**assimilation**" as an organisational process that (1) is set in motion when individual organisation members first hear of an innovation development; (2) can lead to the acquisition of the innovation; and (3) sometimes comes to fruition in the innovation's full acceptance, utilisation, and institutionalisation. In the present study the term "assimilation" refers to the idea acquisition tactic where an organisation acquires an idea from an organisation that does not act as a model for the focal organisation. The term "assimilation" was adopted for the study because an unambiguous concept to refer to this idea acquisition tactic was not found in the literature. The concepts of "diffusion" (Rogers, 1983), "transfer" (Keller and Chinta, 1990) or "adoption" (Daft and Becker, 1978; Daft, 1978; Rogers, 1983) cannot capture the essence of the phenomenon in question because they do not exclude imitation as a possible mechanism for diffusion, transfer, and adoption. Rogers (1983) defines "diffusion" as a process in which an innovation is communicated through certain channels over time among the members of a social system. In case of managerial innovations (Kimberly, 1981), this definition may well include imitation. Keller and Chinta (1990) define "technology transfer" as a process by which "know-how" information called technology is transferred across a boundary or boundaries to another organisation. According to this definition, imitation of best practices between organisations can also be called "technology transfer." The term "adoption", as defined by Daft and Becker (1978), Daft (1978), and Rogers (1983) cannot be used to describe the phenomenon in question because adoption takes place only after idea acquisition.

In the **innovation process models o**f Thompson (1965), Schon (1967), Knight (1967), Normann (1971), Utterback (1971), Zaltman, Duncan, and Holbek (1973), and Rogers (1983) the implementation phase includes "change." In the present study "**implementation**" and "**change**" have been conceptualised as two separate phases because the sets of conditions that have influence on the ability to carry out these phases are different between phases. The term "adopt" is used to refer to a process where the "changer" receives a blueprint of a new feature from the implementer and changes according to the feature. However, it is possible that the changer receives and stores knowledge about new feature but does not change its behaviour according to the feature. In this situation, the domain of knowledge has changed but the domain of behaviour has not. In this study, "**change**" has occurred only after an actor has changed its behaviour. This way of using the term is consistent with how it has been used by Wilson (1966), Knight (1967), Zaltman, Duncan, and Holbek (1973), and Downs and Mohr (1976, 1979).

2.3 CONDITIONS OF ORGANISATIONAL ADAPTATION

This chapter reviews literature on conditions that have been proposed to enhance or impede organisational adaptation. The review is rationalised by the question, "Which conditions enhance or impede organisational adaptation through innovations?" The review is not catch-all but concentrates on the literature relevant from the point of view of the findings of this study. The introductory section of the chapter reviews views on organisation's capability of adaptation and characterises the existing research on enhancing and impeding conditions for organisational adaptation. Then the literature on conditions and their suggested influences on phases of organisatioanl adaptation process is reviewed in the chapters 2.3.1 – 2.3.15 for each condition or category of conditions. Finally, the concluding Chapter 2.3.16 draws general conclusions on the literature on conditions of organisational adaptation.

Views on organisational capability of adaptation

The literature suggests that in order to survive and succeed an organisation must be able to adapt. Norman (1971), Zaltman, Duncan, and Holbek (1974), and Duncan and Weiss (1979) propose that for an organisation to remain viable over time it must be able to develop its outcomes in line with the demands of its environment. Lawrence and Lorsch's study (1969) showed how low-performing organisations were unable to introduce and market new products to the environment. Correspondingly, effective organisations were those who were able to adjust their organisational characteristics and behaviour patterns to fit the environment. According to their study, an organisation's achievement of a degree of differentiation consistent with the requirements of the environment is related to its ability to cope effectively with its environment. Consistent with the propositions of Lawrence and Lorsch (1969) is the argument of Pfeffer and Salancik (2003) that future adapting requires from an organisation the ability to change and the discretion to modify its actions.

Several concepts and definitions have been offered to refer to an organisation's capability to adapt. Teece, Pisano, and Shuen (1997) call a firm's ability to integrate,

build, and reconfigure internal and external competences to address rapidly changing environments "dynamic capabilities." Eisenhardt and Martin (2000) define "dynamic capabilities" as a firm's processes that use resources—specifically the processes to integrate, reconfigure, gain and release resources—to match and even create market change. According to Haberberg and Rieple (2001), an "organisation's dynamic capabilities" refer to an organisation's capacity to learn, adapt, and innovate in the face of environmental change. Collis (1996) has defined "organisational capability" as a firm's dynamic routines that enable it to generate continuous improvement in the efficiency or effectiveness of its performance of product market activities. Trott (2002) and Jasphara (2004) have called an organisation's ability to adapt to changes in environment "adaptability."

The structure of organisational adaptability has been suggested to reflect the phase structure of the organisational adaptation process. Schein (1994) argues that organisational adaptability is reflected by an organisation's ability to carry out the organisational adaptation process. Successful organisational adaptation requires that the organisation is able to carry out all the phases of the organisational adaptation process successfully. Each of the phases in the organisational adaptation process can face problems that impede functioning of the phase and result in failure in organisational adaptation. Pfeffer and Salancik (2003), Duncan and Weiss (1979), Maidique and Hayes (1987), and Schein (1994) have recognised an organisation's ability to sense the environment and evaluate the need for triggering adaptation as sub-capabilities of adaptability. Cohen and Levinthal (1990) argue that an organisation's ability to recognise the value of new external information, assimilate it, and apply it to commercial ends is critical to the innovative capabilities of organisation. According to Kimberly (1981), organisational design involves developing the capacity to evaluate internal and external contingencies critically, to adopt innovations as a response only where such behaviour is indicated by critical evaluation, and to dispose of innovations that do not measure up to minimal expectations. Levy and Merry (1986) posit that the human capability for creative thinking, creative behaviour, and innovation is a major source of organisational change. Mars (1971) and Sternberg and Lubart (1999) propose that adapting may need "creativity." Maidique and Hayes (1987) and Schein (1994) have recognised the ability to produce changes in an organisation as a sub-capability of organisational adaptability. Schein (1994) also recognises the ability to acquire feedback about the consequences of change in an organisation as an element of organisational adaptability.

In the present study, organisational adaptability is studied through conditions that enhance or impede organisational adaptation. In the reviewed literature, studies on conditions that enhance or impede organisational adaptation through innovations were not found. Instead, studies were found on conditions that enhance or impede the functioning of a specific phase or phase sequence in the process of organisational adaptation. These studies dealt with organisational innovation, organisational learning, and organisational creativity. As Chapter 2.2 on "Organisational adaptation process" suggested, the organisational adaptation process may involve the sub-processes of organisational innovation and organisational learning. Thus, conditions that enhance or impede carrying out these sub-processes can be treated as conditions that enhance or impede organisational adaptation. Chapter on 2.2.3.1 on "Search" suggested that the

phase may apply the idea acquisition tactic of "creation." Thus, conditions that enhance or impede creation can be treated as conditions that enhance or impede organisational adaptation to the extent to which an organisation applies creation as an idea acquisition tactic.

Studies on conditions that enhance or impede organisational innovation

It has been suggested that organisations possess the capability of organisational innovation. Kogut and Zander (1992) propose that innovations are products of a firm's combinative capabilities to generate new applications from existing knowledge. Combinative capability is the intersection of the capability of the firm to exploit its knowledge and the unexplored potential of the technology (Kogut and Zander, 1992). Also Nelson and Winter (1982) see producing innovation as an organisational capability. They state that the ability to solve problems, evaluate innovations, and implement innovations are elements of a firm's capabilities.

Through the concept of "innovative organisation" an organisation's ability to innovate has achieved a general status that can characterise the whole organisation. An "innovative organisation" has been defined as 1) the one with ability to implement many new ideas (Thompson, 1965); 2) the one that fosters the creative functioning of its members (Siegel and Kaemmerer, 1978); and 3) an integrated set of components which work together to create and reinforce the kind of environment which enables innovation to flourish (Tidd, Bessant, and Pavitt, 2005). Shepard (1967) defines an "innovation-producing organisation" as one which is continuously learning, adapting to changes within itself and in its environment, and successfully innovating in that environment.

Conditions which enhance or impede organisational innovation have most intensively been studied in "organisational innovativeness." According to Daft and Becker (1978), organisational innovativeness has been prominent in the literature at least since 1958 when March and Simon published their book "Organisations." Traditionally, organisational innovativeness has been measured by 1) the number of specific types of innovations that an organisation has adopted during a time period (Aiken and Hage, 1971; Ettlie and Bridges, 1982; Ettlie, 1983); 2) the adoption rate and the number of innovations an organisation has adopted from a pre-defined list of innovations that a set of organisations could have adopted until a specific moment of time (Baldridge and Burnham, 1975; Moch and Morse, 1977; Daft, 1978, Daft and Becker, 1978; Abbey and Dickinson, 1983); 3) the likelihood of adopting or the ability to adopt specific innovation (Sapolsky, 1967; Duchesneau, Cohn, and Dutton, 1979; Ettlie, 1983); or 4) the functionality of the innovation process (Normann, 1971; Duchesneau, Cohn, and Dutton, 1979; Amabile, 1988). The general aim of studies usually has been to find out which conditions and to what extent those conditions act as determinants of organisational innovativeness. Also, studies have been conducted on determinants of an organisation's intensity in producing innovation proposals during a specified period of time (Aiken, Bacharac, and French, 1980) and a number of successfully produced and implemented innovation proposals during specified time period (Evan and Black, 1967). The studies on organisational innovativeness usually have been quantitative and comparative by nature.

Conditions that enhance or impede organisational innovation have also been studied in the domains of technology transfer (Rothwell, 1978; Ounjian and Carne 1987), diffusion of technologies (Dutton and Starbuck, 1978; Attewell, 1992), and interorganisational learning or imitation (Chew, Breshanan, and Clark, 1990; Szulanski 1994, 1996; Haunschild and Miner, 1997; Baum and Ingram, 1998). The studies have tried to detect the conditions influential in the adoption of specific technologies from the organisation's environment. The studies in the domain of interorganisational learning or imitation have concentrated on conditions influential in adoption when an organisation applies "imitation" as an idea acquisition tactic.

Studies on conditions that enhance or impede organisational learning

Levitt and March (1988) propose that organisational learning can be viewed as one of the technologies within which organisations develop competence through use and among which it chooses on the basis of experience. Learning procedures leading to favourable outcomes will become common and the frequent use of procedures will increase an organisation's effectiveness in learning. Argyris (1994) suggests that organisational learning is a competence that all organisations should develop. Edmonson and Moingeon (1996) argue that most organisations can develop capabilities of learning as potential sources of competitive advantage.

Through the concept of "learning organisation," an organisation's ability to learn has achieved a general status that can characterise the whole organisation. According to Senge (1990), a learning organisation is a place where people continually discover how they create their reality and how they can change it. Through "adaptive learning," a learning organisation adapts for survival and through "generative learning" it continually enhances its capacity to create its future. Garvin (1993) defines a "learning organisation" as an organisation skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights. Marguardt (1996) defines a "learning organisation" as an organisation which learns powerfully and collectively and is continually transforming itself to better collect, manage, and use knowledge for corporate success. It empowers people within and outside the company to learn as they work. Technology is utilised to optimise both learning and productivity. According to Pedler, Burgoyne, and Boydell (1997), a "learning company" is an organisation that facilitates the learning of all its members and consciously transforms itself and its context. According to Rollinson and Broadfield (2002), the idea of a "learning organisation" includes the philosophy about sensing and adapting to the environment. A learning organisation is equipped for continuous change and it responds to market changes proactively.

Organisational learning has been measured by organisational "learning curves" indicating changes in unit costs or hours as a function of cumulative output (Joskow and Rose, 1985; Epple, Argote, and Devadas, 1991; Argote, Insko, Yovetich, and Romero, 1995; Darr, Argote, and Epple, 1995). On the basis of her own research and research review, Argote (1999) argues that large increases in productivity typically occur as an organisation gains experience in production and that organisations vary tremendously in the rates at which they learn.

Research on conditions that enhance or impede organisational learning is rare and fragmented. Argote (1993) points out that there is very little evidence on organisational factors affecting the rate of learning in organisations. Berthoin Antal, Lenhardt, and Rosenbrock (2002) state that the literature does not provide a systematic analysis of barriers to organisational learning and that most of the suggested barriers have been theoretically derived, and they have not yet been empirically explored in organisations. On the basis of the reviewed literature, it seems that only Chris Argyris has systematically studied the conditions for organisational learning.

Studies on conditions that enhance or impede creation of ideas

The literature (2.2.3.1) suggests that the process of organisational innovation may involve the phase of idea acquisition and that an organisation may apply "creation" as an idea acquisition tactic. In the literature the term "creativity" has been used both as a measure of an actor's ability to create and as a measure for creative qualities of outcomes that result from creation. Amabile (1988) defines "creativity" as the production of novel and useful ideas by an individual or small group of individuals working together. Daft and Becker (1978) use the concept of "organisational creativity" to refer to the generation of new ideas, products, or technology within an organisation. According to Steiner (1965), "creativity" has to do with the development, proposal, and implementation of new and better solutions. Andrews and Gordon (1970) propose that "creative act" consists of formation of new, useful combinations of ideas. According to Kanter (1986), creativity consists of rearranging the pieces to create a new reality.

Research on conditions that enhance or impede idea acquisition through creation in organisational context is rare. According to Amabile (1996), there is almost no empirical research on the effects of work environments on creativity. In the reviewed literature the only attempt to operationalise organisational creativity was found in Amabile's study (1997) on creativity in one firm in electronics industry. The study mapped environmental differences between high- and low-creativity R&D projects in a firm. What project was "creative" was subjectively evaluated by organisation members on the basis of a given definition for creativity. Hennesy and Amabile (1988) argue that social and environmental factors play major roles in creative performance. Amabile's (1997) componential theory of creativity assumes that all humans with normal capacities are able to produce at least moderately creative work in some domain, some of the time and that the social environment can have influence both on the level and the frequency of creative behaviour. The theory proposes that work environment influences creativity by influencing the individual components. Although the environment can have an impact on any of the components, the impact on task motivation appears to be the most immediate and direct. Amabile (1988) argues that some conditions have influence on creativity linearly, while some require balancing.

In the following chapters 2.3.1 – 2.3.15 the literature is reviewed on conditions that the present study found to enhance or impede organisational adaptation. The conditions or conditional categories include organisational slack, knowledgeability, remoteness, skilfulness, diversity, centralisation, incongruity of demands, efficacy beliefs, organisational culture, organisational climate, expectations, receptivity, incentives,

defensiveness, and individual characteristics. For these conditions the review also presents preceding conditions when suggested by the literature.

Some of the literature is inaccurate in specifying the phases of organisational adaptation process on which the conditions have been suggested to have influence. The literature also suggests different types of influences a specific condition can have on organisational adaptation. The following review covers all types of influences the literature suggests to occur between the conditions and organisational adaptation. Chapter 2.3.16 summarises the literature that has spesifically suggested conditions that enhance or impede organisational adaptation. The summary involves only the literature that has explicitly related influences to specific phases of organisational adaptation process.

2.3.1 Organisational slack

Organisational "slack" refers to the difference between the payments required to maintain the organisation and the resources obtained from the environment (Cyert and March, 1992). It is the difference between the potential and achieved performance of an organisation (Levinthal and March, 1981). Slack consists of money and manpower not committed to on-going activities of organisation (March and Simon, 1958). It accumulates when performance exceeds the target (Levinthal and March, 1981). Therefore, most successful firms have substantial slack (Cyert and March, 1992). Downs and Mohr (1979) emphasise that slack is not any absolute amount of surplus resources that an organisation possesses in a given moment of time but depends on the return rate associated with resources. Slack resources may already be committed to give returns from sources other than innovation and releasing resources expects that innovation will give a good enough return.

Organisational slack has been found to have positive influence on 1) the intensity of search (Cangelosi and Dill, 1965); 2) the intensity and success of the search (Cyert and March, 1992); 3) the amount of successful innovation adoptions during a specific time period (Aiken and Hage, 1971); and 4) the diffusion of intellectual technology (Dutton and Starbuck, 1978). Also, organisational slack has been hypothesised to have a positive influence on 1) organisational innovativeness (Thompson, 1965; Guetzkow, 1965; Wilson, 1966); 2) carrying out the organisational innovation process (Amabile 1988, 1997); 3) creativity (Guetzkow, 1965); and 4) ability to create (Cummings, 1965; Amabile, 1988, 1997).

Organisational slack has been suggested to have influence on organisational adaptability through several mechanisms. Innovations often cost money (Daft and Becker, 1978). Reorganisation (Hannan and Freeman, 1989), transforming experience into routines (Levitt and March, 1988), and recording routines (Nelson and Winter, 1982; Levitt and March, 1988) involve costs. The retention of organisational structures consumes substantial resources (Hannan and Freeman, 1989). Organisations with surplus resources can better afford the risk (Guetzkow, 1965; Daft and Becker, 1978) and expense (Daft and Becker, 1978) of trying new developments. Guetzkow (1965) proposes that slack increases an organisation's capability of absorbing errors that may result from trying creation products. Errors may result because creation products have

not been tried before. Cummings (1965) suggests that slack allows resources to be applied to the pursuit of long-term, rather than immediately productive ends. According to Levinthal and March (1981), slack may contribute to organisational adaptation by providing an organisation with an unexploited technology pool which buffers the organisation against external challenges. New technologies produced may be useless today but useful in the future. Organisational slack enables the production of "slack innovations" (Cyert and March, 1992) through "slack search" (Levinthal and March, 1981). Slack innovation is not a response to any existing problem (Cyert and March, 1992) and it cannot be rationalised in terms of expected return for the organisation (Levinthal and March, 1981). Activities for "slack search" are initiated because of their attractiveness to some individuals or subunits in an organisation (Levinthal and March, 1981; Cyert and March, 1992). In his study on innovation adoption in public health organisations, Mohr (1969) concluded that a great deal of innovations in large or successful organisations are "slack innovations" where the motivation to innovate does not come from the need for organisational effectiveness or profit but from a need for prestige. The influence of slack on innovativeness may also be mediated by the institutionalisation of innovation. March and Simon (1958) argue that in "slack conditions" specialisations of function may arise with respect to commitment to new programmes and programme elaboration.

According to Aiken and Hage (1971), an organisation may enlarge its resource pool available for innovation by participating in joint programmes with other organisations. In their study on innovativeness of health and welfare organisations, they found that the degree of organisational interdependence in terms of joint programmes with other organisations had a strong positive correlation with a number of successful adoptions of innovations during a specified period of time. They explained that joint programmes offered an extended pool of economic resources for innovation and channels for communicating ideas between the organisation and its environment.

2.3.2 Knowledgeability

In the present study "knowledgeability" refers to the extent to which actors who contribute to the organisational adaptation process have knowledge that enhances or impedes organisational adaptation.

Knowledge has been suggested to have influence on 1) triggering innovation (Daft and Becker, 1978; Duncan and Weiss, 1979); 2) scanning (March and Simon, 1958; Cohen and Levinthal, 1990); 3) idea acquisition through creation (Cummings, 1965; Amabile, 1988; Weisberg, 1999; Nickerson, 1999); 4) idea acquisition through assimilation (Rothwell, 1978; Ounjian and Carne, 1987; Attewell, 1992); 5) idea acquisition through imitation (Chew, Bresnahan, and Clark, 1990; Szulanski, 1994, 1996; Haunschild and Miner, 1997; Miner and Raghavan, 1999); and 6) evaluation of an idea (Wilson, 1966; Rothwell, 1978; Duchesneau, Cohn, and Dutton, 1979; Duncan and Weiss, 1979; Aldrich, 1979; Nelson and Winter, 1982; Ounjian and Carne, 1987; Amabile, 1988; Cohen and Levinthal, 1990; Chew, Bresnahan, and Clark, 1990; Attewell, 1992; Szulanski, 1994, 1996).

Triggering organisational adaptation may be facilitated by knowledge. Daft and Becker (1978) argue that a lack of knowledge on new techniques is one major barrier to innovation. The acquisition of knowledge through scanning requires knowledge about knowledge sources (March and Simon, 1958; Cohen and Levinthal, 1990). Making a decision on whether to trigger organisational adaptation or not when facing environmental change requires that an organisation has knowledge about how changed environmental conditions affect an organisation's action-outcome relationships (Duncan and Weiss, 1979).

The search phase has been suggested to require knowledge. Duncan and Weiss (1979) argue that the success of produced behavioural changes depends on the knowledge available for decision makers during the process of searching. The argument gets support from Rothwell's study (1978) suggesting that the appropriateness of innovation to adopting context depends on the knowledge available in the search phase.

Idea acquisition requires knowledge. The idea acquisition tactics of assimilation and imitation require knowledge of the feature to be assimilated (Rothwell, 1978; Ounjian and Carne 1987; Attewell, 1992) or imitated (Chew, Bresnahan, and Clark, 1990; Szulanski, 1994). Idea acquisition through creation has been suggested to require knowledge of the area of creation. Weisberg (1999) argues that it is universally acknowledged that one must have knowledge of a field to create something novel within it. Knowledge may provide the basic elements, the blocks out of which new ideas are constructed. According to Amabile (1988), domain-relevant knowledge is included in an individual's "raw materials" for creative productivity. Nickerson (1999) argues that people who do noteworthy creative work in any given area are almost invariably very knowledgeable about the area. Amabile (1988) proposes that knowledge contributes to the amount of alternatives available for creating something new. Wilson (1966) emphasises diversity of information inputs for creation as a facilitating condition for creativity. Diversity can be achieved when the whole organisation participates in creation.

Predicting and evaluating the effectiveness of innovation has been suggested to require knowledge. Knowledge is needed about the organisational domain of change (Wilson, 1966; Rothwell, 1978; Nelson and Winter, 1982; Amabile, 1988; Cohen and Levinthal, 1990; Szulanski, 1994, 1996; Chew, Bresnahan, and Clark, 1990) and the stakeholder environment to which innovation will contribute (Ounjian and Carne, 1987; Aldrich, 1979). Wilson (1966) proposes that evaluating feasibility, costs, and benefits of innovation requires understanding an organisation's technology. According to Nelson and Winter (1982), comprehensive understanding of the organisation as a system enables improving one part of the system without worsening another part, but nobody in a complex organisation actually has that sort of comprehensive understanding. However, Williams and Yang (1999) propose that excessive familiarity with the domain of innovation may decrease receptivity to innovation. Aldrich (1979) argues that predicting effectiveness of new technology requires knowledge of the stakeholder environment because new technology is effective only to the extent it is appropriate to the stakeholder environment. In idea acquisition tactics of assimilation and imitation, knowledge is also needed of the domain of the feature to be imitated (Cohen and Levinthal, 1990; Szulanski, 1994, 1996) or assimilated (Cohen and Levinthal, 1990). The authors claim that the lack of prior knowledge related to the domain of a feature is

likely to reduce the ability to evaluate the value of the feature. Imitation also requires the knowledge of 1) the outcomes of the model for other adopters (Miner and Raghavan, 1999; Haunschild and Miner, 1997); and 2) the cause-effect relationships that explain outcomes of the model to be imitated (Szulanski, 1996).

2.3.3 Remoteness

Remoteness, in terms of physical distance between the focal organisation and organisations in the external environment, has been found to have influence on imitation. In his study, Szulanski (1994) found that one of primary causes for difficulty to transfer best practices between plants of a multiplant network was the arduous relationship between the source and recipient. He defined "arduous" as laborious and distant. Chew, Bresnahan, and Clark's study (1990) suggested that if plants in a multiplant network are geographically dispersed and unlinked by physical flows, little opportunity may exist for communication about current practices.

2.3.4 Skilfulness

By "skill" Nelson and Winter (1982) refer to the capability for a smooth sequence of coordinated behaviour that is ordinarily effective relative to its objectives, given the context in which it normally occurs. Skilful acts of selection from the available options are "choices" embedded in the capability. To a considerable extent the options are selected automatically and without awareness that a choice is being made. In the present study "skilfulness" refers to the level of an organisation's skills of adaptation. The concept implies that an organisation can carry out the phases of organisational adaptation process through multiple ways and that some ways produce better outcomes than others. By nature, organisation's skills can be organisational or individual.

Organisational skills. The literature suggests that organisations can possess skills. According to Nelson and Winter (1982), the behaviour of firms can be explained by the "routines" they employ. Routines are regular and predictable patterns of behaviour. They are the "skills" of an organisation. March and Simon (1958) and Teece and Pisano (1994) argue that organisations also can have skills in organisational adaptation. According to Teece and Pisano (1994), an organisation's capacity to adapt is a learned organisational skill. March and Simon (1958) argue that in order to behave adaptively an organisation needs stable procedures it can employ in carrying out its adaptive practices. According to them, the process of organisational adapting is governed by "learning programmes," which are relatively stable and slowly changing procedures used for developing, elaborating, instituting, and revising actual programmes.

The existence and qualities of procedures or routines employed in carrying out phases of the organisational adaptation process have been suggested to contribute to adaptation outcomes. In other words, the ways organisational adaptation is carried out can have characteristics that make organisations more or less skillful in adaptation. In their study Daft and Becker (1978) concluded that to be innovative and rational an organisation should set up processes to monitor the environment and evaluate various ideas in relation to its goals. In his study Szulanski (1994) concluded that to facilitate the transfer of best practices between plants, a multiplant firm should systematically

understand and communicate practices. DiBella, Nevis, and Gould (1996) and DiBella and Nevis (1998) have recognised the existence and quality of measurement systems as factors contributing to organisational learning. They mention internal/external focus, degree of specificity, and degree of customisation as measurement system qualities to be defined. In their analysis on organisational learning in disaster response organisations, Carley and Harrald (1997) concluded that learning may be prohibited because 1) feedback is not available; 2) feedback is not wanted by organisations; and 3) an organisation is more willing to receive subjective than objective feedback. Baum and Ingram (1998) argue that organisations may be unable to learn due to the ambiguity and paucity of their experience. In their study on imitating best practices, Chew, Bresnahan, and Clark (1990) suggested that imitating practices between plants of a multiplant company can be enhanced by the use of a measurement system which reveals if a plant has good practices compared to other plants.

The existence and quality of procedures for search has been suggested to contribute to its outcomes. Aiken and Hage's study (1971) suggested that innovative organisations have mechanisms to infuse and stimulate new ideas and mechanisms for introducing new ideas into the organisation on a continual basis. Daft and Becker (1978) argue that the existence of procedures for proposing innovations facilitates idea conception and proposal. In addition, organisational innovativeness increases as the efficiency of the organisational mechanisms for developing innovative alternatives increases. According to Guetzkow (1965), an organisation may facilitate creativity by acquiring creativity training on suitable routines for eliciting and screening suggestions for improvement. An example of collective routine for idea creation and evaluation is "brainstorming" (Amabile, 1988).

The quality of project management in development activity has been suggested to contribute to activity outcomes. Rothwell (1978) suggested that one reason an activity, including adoption of external technology and using external consultants in adoption, may fail is that the project management done by the adopting organisation is inadequate. Communication between separate organisation units participating in an activity does not happen automatically but must be planned and "forced."

Social interactiveness has been suggested to facilitate idea acquisition and creativity. According to Shepard (1967), the idea generation phase requires openness in an organisation so that diverse and heterogeneous persons can contribute and alternatives can be explored. Thompson (1965) suggests that the diversity of inputs needed for the creative generation of ideas can be achieved by a wide diffusion of ideas within the organisation, including a wide diffusion of problems and suggested solutions. Knight (1967) argues that to increase innovation, organisations should bring individuals with knowledge of a problem into contact with people who have skills or knowledge that offer potential solutions to their problems. In a study on making innovation proposals, Aiken, Bacharac, and French (1980) found that in the middle echelon of organisations studied, the rate of internal verbal communication increased proposal making activities. Becker and Stafford (1967) concluded in their study that frequency and ease of communication in a management group facilitated suggesting and considering innovations. Thompson (1965) argues that in innovative organisations, group processes will be openly used. The group process stimulates creation and increases diversity of input for creation. According to Guetzkow (1965), an organisation may facilitate

creativity through "brain-storming" groups. In their review of research on productivity of idea generation in groups versus individually, Stroebe and Diehl (1994) concluded that under normal circumstances individuals produce fewer ideas and fewer good ideas when working in groups than individually. In other words, individuals who brainstorm alone produce a greater number of ideas and a greater number of good ideas than individuals who brainstorm in groups. Production loss in brainstorming groups is mainly due to the circumstance that only one member of group can speak at any given time. The situation gets worse when the size of a group increases. The authors argue that despite of evidence against the efficiency of brainstorming, people want to believe that groups are more effective because they enjoy group brainstorming more than individual brainstorming. They may also believe that ideas produced by a group are more likely acceptable to the group members than those produced by outside individuals.

Individual skills. Individual skills have been suggested to contribute to creativity and carrying out innovation activities. Amabile (1988) argues that an individual cannot produce a creative work without creativity-relevant skills. Skills that have been suggested to contribute positively to creativity include 1) the ability to toy with elements and concepts (Rogers, 1959); 2) a cognitive style favourable to taking new perspectives on problems (Amabile, 1988); 3) an application of heuristics for the exploration of new cognitive pathways (Amabile, 1988); 4) techniques for conceptualising creation outcomes (Amabile, 1988); and 5) social skills (Amabile, 1988). By "heuristic," Amabile (1988) refers to a general strategy that can be of help in approaching problems or tasks. Heuristics are explicit or implicit methods of approaching a problem that are most likely to lead to set-breaking and novel ideas.

2.3.5 Diversity

In the present study "diversity" refers to the extent to which objects of a group of objects differ. The diversity can be environmental or organisational by nature. Environmental diversity refers here to the extent to which the environments of a group of organisations differ. Organisational diversity refers here to the extent to which organisations within a group differ.

Environmental diversity. Aldrich (1979) defines environmental homogeneity-heterogeneity as the degree of similarity or differentiation between the elements of the population discussed, including organisations, individuals, and any social forces affecting resources. The diversity of environments between the organisations of a group of organisations has been found to have influence on imitation between organisations. Chew, Bresnahan, and Clark's study (1990) on transferring best practices between plants of a multiplant firm and the study of Baum and Ingram (1998) on effects of interorganisational learning on survival of hotels suggests that diversity of environments of organisations in a population inhibits imitation between organisations. According to the Baum and Ingram (1998), environmental diversity can also reduce contributions of imitation to an organisation's survival. They concluded that given the difficulty of identifying means-ends relationships in complex environments, managers may be unable to filter experience that applies to their environment from experience that does not.

Organisational diversity. Also the diversity of organisations in a group of organisations has been found to inhibit imitation between organisations. Chew, Bresnahan, and Clark (1990) suggest that networks of plants with similar products, processes, environments, and mission provide the best opportunity for sharing knowledge from plant to plant. If core technologies differ substantially, processes that improve performance in one plant may not apply to another. Zander and Kogut (1995) have found that imitation rates are influenced by the extent to which important aspects of the capability are possessed by many firms. Haberberg and Rieple (2001) explain that uniformity between different parts of an organisation gives people in those parts a common language making it easier to identify best practices in one place and implement it in another.

2.3.6 Centralisation

In the literature the concept of "centralisation" has been used to refer to the locus of decision making in an organisation (Zaltman, Duncan, and Holbek, 1974; Hatch, 1997; Rollinson and Broadfield, 2002; Trott, 2002; Rogers, 1983). In relation to organisational innovation the concept has also been used to refer to the organisational hierarchy level where idea acquisition is carried out (Guetzkow, 1965; Thompson, 1965; Mars, 1971; Aiken, Bacharac, and French, 1980; Chew, Bresnahan, and Clark, 1990). In the present study "centralisation" refers to division of labour in the search phase between the organisational hierarchy level which is expected to adopt the new feature and level responsible for carrying out the search for the new feature.

Senge (1990) and Teece and Pisano (1994) have argued that de-centralisation improves an organisation's adaptability. Both "innovative organisation" (Thompson, 1965; Shepard, 1967) and "learning organisation" (Senge, 1990) has been characterised by high degree of decentralisation. In the organisational adaptation process, centralisation has been suggested to have influence on 1) scanning (Teece and Pisano, 1994); 2) triggering organisational adaptation (Aiken, Bacharac, and French, 1980); 3) generating innovation proposals (Thompson, 1965; Wilson, 1966; Daft, 1978; Aiken, Bacharac, and French, 1980); 4) idea acquisition through creation (Guetzkow, 1965; Thompson, 1965; Mars, 1971; Aiken, Bacharac, and French, 1980; Chew, Bresnahan, and Clark, 1990); 5) idea acquisition through imitation (Chew, Bresnahan and Clark, 1990); and 6) adoption of innovation (Wilson, 1966; Sapolsky, 1967; Aiken and Hage, 1971; Moch and Mores, 1977; Daft, 1978; Daft and Becker, 1978; Kimberly, 1981; Chew, Breshanan, and Clark, 1990).

Interface between organisation and environment may be centralised or diffused across individuals in an organisation (Cohen and Levinthal, 1990). According to Teece and Pisano (1994), decentralisation and local autonomy assists in scanning the environment and evaluating markets and competitors. Aiken, Bacharac and French (1980) suggested that a too high degree of centralisation of making decisions to trigger organisational adaptation can impede triggering as a response to change in customer needs. In the organisations studied, the hierarchy level that was structurally well situated to understand client problems and propose desirable changes could not trigger organisational adaptation due to lack of information and power resources needed for triggering (Aiken, Bacharac and French, 1980).

Decentralisation has been hypothesised to enhance generating innovation proposals (Thompson, 1965; Wilson, 1966) within an organisation's technical core (Daft, 1978). Centralisation has been hypothesised to have a positive influence on initiation of innovations within an administrative core (Daft, 1978). In studies on generating innovation proposals, decentralisation has been found to have a positive influence on the rate of proposals made at the lower organisational level, especially when proposals relate to technology (Aiken, Bacharac, and French, 1980).

Decentralisation of creation has been hypothesised to have a positive influence on creativity (Guetzkow, 1965; Thompson, 1965; Mars, 1971), and the effectiveness of creation outcomes relating to management practices (Aiken, Bacharac, and French, 1980; Chew, Bresnahan, and Clark, 1990). Chew, Bresnahan, and Clark (1990) point out that in a multiplant firm the creation of new management practices can be centralised or decentralised. In the centralised creation, plant network management's key task is to create an environment that encourages innovation. Having a central staff for centralised creation may be a more efficient way to promote innovation, but efficiency may come at the cost of effectiveness of creation outcomes. Mars (1971) suggests that organisational creativity can be facilitated if all levels of the organisational hierarchy participate in the creation of ideas. According to Cummings (1965), one character of creative organisation is that those who are expected to be creative have relatively large areas of discretion and healthy amounts of participation. Guetzkow (1965) argues that centralising creation to the firm level decreases organisational creativity by constraining the local organisation's space of creative alternatives available for responding to demands of the environment. Decentralisation facilitates creativity and innovation, especially when the decentralised unit exists within a diversified firm and possesses relatively objective criteria for evaluation of its output (Guetzkow, 1965).

In a study on transferring best practices between the plants of a multiplant firm, Chew, Bresnahan, and Clark (1990) found that centralisation of model detection and communication tasks had a negative influence on imitation. Centralised quality staff could not be used for transferring best practices between plants because staff did not have sufficient knowledge about plant operations to be able to identify and communicate practices. Centralised technology staff could not be used for transferring best practices due to indifference, lack of credible data, and a belief that only local ideas have value. According to the authors, applying transferred practices can take place only at the local level because successful application often requires a degree of local adaptation.

Centralisation has been hypothesised to have influence on adoption of innovation. Aiken and Hage (1971) found that the degree of decentralisation of decision making had only a weak positive correlation with the number of successful adoptions of innovations during a specific period of time. Moch and Morse (1977) found decentralisation to have a positive influence on adoption of innovations that were compatible with the interests of lower-level decisions makers. Daft and Becker (1978) found decentralisation to have a positive influence on adoption of innovations originating at lower levels of the organisation hierarchy. Kimberly (1981) claims that an innovation is most likely to be used if subunits can evaluate it independently and make their own decisions about how best to implement it. Thompson (1965) and Ounjian and Carne (1987) suggest that an

adopter organisation's resistance to innovation may decrease if the organisation also participates in the search phase. Sapolsky (1967) suggested that decentralisation of the decision-making authority can impede the implementation of innovation proposals. Daft (1978) has hypothesised centralisation to have positive influence on adoption of innovations within an organisation's administrative core.

Wilson (1966) argues that decentralisation may increase the probability of getting innovation proposals implemented because it constricts the effects of innovations to certain subunits and therefore reduces the number of needs that innovation must satisfy to be adopted by changers. Participation may also reduce resistance to change because it provides an opportunity to eliminate or reduce certain disincentives by giving members a chance to talk out their grievances, discharge generalised resentment, and partially overcome feelings of inferiority. According to Rogers (1983), innovations diffused by a decentralised diffusion system are likely to be more compatible with user needs and problems than innovations from a centralised system. This is the case especially if a set of users have diverse conditions and innovation does not involve a high level of expertise. In their study Chew, Bresnahan, and Clark (1990) concluded that applying transferred practices can take place only at the local level because successful application often requires local adaptation.

2.3.7 Incongruity of demands

In their study, Daft and Becker (1978) concluded that an organisation does not resist innovation because of foot dragging and natural resistance to change. Instead, innovations are resisted due to a lack of fit between innovation and the demands of adopting organisations. Daft and Becker (1978) and Downs and Mohr (1979) argue that organisations welcome new techniques that are perceived as useful.

It has been suggested that a lack of fit between innovation and the adopting organisation may be due to an incongruity of demands. Incongruity of demands occurs when the demands of an organisation's members conflict with demands of the external environment. Incongruity of demands has been suggested to impede change. Detrimental effects of incongruity of demands on change has been raised by Thompson (1965), Wilson (1966), Sapolsky (1967), Zaltman, Duncan, and Holbek (1974), Rothwell (1978), March (1981), Ounjian and Carne (1987) and Hannan and Freeman (1989). Change resisting incongruity of demands has been suggested to occur between 1) organisation members (Wilson, 1966); 2) hierarchy levels of an organisation (Sapolsky, 1967); 3) sub-groups of organisation (Hannan and Freeman, 1989); and 4) organisation and external environment (Thompson, 1965; March, 1981; Zaltman, Duncan, and Holbek, 1974; Ounjian and Carne, 1987).

Sapolsky (1967) found that in decentralised organisational structure incongruity of demands between different levels of the organisational hierarchy made it difficult for upper levels of hierarchy to get lower levels to adopt suggested innovations. Rothwell's (1978) study suggested that innovation activity may fail because the technology it produced is inappropriate to the adopting organisation as a result of conflicting interests between an organisation and the consultant who participated in the search phase of the innovation process. Ounjian and Carne (1987) found that an inhibiting factor for

transfer of development results from a research organisation to a business organisation was that the former was more interested in research than in solving the business unit's problems.

2.3.8 Efficacy beliefs

By the concept of "self-efficacy" Bandura (1986) refers to an individual's beliefs in his or her ability to act in a certain way. According to Bandura, self-efficacy has influence on the intensity and length of efforts to carry out a given task in the face of obstacles or aversive experiences. The stronger the perceived self-efficacy, the more intense and long-lasting the efforts to carry out the task. Individuals with a low sense of self-efficacy may be discouraged easily by failure (Bandura and Cervone, 2000). Bandura (1986) argues that an individual's experiences of performance attainments represent one source of information in the formation of self-efficacy beliefs. Successes raise the sense of self-efficacy, while repeated failures lower it, expecially if the failures occur early in the course of events and do not reflect a lack of effort or adverse external circumstances. Perceived efficacy can also be a property of a collective unit of action. Bandura has called this type of efficacy "collective efficacy."

It has been suggested that collective efficacy has influence on organisational innovation. Abbey and Dickinson (1983) found perceived innovativeness to be positively related to the number of initiated, adopted, and implemented innovations within a given time period. Perceived innovativeness measured the perception of the R&D personnel regarding the technological innovativeness of their respective companies. Also Amabile (1988) has suggested a relationship between collective efficacy and organisational innovation. According to Amabile, an important element of the motivation to innovate in an organisation is a sense of pride in its members and what they are capable of doing.

2.3.9 Organisational culture

Schein (1992) defines "organisational culture" as a pattern of basic assumptions—invented, discovered or developed by a given group as it learns to cope with its problems of external adaptation and internal integration—that has worked well enough to be considered valuable and taught to new members as the correct way to perceive, think, and feel in relation to those problems.

Values of the management, as part of the organisational culture, have been suggested to contribute to organisationational innovation and idea acquisition through creation. Rokeach (1973) defines "value" as an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence. According to Amabile (1988), an organisation's basic orientation toward innovation comes primarily from its top management. Aiken and Hage (1973) found that the values of the elite of an organisation had a strong positive correlation with the number of successful adoptions of innovations during specified period of time. An individual's motivation to create ideas is negatively influenced by perceptions that efforts to create ideas are not valued by an organisation (Mars, 1971).

Cultural beliefs have been found to have a negative influence on imitation. Chew, Bresnahan, and Clark (1990) found that the culture of the plant network can be governed by beliefs that reinforce the search for local solutions to local problems. Their study showed that the manager of the plant network may hold beliefs which hinder him or her from encouraging the transfer of ideas between plants. Network managers may believe that plants and their managers are unique and therefore the potential for learning between plants is low. The authors also concluded that perceived uniqueness reduced motivation to develop uniform networkwide performance measures.

2.3.10 Organisational climate

Schein (2000) defines "climate" as a cultural artefact resulting from espoused values and shared tacit assumptions. According to Rollinson and Broadfield (2002), "organisational climate" is a characteristic ethos or atmosphere within an organisation at a given point in time which is reflected in the way its members perceive, experience, and react to the organisational context.

Organisational climate has been suggested to have influence on creativity, adoption of innovation, and on the innovation process as a whole. Amabile has hypothesised that creativity is positively influenced by encouragement and support (1988). Dutton and Starbuck (1978) and Ounjian and Carne (1987) have found that support can enhance the adoption of technology from the environment. Abbey and Dickinson (1983) found that organisational flexibility measured by willingness to try new procedures and to experiment with change was significantly related to all stages of the innovation process in terms of number of innovations the process produced.

Amabile (1997) found that a specific type of organisational change can result in a climate detrimental to creativity. In a company studied by her, a downsizing project decreased perceived encouragement and support. Work group support and organisational encouragement declined and these conditions showed the weakest rebound for four months after the downsizing ended. Creativity declined during downsizing and did not rebound at least for four months after downsizing. Regardless of how much downsizing happened in a worker's own department, they were less creative and reported poorer work environments when the stability of their own work group had been disrupted. The more downsizing people expected in the coming months, the poorer the work environment in the department, the lower the morale, and the less creative their approach to their work.

It has been hypothesised that a climate resulting from organisational changes may produce traumatic experiences that can inhibit organisational adaptation in the future. According Schein (1993) and Scherer and Tran (2001) organisational changes may cause painful and traumatic experiences for organisation members. Scherer and Tran (2001) argue that traumatic experiences are generated by an emotional climate of anxiety resulting from organisational change. Knight (1967) proposes that traumatic experiences result when employees are forced to change. Schein (1993) argues that traumatic experiences of past changes cause employees to feel anxiety when facing new organisational changes. According to Scherer and Tran (2001), traumatic experiences of past changes may paralyse an organisation and prevent adaptation.

2.3.11 Expectations

The literature suggests that organisational adaptation behaviour may be a target of explicit expectations which can have influence on conducting the behaviour. Expectations may be carried by structures such as roles or they may be expressed through time pressure. In the present study "**expectations**" refers to the extent to which organisational adaptation behaviour is a target of explicit expectations.

Individual and organisational roles relating to organisational innovation have been suggested to facilitate organisational innovation. In their study on team learning, Cangelosi and Dill (1965) found that team members who felt that their role involved improving current rules continued improving rules no matter how good the outcomes of existing rules had been. Guetzkow (1965) has proposed that establishing organisational groups whose role is to innovate may facilitate innovation. In Daft and Becker's study (1978), the adoption of innovation was positively correlated with the existence of a "support group" that facilitated and coordinated innovation related tasks like idea exchange, proposal preparation, and research work.

Boundary spanning roles have been suggested to have a positive influence on idea proposal and the adoption of innovations. Callahan and Salipante (1979) define "boundary spanning unit" as any group or department whose primary responsibilities are to deal with parties outside the organisation, such as clients, suppliers, and research institutions. Daft and Becker (1978) propose that the existence of boundary-spanning units responsible for scanning the environment for new ideas can facilitate idea conception and proposal in an organisation. Ettlie and Bridges (1982) found that the existence of a specialised group to evaluate new process innovations facilitated adoption of major but not minor process innovations. Callahan and Salipante (1979) advocate establishing temporary boundary spanning units as an effective mechanism for an organisation to adopt an innovation. By buffering other organisational units from change, a boundary spanning unit allows them a longer time period to adopt the innovation.

Time pressure has been suggested to have influence on creativity, the rate of producing innovations, and participation in innovation activities. Thompson (1965) argued that the creative atmosphere should be free from external pressure because if too much hangs on a successful outcome of search activity, the creator will have a strong tendency to accept the first satisfactory solution whether or not it seems novel or the best possible solution. According to Amabile (1996), creativity research has not demonstrated consistent negative effects of deadlines on intrinsic motivation to create and on creativity. In a study on R&D organisations Amabile (1988) advocated balancing time and competition pressure to enhance creativity. In R&D activities, creativity can be enhanced by setting goals that are not too loose or too tight. A study by Eisenberger, Armeli, and Pretz (1998) proposed that the combination of a highly salient reward and severe time pressure to find a creative solution to a problem may produce intense emotional arousal that disrupts sustained cognitive processing.

2.3.12 Receptivity

According to Bower (1965), a person gives birth to an idea by telling someone else about it. In an organisation, an idea is usually communicated to someone who can do something about it, often an individual's superior or peer. In this study "receptivity" refers to the receptivity of an actor's social environment to the idea or adaptation behaviour suggested by an actor.

The way an individual expects the social environment to respond to the idea has been suggested to have influence on an individual's motivation to create ideas and quality of ideas. An individual's motivation to create ideas has been proposed to be negatively influenced by the beliefs that 1) the idea will be evaluated (Rogers, 1959); 2) the creator will be evaluated negatively (Bower, 1965); 3) the idea will not be noticed by the organisation (Bower, 1965); and 4) the idea will not lead to action (Bower, 1965). It has been proposed that the motivation to suggest ideas is negatively influenced by the belief that the proposed idea will be evaluated negatively (Wilson, 1966). Creativity has been hypothesised to be negatively influenced by the belief that an idea will be evaluated by others (Amabile, 1988) and idea will be evaluated negatively by others (Amabile, 1988). The novelty of creation outcomes has been suggested to be negatively influenced by the belief that the idea will be evaluated (Rogers, 1959). The motivation to take risks has been hypothesised to be negatively influenced by the expectation that an idea will be evaluated negatively (Amabile, 1988).

The motivational consequences of expected evaluation of the idea have been suggested to depend on specific characteristics of the individuals. In their review of research of environmental effects on task motivation, Hennesy and Amabile (1988) conluded that expected evaluation can be perceived quite differently by persons who vary in self-esteem, and as a result the condition can have disparate effects on the creativity of persons who differ along this dimension. According to Bower (1965), reasonable and realistic innovators are satisfied with reasonable explanations of why their ideas cannot be acted on at all or at that particular time. The mere recognition that the effort has been made and appreciated is all that is necessary to overcome the feeling of futility.

Expectations of responses to ideas emerge through learning from an individual's own experience (Bower, 1965; Daft and Becker, 1978; Amabile, 1983) or experience of others (Bower, 1965). According to Daft and Becker (1978), organisation members also learn which types of proposals are acceptable. They claim that the belief that an idea will not be adopted is a strong predictor of low intensity of proposing ideas. When organisation members hold this belief ideas will not be proposed even under favourable structural conditions of low formalisation, high complexity, and decentralisation. Amabile (1983) has argued that even positive actual evaluation can undermine future creative performance because it leads to expectations of future evaluation.

An organisation's actual responses to ideas is influenced by the amount of organisational slack, the perceived quality of an idea in terms of its distance from an organisation's current knowledge base, and the extent to which an organisation contacts the external source of the idea. Guetzkow (1965) argues that if an organisation has only a little slack, the climate is unfavourable for innovation because an organisation must eliminate its short-run errors to survive and new ideas are evaluated by their capacity to

satisfy this need. Cohen and Levinthal (1990) suggest that an organisation may resist accepting innovative ideas from environment if they are too distant from the organisation's existing knowledge base to be appreciated or accessed. Duchesneau, Cohn, and Dutton (1979) found that an organisation's actual reaction to innovation offered by a supplier was strongly influenced by the extent to which organisations contacted the supplier.

2.3.13 Incentives

Organisations may use incentive systems as extrinsic motivators for organisational innovation. According to Aldrich (1999), organisational incentives to produce innovation include making innovation an in-role task for employees, rewarding workers whose ideas are selected for further evaluation, and creating competitions between work groups with recognition as a symbolic reward. Rewarding employees' innovative ideas can take place through a "suggestion system" (Thompson, 1965; Guetzkow, 1965). According to Guetzkow (1965), the basic idea behind the systems is to motivate the organisation to develop innovation for its improvement. In this study "**incentives**" refers to the extent to which employees are offered incentives to motivate organisational adaptation behaviour.

Rewarding, as a type of incentive system, has been suggested to enhance organisational innovation. Daft and Becker (1978) argue that idea conception and proposal can be enhanced by rewarding innovation proposals. According to Wilson (1966), innovation proposals will be more frequent in organisations in which a high degree of uncertainty governs the member's expectation of rewards. In re-analysis of his earlier study, Norman (1971) argued that the motivation of individuals to engage in development projects is a function of the organisation's incentive system. The study by Chew, Bresnahan, and Clark (1990) on transferring best practices between the plants of a multiplant network suggests that transfer cannot be motivated by a reward system where network members are unable to contribute sufficiently to meeting the rewarding criteria. In her model of organisational creativity and innovation, Amabile (1988) suggests that to enhance creativity in an R&D organisation, reward systems have to be balanced. People who feel that their action is totally tied to bonuses, awards, salary increases, or promotions are unlikely to take the risk to try out new ideas. On the other hand, without rewards for creative efforts, employees may feel that an organisation does not value creativity. Abbey and Dickinson (1983) found that the number of innovations for all stages of the innovation process were significantly related the extent to which rewards were fair and appropriate, and the degree to which rewards were based on worth, ability, and past performance. The level of reward was significantly related only to the idea acquisition phase. The level of reward was measured by the degree to which personnel were well rewarded by salary, fringe benefits, and other status symbols. They explained that motivational conditions are present in the idea acquisition stage because motivation is an individual phenomenon; in the innovation process, idea acquisition is more an individual stage, while adoption is a group stage, and implementation is an organisation stage. According to Amabile (1993), the results of her studies suggest that people are less strongly driven to achieve salary increases and recognition as they progress in their careers.

Rewarding is an “extrinsic” motivator for organisational adaptation behaviour. In extrinsically motivated behaviour, the goal of the behaviour is separable from activity itself, whether that goal is the avoidance of punishment or the pursuit of a valued outcome (Deci and Ryan, 2000b). According to Amabile (1993), extrinsic motivators include anything coming from an outside source that is intended to control (or can be perceived as controlling) the initiation or performance of the work. For example, extrinsic motivators include promised reward, praise, critical feedback, deadlines, surveillance, or specifications on how the work is to be done.

The literature on human motivation suggests that behaviour also can be “intrinsically” motivated. An intrinsically motivated person behaves for the satisfaction inherent in the behaviour itself (Deci and Ryan, 2000a). Satisfaction may come, for example, from experienced personal challenge in the work or self-expression (Amabile, 1993).

It has been suggested that organisational innovation and creativity are facilitated by intrinsic rather than extrinsic motivators. Thompson (1965) hypothesised that the extrinsic reward system stimulates conformity rather than innovation and that organisational innovation and creativity are facilitated by intrinsic rewards such as professional growth and satisfaction from the search process. Cummings (1965) suggested that in order to generate creative responses, the typical organisational reward system may have to be re-directed toward the intrinsic satisfaction reward for the individual with creative abilities. Nickerson (1999) argues that creativity researchers generally agree that intrinsic motivation is a more effective determinant of creative productivity than extrinsic motivation. According to Amabile (1997), the results from several studies suggest that people are the most creative when they are primarily intrinsically motivated rather than extrinsically motivated by expected evaluation, surveillance, competition with peers, dictates from superiors, or the promise of rewards. Cummings (1965) argues that a creation task can be intrinsically motivating if it is perceived as interesting, challenging, flexible, and self-directed. Hennesy and Amabile (1988) argue that people will be most creative when they are motivated primarily by the interest, enjoyment, satisfaction, and challenge of the work itself.

According to Amabile (1987), the positive relationship between intrinsic motivation and creativity in open-ended tasks is due that an externally motivated individual is willing to allocate his or her own capacity to a task only to the extent required to satisfy the external motivator, while an intrinsically motivated individual will explore more alternatives and, as a consequence, the final product will be more creative. In an extrinsically motivated creation task, the first satisfactory creation outcome will terminate the process.

An individual’s level of intrinsic motivation can be influenced significantly by extrinsic motivators offered by an individual’s social environment (Amabile, 1997). According to Hennesy and Amabile (1988), several studies have indicated that the experience of performing a task for money significantly decreases a subject’s intrinsic motivation for that activity. Amabile (1997) argues that whether extrinsic motivation will combine positively with intrinsic motivation or detract from it, influencing creativity depends on a person’s initial motivational state, the type of extrinsic motivator used, and the timing of the extrinsic motivation. Controlling extrinsic motivation is detrimental to creativity, but informational or enabling extrinsic motivation can be conducive, particularly if

initial levels of intrinsic motivation are high. Eisenberger, Armeli and Pretz's study (1998) on the effects of rewarding creativity among schoolchildren suggested that a promise of reward can increase creativity if people are trained to think divergently in a preliminary task or the instructions explicitly convey the necessity of a creative performance. Amabile (1993, 1997) suggests that in the process of organisational innovation it may be optimal to reduce all types of extrinsic motivators at the problem presentation and idea generation stages because they most strongly influence the novelty of the final idea.

2.3.14 Defensiveness

According to Argyris (1993), individual behaviour seems to be governed by a universal "master programme" which defends an individual against feelings of embarrassment, threat, vulnerability, or incompetence. As an organisation-level consequence, an organisation may use "organisational defensive routines." Argyris (1990) defines "organisational defensive routines" as actions or policies that prevent individuals or segments of an organisation from experiencing embarrassment or threat. In this study "**defensiveness**" refers to the extent to which organisational adaptation behaviour is governed by a tendency to avoid behaviours whose outcomes are perceived as threatening to an individual or an organisation.

Defensive behaviour can impede triggering organisational adaptation (Guetzkow, 1965), organisational learning (Argyris, 1990), and creativity (Rogers, 1959). Guetzkow (1965) points out that if an organisation's vertical communication system filters out unpleasant feedback from the lower hierarchy levels to the upper levels, management cannot trigger activities to improve the organisation. Argyris (1990) argued that organisational defensive routines are anti-learning and overprotective. The need to defend oneself against feelings of embarrassment, threat, vulnerability, or incompetence may cause individuals to misattribute failures in defensive ways. Rogers (1959) argued that defensive behaviour can prohibit creativity because that actor is not open to new experiences.

2.3.15 Individual characteristics

The literature suggests that individual differences may occur in creativity and innovativeness. Mars (1971) argues that creativity is spread unevenly through all human organisations; some people are more creative than others, although everyone probably has some attributes of creativity. According to Runco and Sakamoto (1999), the experimental research on creativity suggests that a creative personality is tied to the creative process. Amabile (1988) found that in an organisation, creativity was promoted by personality traits such as persistence, curiosity, energy, intellectual honesty, and general intelligence. Creativity was also found to be promoted by being naïve or new to the field—in other words, not being biased by preconceptions or bound by old ways of doing things. Knight (1967) argues that significant variation in an organisation can be observed in the extent to which different people are innovative. Hurt, Joseph, and Cook (1977) argue that a definition of innovativeness as a normally distributed, underlying personality construct which may be interpreted as a willingness to change, is well supported in literature. According to Shepard (1967), in innovation-resisting

organisations, successful innovators are often marginal to the organisation; that is, their basis for self-esteem is somewhat independent of organisational values as expressed in its reward and punishment system.

2.3.16 Summary

Drawing conclusions from the literature on conditions that have been suggested to enhance or impede organisational adaptation is difficult due to the diversity of concepts used in the literature. In the literature a multitude of different concepts have been used to refer to the domains of organisational adaptation behaviour to which enhancing or impeding conditions have been suggested to relate. In referring to specific behavioural domains as objects of influences, the studies have applied several different definitions. It is also common that concepts for conditions or behaviour have been used without giving explicit definitions for the concepts.

Table 2 summarises the literature about conditions that have been suggested to enhance or impede the phases organisational adaptation. Only those influences are involved where the definitions of both the condition and the influenced domain of organisational behaviour match with those used in the present study. The “+” mark after the name of the condition refers to a positive relationship between the condition and phases while the “-“ mark refers to a negative relationship. In the table, the column named “Organisational innovation” refers to the conditions found in the literature that were related to the process of organisational innovation as a whole.

CONDITION		ORGANISATIONAL ADAPTATION PROCESS					
		TRIGGERING		ORGANISATIONAL INNOVATION PROCESS			
	Organisational innovation	Scanning	Performance monitoring	Search	Implementation	Change	Retention
Organisational slack (+)	Amabile (1988,1997)			Cyert and March (1992)			
Knowledgeability (+)				Amabile (1988); Nickerson (1999); Weisberg (1999); Wilson (1966), Duncan and Weiss (1979); Aldrich (1979); Nelson and Winter (1982); Cohen and Levinthal (1990); Rothwell (1978); Duchesneau, Cohn and Dutton (1979); Ounjian and Carne (1987); Chew, Bresnahan and Clark (1990); Attewell (1992); Szulanski (1994, 1996)			
Remoteness (-)				Szulanski (1994); Chew, Breshanan and Clark (1990)			
Skilfulness (+)		Chew, Bresnahan, and Clark (1990)		Shepard (1965); Thompson (1965); Becker and Stafford (1967); Aiken, Bacharac and French (1980)			
Diversity (-)				Chew, Bresnahan and Clark (1990); Zander and Kogout (1995); Baum and Ingram (1998)			
Centralisation (+)						Thompson (1965); Ounjian and Carne (1987); Aiken, Bacharac,and French (1980); Chew, Bresnahan, and Clark (1990); Kimberly (1981)	
Incongruity of demands (-)						Thompson (1965); Wilson (1966); Sapolsky (1967); Zaltman, Duncan and Holbek (1974); Rothwell (1978); March (1981); Ounjian and Carne (1987); Hannan and Freeman (1989)	
Efficacy beliefs (+)	Abbey and Dickinson (1983); Amabile (1988)						
Organisational culture (+)				Mars (1971)			
Organisational climate (+)	Dutton and Starbuck (1978); Ounjian and Carne (1987)			Amabile (1997)			
Expectations (+)	Cangelosi and Dill (1965); Guetzkow (1965)					Daft and Becker (1978); Callahan and Salipante (1979); Ettlie and Bridges (1982); Meyer and Goes (1988); Wilson	
Receptivity (+)				Wilson (1966); Daft and Becker (1978)			
Incentives (+)	Thompson (1965)			Daft and Becker (1978)			
Defensiveness (-)			Argyris (1990); Guetzkow (1965)				
Individual characteristics (+)				Mars (1971); Amabile (1988)		Knight (1967); Shepard (1967)	

Table 2. The literature on conditions that enhance or impede organisational adaptation.

In the literature it is not possible to find any theoretical framework that draws together conditions that enhance or impede organisational adaptation through innovations. The literature suggests several conditions that may contribute to organisational adaptation, but the conditions have been studied in phases or phase sequences of organisational adaptation process, not in the process of organisational adaptation as such. According to Table 2, the knowledge of conditions is biased towards certain phases or phase sequences in the organisational adaptation process. The literature is most extensive on the organisational innovation process and most scarce on the phases of scanning, performance monitoring, and retention. Within the organisational innovation process, the literature is the most extensive on the search and change phases while literature on the implementation phase was not found. Between conditions influential in organisational adaptation, the literature is most extensive on organisational slack, knowledgeability, skilfulness, centralisation, and incongruity of demands. The literature suggests that specific conditions may have influence on organisational adaptation in more than one phase of the process. Skilfulness and individual characteristics have been suggested to contribute to more than one phase in the organisational adaptation process.

3 RESEARCH METHODOLOGY

The goal for the study was to describe and explain organisational adaptation behaviour and adaptability by answering to the questions:

- how does an organisation adapt through innovations?
- which conditions enhance or impede organisational adaptation through innovations?

The action plan for getting from the research questions to some set of conclusions about the questions has been called “research design” (Yin, 1994). The present study applied the “case study” approach (Yin, 1994) as a research design. According to Yin (1994), case study is an appropriate approach when a study covers both a phenomenon and its contextual conditions in real-life setting. Stake (1995) and Eisenhardt (1989) consider case study as an approach that focuses on understanding dynamics in a single setting. Stake (1995) raises phenomenon-context dynamics and the complexity of an individual case to the focal point of case study. In this study, the objects of interest were understanding organisational adaptation behaviour and organisational adaptability as phenomena in a real-life context. Yin (1994) states that case studies are preferred when research focuses on “how” or “why” questions. In the present study the first research question was of type “how”. Yin (1994) distinguishes between single-case study and multiple-case study as two different research designs. According to Stake (1995), studying multiple cases can be rationalised because each case is instrumental to creating a general understanding about the phenomena studied. This study applied a multiple-case research design where multiple case organisations were used instrumentally to achieve the goal that the study should create general understanding of organisational adaptation behaviour and organisational adaptability in the organisational context.

Since the phenomena of organisational adaptation and adaptability are not well known and the goal of the present study was to increase understanding of the phenomena, “grounded theory” approach (Glaser and Strauss, 1967; Strauss and Corbin, 1998) was used as the research strategy for the study. Glaser and Strauss (1967) define grounded theory as an approach where theory is discovered from data. According to Strauss and Corbin (1998), “theory” expresses a set of well-developed categories that are systematically interrelated through statements of relationship to form a theoretical framework that explains some relevant phenomenon. Glaser and Strauss (1967) state that generating grounded theory is a way to arrive at theory suited to its supposed use.

According to Stake (1989), cases for a multiple case study should be selected so that they offer an opportunity to maximize what we can learn. In the present study the selected five cases acted as “pilot”-organisations in development of the LWOD design for the case company. The underlying criteria for selecting the organisations as “pilots” were that the organisations covered the diversity of the case company organisations in Finland in terms of services produced and that the selection maximised strategic utility. The selected cases offered an opportunity to learn about the phenomena studied in different organisational settings. They also satisfied the practical criteria that the knowledge created through the study can maximally be utilised in development of the LWOD design.

Cases A, B, and C were "representatives" from three diverse organisation groups in the case company. Case A belonged to the group of small highly specialised maintenance service suppliers. The case organisation was selected from the group because in the beginning of the study it looked like the organisation was exceptionally innovative among the organisations of the case company. Case B belonged to a group of organisations that provided operation and maintenance services to the plants that acted in the industry of the case corporation. Selection of Case B was based on recommendation of the case company management. Case C belonged to a group of the plant maintenance organisations. The organisation was selected due to its role as an important reference target in sales activities. Piloting development of LWOD design in cases A, B, and C was based on the assumption that developmental results achieved in a pilot organisation could be transferred to other organisations in the same group because of the similarities between the organisations of the group.

Cases D and E were selected as pilot organisations and targets of the research because of their central strategic position in the case company. Case E was the company headquarters and it was supposed to have a central role in adaptation of the case company. In the company management's long-term vision about networked company structure, the profit centre where Case D belonged was a key node in the network of internal and external organisations.

This study was carried out in two phases. The "pilot study" phase was carried out in 1999-2000 and the actual study phase between 2001 and 2004. Yin (1994) describes a pilot study as an activity of final preparation for data collection. A pilot study can help to refine research design and contents and procedures of data collection. In this study, the main contribution of the pilot study was development of "pre-understanding" (Gummeson, 1991) which enabled focusing the research in the actual "study phase." From the point of view the grounded theory approach, the pilot study enabled "theoretical sampling". In theoretical sampling the data gathering is guided by the theory that evolves during the research (Strauss and Corbin, 1998). According to Strauss and Corbin (1998), theoretical sampling is important when exploring uncharted areas because it enables the researcher to gather data about the subjects that are most useful for the theory generation. In this study the pilot study phase produced an initial theoretical framework that guided data gathering in the actual study phase.

3.1 Pilot study phase

The aim of the pilot study was to generate a preliminary understanding of the studied phenomena. This chapter describes the methods of gathering and analysing the data from the case company and case organisations in the pilot study.

3.1.1 Data gathering

In the pilot study the data were acquired through participant observations, discussions, interviews, survey, and documentation.

Participant observations. In cases B, C, and E, the researcher participated in the organisational adaptation processes that were carried out before the actual study phase

started in 2001. The work offered a possibility for gathering data about organisational adaptation behaviour through participant observation. The development activities of the case organisations where the researcher participated in were manifestations of organisational adaptation carried out by the case organisations.

In Case B the researcher facilitated five development sessions in the development activity aimed at improving knowledge management practices of the case organisation. Six employees from management and one worker participated in the sessions. The researcher wrote memos about the sessions and fed them back to the participants. The memos contained information about recognised development targets and ideas of how to improve practices in the case organisation.

In Case C the researcher facilitated five development sessions aimed at improving the case organisation's adaptation behaviour. The domains of organisational adaptation behaviour developed included scanning models from peer-organisations and new technologies available in the case corporation, retention of organisational knowledge through documentation management, and implementation of new data system. Eight employees from management and six workers participated in the sessions. In autumn 2000, the researcher also facilitated a special session to develop a "suggestion system." The suggestion system was an incentive system which rewarded new and published development ideas that met specific criteria. From the case organisation one supervisor and five workers participated in the session. The researcher wrote memos about the facilitated sessions and fed them back to the participants. The memos contained information about recognised development targets and ideas of how to improve organisational adaptation behaviour in the case organisation.

In Case E the researcher participated in numerous forms of organisational adaptation behaviour. The researcher participated in the strategic and annual planning activities and in development activities aimed at developing scanning of the supplier environment and acquisition of feedback from the employee environment. As a group member, the researcher also participated in meetings of different forums of the case company and the case corporation. Membership-based participation took place in the case company development management team, product development management team, IT-management team, HR-process team, meeting for the managers of the field-organisations, and the case corporation knowledge management team. The participant observations from Case E were recorded on-line in an electronic diary. The contents of the diary included observations of organisational adaptation behaviours and comments of participants on conditions that enhance or impede organisational adaptation.

Discussions. In 1999–2001 the researcher kept a diary about discussions between the researcher and the members of the case organisations. The largest content was generated from Case E comprising memos of 161 discussions with 27 different people. The discussions were about organisational adaptation behaviour in Case E and conditions which enhance or impede organisational adaptation. The discussions concerned, for example, performance of feedback acquisition processes and development activities carried out in Case E.

Interviews. In the case company the personnel training program was carried out with one course about LWOD. The researcher acted as a trainer in five training sessions in

the course. In the sessions, the participants were introduced to the preliminary ideas of the LWOD design and they were asked to evaluate individually which conditions in their organisations enhance or impede acting as suggested by the LWOD design. For example, the preliminary LWOD design included ideas that organisations scan and adopt practices from other organisations and acquire and attribute feedback from the performance of their own organisation. The results of the interviews were recorded in memos. The sessions did not have participants from the case organisations.

Survey. In the end of 2000, a Christmas party was arranged for the employees of the profit centre in Case D. During the "official part" of the occasion the preliminary ideas of the LWOD design were introduced to the participants and a survey was conducted where the participants were asked to 1) describe conditions which enhance or impede action according to the LWOD design in the profit centre and 2) recognise development targets in the behavioural domains covered by the LWOD design. The survey was carried out through a questionnaire. The results of the survey were recorded in a memo.

Documentation. The quality system documentation of cases A-D was utilised in mapping forms of organisational adaptation behaviours and developing the vocabulary for interviews of the study phase. The quality documentation involved information about performance monitoring and search practices of the case organisations. The documentation described, for example, the procedures the organisations were expected to follow in performance monitoring and evaluation of ideas suggested by employees.

3.1.2 Data analysis

In the pilot study phase, the analysis of the data acquired from the case company was carried out by reflecting acquired data, writing emerged thoughts to memos, and categorising them; listing and categorising data from the inquiries; and generating phase models and other kinds of visual abstractions from the data and the ideas that emerged. The main outcomes of the data analysis were clarification of the subject of the research, orienting assumptions about the nature of the phenomena to be studied, adoption of vocabulary of the case organisations, and the theme lists for interviews to be conducted in the study phase.

The data analysis in the pilot study clarified the subject of the research. In the beginning of the research process in 1998, it seemed that the studied domain of organisational behaviour would be organisational learning. However, the analysis of the data gathered in the pilot study suggested that organisational learning is a too "narrow" phenomenon for studying how an organisation develops. Instead, the phenomenon to be studied was suggested to involve both organisational innovation and organisational learning. As a result, the focus of the research shifted to organisational adaptation because it involved both organisational innovation and organisational learning as forms of organisational behaviour through which an organisation can develop itself.

The data analysis suggested orienting assumptions about the nature of the phenomena to be studied. The assumptions of the organisational adaptation behaviour were embedded into the theme lists (appendixes 1 and 2) that were developed to guide interviews in the study phase. The themes expressed forms of organisational adaptation behaviour detected in the pilot study and theoretical ideas about adaptation behaviours that

organisations should have. The vocabulary used in the theme list was adopted from the case organisations. Assumptions of the types of conditions that enhance or impede organisational adaptation were embedded in the interview questions of the study phase. The results of the pilot study and their empirical groundings are introduced in Chapter 5. 5

3.2 Study phase

In the actual study phase, data gathering and data analysis were carried out according to the selected research design and strategy. The findings of the pilot study enabled elaborating the research design. As its findings suggested that it is possible to conceptualise organisational adaptation behaviour as a process model consisting of multiple phases, an "embedded case design" (Yin, 1994) was adopted and applied in the study phase. In the embedded case design, each of the phases of the process model was treated as an embedded unit of analysis. This chapter describes the methods of data gathering and data analysis applied in the study phase.

3.2.1 Data gathering

In the study phase group and individual interviews were the main data gathering methods. Interviews were guided by the theme lists (appendixes 1 and 2) that were developed in the pilot study phase. Participant observations, direct observations, discussions, recalling the researcher's prior knowledge of the case company, and documentation were utilised as supplementary data sources. All of the used data gathering methods were utilised in answering to both of the research questions of the present study.

The data gathering started with "entrée" interviews in the case organisations. In cases A, B, C, and E the first interview was an individual interview of the manager of the organisation. In Case D, the first interview was an individual interview of the manager of the profit centre to which Case D belonged. In addition to interviewing the managers, the purpose of the sessions was to give the managers a picture of the topic of interviews and get their permission for further interviews in the organisations. After the "entrée" interviews, in cases A-D group interviews and in Case E individual interviews were conducted.

The participants for the interviews were selected by both the case organisations and the researcher. Cases A-D were free to select participants for the group interviews. The recommendations given for the selection were that participants should be well aware of the themes of interviews in the case organisation and that all levels of the organisation hierarchy should be represented. Freedom was allowed in the participant selection because the researcher did not know who had the best knowledge about the topics of interest in the organisation, did not know which group compositions would be viable, and believed that maintaining a sense of control in the organisation would create better ground for the interviews. In cases A and D it revealed that the groups interviewed lacked knowledge in some interview themes. To fill the gaps, a few additional individual interviews were conducted. Interviewees were selected by the researcher on the basis of prior personal knowledge about the case organisations and the knowledge

that accumulated during the group interviews. In Case E the researcher selected participants for the individual interviews. The selection procedure in Case E was different from the other case organisations because the researcher was familiar with the employees of case E and the employees were familiar with the LWOD project and the researcher. In Case E the main criterion in participant selection was that the participant was responsible for the central areas of organisational adaptation behaviour in the case company.

In Case A: Four group interviews and two individual interviews were carried out. Fourteen employees participated in these interviews, of whom 10 were workers and four were in managerial positions. The workers were interviewed in three group sessions in groups of three or four persons. Each informant participated in only one interview session. The manager of Case A and the technician responsible for installations and overhauls were interviewed individually. The group manager and the engineer responsible for supervising the workshop were interviewed together in one interview session. The interviews were carried out between 21/5–7/11/2001.

In Case B: Three group interviews and one individual interview were carried out. Five employees participated in these interviews, four of them were in managerial positions and one was a temporarily employed student making a thesis for the organisation. The manager of Case B participated in all three group interviews and also was interviewed separately in the individual interview. Other participants in all the group interviews were the manager of the sub-organisation called "Operation," the manager of the sub-organisation called "Support of operation," and the student. The supervisor of one shift also participated in the first group interview session. The interviews were carried out between 7/5–12/6/2001.

In Case C: Five group interviews and one individual interview were carried out. Twelve employees participated in these interviews, of whom four were workers and eight were in managerial positions. Of the five group interviews, four concerned whole Case C and one was specific for the sub-organisation called "C4." The other sub-organisations of Case C are called "C1," "C2," and "C3." Group composition and the amount of participants varied between the interview sessions. The manager of Case C and the person responsible for separate delivery projects participated in all four group interviews that concerned the whole case organisation. The manager of Case C changed during the interview period. The former manager participated in the first two group interviews and the new manager in the last two interviews. The other participants were three workers and purchaser in the first session, the supervisors of C1 and C2 in the second session, the supervisors of C3 and C2 and the purchaser in the third session, and the supervisors of C1 and C2 in the fourth session. In the group interview session specific for C4, three workers participated, one of whom had a supervising role. The session in C4 was different from other group sessions because the researcher spent the whole day with the informants and "hung around" with one worker in the real working environment. The manager of Case C also was interviewed individually. The interviews were carried out between 29/1–13/8/2001.

In Case D: Five group interviews and two individual interviews were carried out. Eight employees participated in these interviews, of whom four were workers and four were in managerial positions. A group of five persons participated in the group interview

session in varying compositions. The manager of the sub-organisation "Planning of automation and electricity" participated in all group interview sessions. A project-engineer from the sub-organisation "Process and machine technology" participated in the last four sessions. One technician from this sub-organisation participated in the first four sessions. Another technician participated in the first and the fourth sessions. A technician from the sub-organisation "Planning of maintenance" participated in the first, second, and fifth sessions. The manager of Case D, the manager of the parent profit centre of Case D, and the manager responsible for the quality matters in the profit centre were interviewed individually. The interviews were carried out between 31/5–12/11/2001.

In Case E: Seven individual interviews were carried out. The interviewed employees were the case company CEO, the executive vice president, the vice president responsible for human resources (HR), the vice president responsible for marketing, the vice president responsible for quality and EHS (environment, health, safety) matters, the vice president responsible for product development, and the sales manager of business division Z. The interviews were carried out between 1/2–5/11/2001.

All 32 interviews were carried out by the researcher on the work premises of the case organisations. The length of the interview sessions varied typically from one to four hours. An exception was one full-day session in Case C. All the group interviews and all but one individual interview were recorded by a tape recorder. The manager of the parent profit centre of Case D did not give permission for recording her interview.

That the case organisations acted as pilot organisations in the LWOD project had been negotiated with the organisations before the interviews started. In the beginning of the interview sessions, the project was introduced to the participants. The informants were told that the purpose of the interviews was to map good practices and potential development targets in the case organisation's adaptation behaviour. To create a safe atmosphere for the informants, confidentiality of the interviews was emphasised.

All the interviews were semi-structured by nature. In cases A-D the interviews were guided by the theme list developed in the pilot study phase (Appendix 1). In the list each theme represented a phase or phase sequence of the initial phase model of the organisational adaptation process detected in the pilot study. The themes covered all the phases of the organisational adaptation process recognised in the pilot study. The theme acted as a "gate" to the phase sequence and, depending on its location in the sequence, it was possible to trace phases that had occurred before and/or after the phase expressed by the theme. For example, in the theme "Suggestion and initiative systems" which expressed search behaviour, it was possible to map how triggering and implementation were carried out for specific initiative or initiatives in general. Because of the amount of the themes it was not possible to cover all the themes in a single interview session. As a consequence, the different interview sessions in a specific case organisation covered different themes. It was possible, for example, that the first group interview session in a case organisation covered 5 themes of the list, the next session covered 8 themes, and so on. The sessions continued in a specific case organisation until all the themes had been covered.

Case E differed from other cases in that it was not a service organisation but a management organisation where the interviewed employees had company-wide areas of responsibilities. As a consequence, most of the interview themes for cases A-D were not applicable in Case E. In Case E, the themes of the individual interviews were tailored to concern organisational adaptation behaviour in the informant's area of responsibility (Appendix 2). The interviews of the CEO and the executive vice president covered more general and historic topics than the other interviews.

In all the interviews the questions about conditions that enhance or impede organisational adaptation did not follow any advance plan but were intuitive, motivated, and guided by the situation at hand. If in the interview session it came out that in the case organisation intensity of publishing ideas as initiatives had decreased, the informants were immediately encouraged to reflect causes for change in intensity. For example, Cases B and D had statistics of the annual amounts of inititiatives the employees of the organisations had created. In the group interviews the informants explained changes in the annuals amounts of initiatives by changes in specific conditions in the organisations. In cases B, C, and E the researcher observed failures in development activities that were triggered in 1999–2001. The activities and their failures were observable to the researcher through data gathering methods applied to the case organisations. In interviews, failures in the observed activities were explained by specific conditions in the case organisations. In Cases A, C, and D comparisons were made between individuals and sub-groups presenting different adaptation behaviours. The differences in adaptation behaviours and explanations for the differences came out in the group interviews.

In general, the interview situations were highly flexible. To motivate discussion the topics of discussions were allowed to diverge to the directions the interviewees were interested in. All the interview questions were formulated in the interviews. To increase mutual understanding between the researcher and the informants in cases A-D, the question formulation applied vocabulary adopted from the case organisations during the pilot study.

In the group interview sessions in cases B, C, and D, a phenomenon was observed that the participant with the highest position in the organisational hierarchy spoke more than the other participants. The researcher tried to balance the communication pattern by asking new questions directly of the other participants and asking the same question separately from all the participants. In Case C, the communication pattern smoothed automatically after the manager of the organisation had changed and the new manager participated in the interview sessions. In all the group interview sessions in Case D, the manager of the sub-organisation "Planning of automation and electricity" had the highest position in the organisational hierarchy. The manager was aware of the polarised communication pattern and encouraged other participants to give their comments in the discussion.

The interviews were transcribed from the tapes word-by-word. The first transcription was carried out by a person hired external to the case corporation. Due to the observed high amount of errors in the transcriptions, the researcher inspected all of them by listening to the tapes, comparing the text to the speech on the tape, and by making

corrections to the text when errors occurred. All the informants of the group interviews were individualised and coded to the transcriptions.

Direct observations, participant observations, discussions, recalling the researcher's prior knowledge of the case company, and documentation were used as supplementary data gathering methods. As in the pilot study methods of keeping discussion diaries and recording direct observations and participant observations from meetings on-line to the electronic diary were also carried out during the study phase.

In Case B two development sessions were arranged in which the researcher acted as a facilitator and secretary. The first session in 2/2/2001 concerned the development of communication practices, and the second session in 14/12/2001 concerned the development of the new initiative system. From the case organisation, two employees from the management and two workers participated in both sessions. The researcher wrote memos about the sessions and sent them back to the participants. The memos contained information about recognised development targets and created ideas concerning the initiative system. Recalling the researcher's prior knowledge of the case company was also used as a data gathering method in the study.

The researcher had worked in the case company headquarters since 1993. In 1993-1995, the researcher worked as a project manager in the case company in an IT-function and in 1996-1998 as a development manager in the product development function. In 1999-2001, the researcher worked in the role of development manager in the domain of the "Learning-way-of-doing (LWOD)." In 1993-2001 Case E was the researcher's place of employment. In 2002 the researcher had leave of absence. The researcher's contract of employment with the case company ended in 2003.

Documentation that was utilised in the study phase included the first business plan of the case company written by the CEO (1992), the strategic plans and the annual plans, the annual and the quarterly reports targeted for internal use, memos from different kinds of management team meetings, suggestions and initiatives, product development suggestions, customer reclamations, internal news, and organisational structure descriptions.

3.2.2 Data analysis

The data analysis in the study involved stages of "within case analysis" and "cross-case analysis." In the within case analysis data about organisational adaptation behaviour in each of the five individual cases was analysed separately. In the cross-case analysis the outcomes of the within case analysis together with the supplementary data were analysed and the theoretical framework of organisational adaptation and adaptability was developed. In this study the data from interviews were treated as the main data and the data from other sources were treated as supplementary data. The supplementary data was only used in the cross-case analysis. The data were used to find support and clarification for the findings from the main data.

3.2.2.1 Within case analysis

The procedure for analysing individual cases followed the logic of "grounded theory" (Strauss & Corbin, 1998) involving the stages of open coding, axial coding and selective coding. At first, the two stages were carried out for Case A and the case description was created. This was followed by open coding, axial coding, and selective coding for cases B, C, D, and E. The case description of Case A was used as a template when creating the case descriptions for cases B, C, D, and E. All the case descriptions were written in the form of "storyline memos." Strauss & Corbin (1998) define "story line memo" as a type of memo that tells the story using concepts and their linkages. Since the cases were analysed in sequential order, the research strategy shifted during analysis from inductive to deductive direction. "Pattern matching" (Yin, 1994) tactics were used to discover whether categories already identified in one case were found in the next case analysed.

Open and axial coding

The first steps in the analysis were open and axial coding. According to Strauss and Corbin (1998), in open coding, concepts are identified, their properties and dimensions are discovered, and the concepts are grouped to form categories. In axial coding, the categories are related to their subcategories. In codifying of action/interaction, "process" and "structure" are intertwined objects of analysis and therefore open and axial coding are carried out simultaneously. In this study, organisational adaptation behaviour was treated as "process" as suggested by the findings of the pilot study, and conditions having influence on organisational adaptation were treated as "structure."

Interviews of the cases were coded line-by-line. Coding was guided by the initial phase model developed in the pilot study. In the model, each phase represented a sub-category for the core category "organisational adaptation behaviour." Incidents of sub-categories and their sub-categories were coded as they emerged in the data. In this stage, the resolution of the phase model was increased compared to the initial model. The abstraction level of the phase model was lowered two categorical levels downward. Open and axial coding were carried out at the same time so that when an expression of a phase was found in the data, the phase and the detected sub-phases and conditions were coded. Theoretical ideas that emerged during the coding process were written down on the interview documents and the separate "theory memo" about each case. During coding the phase model was constantly re-evaluated and modified.

Selective coding

Strauss and Corbin (1998) define "selective coding" as a process of integrating and refining theory. Integration involves organising categories around a central category. The first step in selective coding is deciding on a central category that represents the main theme of the study. The integration of categories around a central category can be facilitated by writing a storyline memo, using diagrams, and reviewing and sorting

memos. Theory is refined by reviewing the scheme for internal consistency and for gaps in logic, filling in poorly developed categories and trimming excess ones, and validating the scheme.

In this study "organisational adaptation behaviour" was treated as the central category. The categories that were integrated around a central category concerned phases and sub-phases in the model for organisational adaptation and conditions that may have influence on organisational adaptation behaviour. Integrating categories was carried out by reviewing memos written during coding, using diagrams to clarify relations between the categories, and by writing case descriptions in the form of storyline memos. After the interviews had been coded, codes were "opened" to text where statements of informants were expressed by using concepts created during coding. At first the text was in the form of disconnected sentences that were structured according to the categories expressed by the initial phase model. Then, the text under each category was structured according to the sub-categories identified in open/axial coding. This stage of analysis also produced new categories and homogenised concepts across cases (Miles and Huberman, 1994) for cross-case analysis. As a result of integrating, each case was expressed in form of storyline memo structured according to the identified categories. The phase model of organisational adaptation process that developed during the within case analysis acted as an integrative framework that kept pieces of text together and gave it a uniform shape across cases.

In the present study the phase model for organisational adaptation process was the theoretical scheme (Strauss and Corbin, 1998) by which the theory was refined for individual cases. Internal consistency and logic of the theoretical scheme was achieved by structuring the storyline memos according to the phases of organisational adaptation process and reviewing the scheme continuously against the data that came from the cases as the analysis proceeded from the Case A to the Case E. Poorly developed categories were filled in by reviewing the data, making additional coding or changing the coding when necessary, and extracting the new findings to the storyline memos. The scheme was validated by comparing the scheme against the data continuously during the within case analysis and by re-structuring the scheme when suggested by the data.

3.2.2.2 Cross-case analysis

Cross-case analysis was used for 1) the creation of new categories; 2) "pattern clarification" (Miles and Huberman, 1994); 3) the detection of cross-case variation in categories; and 4) validating emerged theory.

The initial phase model developed in the pilot study offered a theoretical platform for the cross-case analysis at the main category and sub-category level. Within the case analysis produced, case specific storyline memos were structured uniformly according to the phase model. The pattern matching technique applied in the coding produced categories that were comparable across the cases.

The cross-case analysis was carried out through the "aggregate-case" description. In the aggregate-case description, the storyline memos of the individual cases were combined. These combined descriptions were created separately for organisational adaptation behaviour and conditions for behaviour.

The parts that described organisational adaptation behaviour in the storyline memos of the individual cases were summarised into one document that was structured the same way as the individual case descriptions. Data reduction did not take place in this stage and links to the individual cases were retained in the text. For the categories and the sub-categories all the detected variations were listed to see their total range of variability across the cases. The research data base was explored to detect supplementary data that could expand the range of variability and clarify the categories identified. The relevant data from the supplementary sources was not coded but it was marked with underlining and colours.

The parts that described the conditions for organisational adaptation behaviour in the storyline memos of the individual cases were summarised into another document. Data reduction did not take place and the links between conditions, behaviour, and the cases were retained in the text. The conditions were categorised into 20 categories through which the results of the analysis were presented. Several new categories arose from the analysis and some categories recognised in the within case analysis were clarified because in the summary document there was more data expressing the same category than in the description of the individual case. In addition, the research data base was explored and the literature was reviewed to find support and clarification for the categories that emerged. The supplementary data suggested new relationships between conditions and organisational adaptation. The results of the analysis were arranged into a matrix (Table 6, p. 237) and a network presentation (Figure 10, p. 240) where it was possible to see how conditions appeared across the cases and the phases of the model.

The results of the study are not reported separately for each individual case but at the aggregate level only. However, the findings on each individual case are presented as part of the aggregate description. The results are presented through a theoretical framework on organisational adaptation and conditions that have influence on success of organisational adaptation. The five cases were instrumental in generating the theoretical framework. The within case analysis acted as one phase in the analysis process which led to the final theoretical framework. In addition, because moving from the within case analysis to the cross-case analysis did not involve any data reduction but all the data from the storyline memos of the individual cases is also present in the cross-case description, there is no point to report the same data twice. However, the cross-case description involves data that is not present in the within case storyline memos because during the cross-case analysis new categories emerged and the research data base was explored again to clarify these findings.

4 THE CASE ORGANISATIONS

This chapter introduces the background information about the case company and the case organisations. Chapter 4.1 describes the case company as a context for the case organisations. Chapters 4.2 – 4.6 give a general description of each of the five case organisations.

4.1 The case company

The case company is an international service company providing operation and maintenance services for industrial plants and maintenance services for the technical systems external to the plants. The company was established in 1992. It is a wholly owned subsidiary of the international corporation (later case corporation) in the field of energy production. The mission of the case company is to improve the competitiveness of its customers with the best operation and maintenance expertise and service in the field, leaving the customers free to concentrate on developing their core business.

In 2000, the case company employed 3615 persons in nine countries (1622 persons in 1993). The company consisted of four horizontally differentiated business divisions — X, Q, Y, and Z. The differentiation of divisions was based on a mix of geographical and service grouping. Divisions X, Q, and Y offered the same operation and maintenance service but to three geographically different market areas. Division Z offered only maintenance services but it had an overlapping geographical market area with the other three divisions. Generally, operation services were offered only to plants that represented the industry of the case corporation while maintenance services were offered to a variety of industries. From an economic point of view each division was an individual profit centre that consisted of profit centres at the lower levels in the organisational hierarchy. By geographical structure, each business division was a group of small geographically dispersed “field-organisations.” Typically a field-organisation was physically located around one “home plant” to which the organisation delivered services.

One rationale for the establishment of the case company in 1992 was the predicted growth in markets for the operation and maintenance services. In 2000, the case company had generated turnover of 356 Meu of which 53 per cent came from customers internal to the case corporation. The customer base of the case company comprised approximately 800 companies in nine countries in Europe and Southeast Asia.

4.2 Case A

Case A was a highly specialised maintenance service supplier organisation in Division Z. Case A delivered maintenance services for two different types of equipment, called here X and Y. The services included condition monitoring, preventive maintenance, fault repairs, installations, testing, and wrecking. Depending on the type of the equipment and the service, the work was carried out either on the customer’s site or at the workshop.

The case organisation had 15 employees (1/1/2000). Five of the employees were in managerial positions and 10 were categorised as "workers." Fourteen of 15 employees were geographically located in the same work premises. The average age of the employees was 37 years. The youngest employee with a permanent employment relationship was 22 years old. According to the employees' working age in the case corporation, it was possible to identify groups of "old workers" and "young workers." The group of "old workers" had six members whose working age was higher than 25 years and two members whose working age was higher than 15 years. The group of "young workers" consisted of seven persons with a working age of less than six years.

The case organisation delivered services as separately ordered work activities or according to long-term delivery contracts. In 2000, approximately 15 per cent of the organisation's annual turnover came from the case corporation and 85 per cent from the customers external to the case corporation. Most of the annual turnover came from one service type for the equipment type X. Annually there were approximately 30 delivery activities of this service type. During the last three years the organisation delivered services to tens of different customer companies in Nordic countries. Demand for the services usually varied seasonally so that summer was the busiest time. In winter, demand could be 50 per cent lower than in summer. The organisation had one strong competitor for servicing type X equipment and several competitors for servicing type Y equipment. The organisation succeeded well in competition. In 2000 its marked share in the target country in services for the equipment type X was approximately 40 per cent. In action plans for 2001, it was stated that the organisation's goal was to stabilise its business volume to the level enabled by the recently implemented new workshop.

4.3 Case B

Case B was a supplier of plant operations and maintenance services. Within the case company structure the organisation was located in the business division Q. In 1991 one industrial company sold a plant to the case corporation. Between the seller and the case corporation it was agreed that the operation and maintenance organisation of the plant remained in the seller company and delivered operation and maintenance services to the plant. Case B was established in 1995 when the operation and maintenance organisation of the plant (later "home plant") was integrated from the plant seller to the case company. In the case company the organisation got an identity of operation and maintenance service supplier that delivered services to the plant owner organisation, its main customer (later "home plant customer"). Services of the organisation included plant operations, separate large maintenance and alteration work activities, and long-term planning of maintenance for the home plant. The case organisation bought the actual maintenance and alteration work from a maintenance supplier organisation located in the business unit Z and from other sub-contractors. The maintenance supplier organisation in the business unit Z was established at the same time as Case B. During integration to the case company the operation and maintenance organisation of the home plant was split in Case B and the maintenance organisation.

The case organisation had 34 employees (31/12/2000) of whom nine were in management, five in clerical employee, and 20 in worker positions. The organisation had sub-organisations called "operation," "support of operation," and "office." The

"operation" sub-organisation consisted of five shifts with four workers and one supervisor in each shift. The average age of the employees was 52 years. The youngest person with a permanent employment relationship was 44 years old and the oldest was 61. Geographically the employees of the organisation were located in the same work premises in the "home plant" site.

The case organisation delivered services as separately ordered work activities or according to long-term delivery contracts. In 1999, more than 99 per cent of the organisation's annual turnover came from the case corporation. More than 80 per cent of the organisation's turnover came from the long-term delivery contract with the home plant customer. Part of the price of the contract was fixed for a period of one year and part depended on the production amount of the home plant. The price was checked once a year. The annual amount of the separately ordered activities varied between 5 and 10. As the home plant customer did not compete for the long-term delivery contract or alteration work activities, the case organisation did not face real competition in its business.

At the time of the interviews the organisation had acted as the service supplier and the profit centre for six years. In the near future the organisation's central developmental challenges included adjusting the service capacity to meet the decreased demand for the plant products and renewing the co-operation model between the organisation and the home plant customer.

4.4 Case C

Case C was a supplier of maintenance services. Within the case company structure the organisation was located in Division Z. The case organisation was established in 1998 when one Finnish industrial company outsourced its maintenance activities to the case company. In the case company the organisation got an identity of a maintenance service supplier that delivered services to the former parent company as its main customer (later "home plant customer") and to other customers in neighbouring area. The services of the organisation included condition monitoring, preventive maintenance, fault repairs, modernisations, installations, and machine transportations. In 2000, the organisation had performed more than 4500 maintenance activities in the four plants (later "home plant") of the home plant customer.

The case organisation had 55 employees (1/1/2000) of whom eight were in management and 47 in worker positions. Structurally the organisation consisted of four sub-organisations—C1, C2, C3, and C4. The four sub-organisations were located in the four separate plants of the main customer. C1, C2, and C3 were located in the same factory area while C4 was situated a few kilometres away. C1 had 20 employees, C2 had 19, C3 12, and C4 had four employees. The average age of the employees was 41 years. Each plant was different in terms of production technology and products.

The case organisation delivered services as separately ordered work activities or according to long-term delivery contracts. The organisation had 15 customer companies in the target country. Approximately 70 per cent of the annual turnover came from the long-term delivery contract with the home plant customer. The price of the contract was

fixed for a period of one year and it was checked once a year. The whole contract was competed every fifth year. In services external to the contract the level of competition was high but varied between the types of services. When the home plant customer called for bids of separate service deliveries, the organisation had a contracted privilege to offer. The organisation succeeded well in competition.

At the time of interviews the organisation had acted as a maintenance supplier and profit centre for thee years. In the near future the organisation's central developmental challenges included maintaining the long-term delivery contract after the contract period had expired and maintaining the expected profitability level.

4.5 Case D

Case D was a supplier of plant operation and maintenance planning services. Within the case company structure the case organisation was located in business division Y. Case D came into existence in 1998 when the operation and maintenance planning activities of two plants operated and maintained by the case company were separated from the plant operation and maintenance organisations and centralised to an established profit centre. Case D was a sub-organisation in the established profit centre. The services of the organisation included planning separate large maintenance and alteration work activities, cost estimating for alteration activities, planning preventive maintenance, implementing maintenance data systems, operation and maintenance reviews, water chemistry management, and training services.

The organisation had 32 employees (3/1/2001)—three managerial and 29 in clerical employee positions. Twenty-nine of 32 employees were geographically located in the same plant (later "home plant") site. The organisation consisted of three sub-organisations called "process and machine technology," "planning of automation and electricity," and "planning of maintenance." The average age of the employees was 51 years. The youngest employee with a permanent employment relationship was 36 years old and the oldest was 61.

The organisation delivered services according to long-term delivery contracts and as separately ordered work activities. Services were delivered to the case organisation's former parent organisation (later "home plant customer"), other customer organisations in the case corporation, and to the customer organisations external to the case corporation. In 2001 the organisation had approximately 20 customers in the target country and abroad. Most of the customers were organisations of the case corporation. The case organisation delivered planning services to the home plant customer and to the home plant's maintenance supplier according to the long-term delivery contracts. The price and the contents of the long-term delivery contract with the home plant customer were checked once a year. The amount of separate delivery activities was several hundreds per year. Service deliveries were carried out on geographically dispersed customer plant sites. In the deliveries to customers external to the case corporation, the organisation had succeeded well in competition. In competition of large volume deliveries, the organisation had not succeeded. The organisation had experienced competition situations also inside the case corporation.

At the moment of interviews the case organisation had acted for four years as a service supplier and sub-organisation of its parent profit centre. In the near future the organisation's developmental challenges include improving profitability, growing according to the new goals from the case company management, and establishing a network structure.

4.6 Case E

Case E started functioning as the case company headquarters in 1993. In July 2000 the organisation had 50 employees—15 in managerial positions and 35 in clerical employee positions. The case company CEO acted as the head of the organisation. Other employees were structurally located in four business divisions and 10 support processes. All the support processes served all the business units. The activities of the organisation included strategic planning, development of the company structure, management of financial affairs, quality management, management of human resources, sales management, marketing management, management of product development, management of information technology, and risk management. All but one employee were located at the same work premises.

At the moment of the interviews the organisation had acted for eight years as the case company headquarters. In the near future the organisation's central developmental challenge was improving the profitability of the case company.

5 RESULTS

Chapter 5 presents the results of the study. Chapter 5.1 supplements the conceptual system used in the study. Chapters 5.2, 5.3, and 5.4 answer the research question, "how does an organisation adapt through innovations?" Chapters 5.5 and 5.6 answer the research question, "which conditions enhance or impede organisational adaptation through innovations?"

The chapter is structured according to the findings of the study. The categories identified are used as headings for the chapters that introduce the description and the evidence for the categories. Each chapter start with the findings and then present the evidence for the findings. The evidence for the findings is presented as an indented text. The case organisation where certain phenomenon was detected is indicated in the text either as a direct statement or as a case indicator in parenthesis after the sentence expressing the occurrence of the phenomenon.

5.1 ADDITIONAL CONCEPTS OF THE STUDY

This chapter supplements the conceptual system that will be used in presenting the results of the study. The chapter introduces additional concepts of general type that will be used throughout the remaining part of the study. The chapter also presents interpretation logic that will be used when relating the evidence to the concepts adopted from the literature.

The present study adopts a view that an organisation has "features." An organisation can manifest different "feature sets" in different conditional environments. Through the process of organisational adaptation an organisation changes its feature set as a response to changing conditions. The literature suggests that organisational adaptation takes place either by producing new features called "innovations" (March and Simon, 1958; Wilson, 1966; Thompson, 1965; Evan and Black, 1967; Zaltman, Duncan, and Holbek, 1973; Daft and Becker, 1978; Stata, 1989; Eisenhardt and Tabrizi, 1995) or by retrieving and expressing features from an organisation's existing repertoire (March and Simon, 1958). In this study the former mode of the organisational adaptation will be called "regenerative organisational adaptation" and the latter "routinised organisational adaptation." As this study concentrates on organisational adaptation through innovations, the remaining parts of the study use the term "organisational adaptation" to refer to regenerative organisational adaptation only.

An organisational feature has "**adaptive value**" in the stakeholder environment if it contributes positively to the organisation's fitness in this environment. The adaptive value as a measure refers to the amount of the organisational feature's positive contribution to the fitness of the organisation in the stakeholder environment. "Fitness" refers here to the extent to which an organisation satisfies demands of its stakeholder environment.The organisational feature that has proven to possess adaptive value can be called an "**adaptation.**" The concept and its definition are borrowed from evolutionary biology and applied here. Mayr (2003) has defined adaptation as "a feature, structure, physiological character, behavioural character or any other character of an organism that enhances success of organism in a battle for existence." Ridley (2004) has defined

adaptation as “a feature of an organism enabling it to survive and reproduce in its natural environment better than if lacked the feature.” The following evidence from the case organisations illustrates the essence of the concepts “adaptive value” and “adaptation” in the organisational context.

> In the interviews in cases A, C, and D, the price of the service came out as a feature possessing adaptive value in the customer environments. The manager of Case A said that in the customer environments the price of the offering was the most important competitive factor in competitive bidding. In the interview of the group manager and the supervising engineer in Case A, the point was raised that the organisation had lost competitive bids because its offerings had too high a price. Having a higher price in an offering than a competitor was mentioned as a common reason why the organisation lost competitive biddings. In one group interview in Case C it was evaluated that the price was the only service characteristic that was important to the home plant customer. One competitor who won the competitive bidding due to low price was believed to be able to offer low price services because the quality of the services was low. In one group interview in Case D, the point was raised that the organisation had lost competitive bids because the price of its offering was higher than the competitor’s. According to the informants, the home plant customer expected that the price of the services of the case organisation decreased continuously. Other examples of the organisational features that were said to possess adaptive value in the customer environments were a customer’s good experiences with former deliveries (A), taking care of a customer at personal level (A), differentiation of service from that of a competitor (A), ability to show continuous development to a customer (C), ability to deliver a service on an expected schedule (D), details of a plan for service delivery (D), and quality of goods (D).
>
> The organisational features that the interview data suggested to have adaptive value in the employee environment were possibilities for job rotation (E), clean workwear (A), clean working environment (C), entertainment activities for employees (A), sufficient level of autonomy (B,C), sufficient level of salary (E), easy work (A,B,C,D,E), lack of negative social feedback (D,E), fair compensation (A,C), and not too high work load (C). The data from the interviews of two employees who left Case E and moved to other companies suggested the lack of possibilities for job rotation and the insufficient level of the salary were organisational features that explained why Case E lost these two “competitive biddings” in the employee environment.

The evidence above shows that organisational adaptations can be located “on the surface” because they occur in the criteria by which the stakeholders evaluate and select or reject organisations. The incidents of the features that, according to the informants, had adaptive value in the customer environments were suggested to be involved in the criteria the customer used to select the organisation for resource allocations. The possibilities for job rotation and compensation were suggested to be involved in the criteria the employees used to select the organisation for resource allocations. In this study, an organisational feature has “**selection value**” if it explains in part why the stakeholder selected a specific organisation for resource allocations. The organisational

features that are not involved in the stakeholder's selection criteria but contribute positively to the features involved in the criteria are also adaptations. For example, a supplier's high cost efficiency can contribute positively to the price of the supplier's product, but a customer does not necessarily use the supplier's cost efficiency as a selection criterion for the resource allocations, using instead the price.

The following chapters present the evidence from the case organisations through the concepts they used themselves. As these concepts did not totally match the concepts adopted from the literature, some interpretation rules are made explicit. The concept of "search" was not used in the data and the concept of "innovation" was used rarely. Instead, the concepts of "development" and "development activity" or "development project" were used in the data. On the basis of the researcher's prior knowledge of the vocabulary and semantics used in the case company, the concept of "development" refers to the phase sequence that is consistent with the phase sequence implied by the concept of "search." Both the "search" and "development" involve sub-phases of idea acquisition, evaluation, and elaboration. The concepts of "development activity" and "development project" refer to the phase sequence including the search, implementation, and change. It was this phase sequence through which the case organisations produced organisational innovations.

The case company business divisions, as well as the case company, can be treated as "organisation families." "**Organisation family**" refers to a group of organisations with the same parent organisation at a higher level of the organisational hierarchy. For example, all the case organisations belonged to the organisation family called "case company." Case B belonged to organisation family called "Division Z." Case D belonged to the organisation family called "parent profit centre," etc. As the family structure is hierarchical, each organisation can belong to several families at the same time. For example, Case D belonged to its parent profit centre which belonged to the business division which belonged to the case company which belonged to the case corporation. Thus, Case D was a member of four organisation families.

5.2 ORGANISATIONAL ADAPTATION PROCESS

One goal of the present study was to describe the organisational adaptation behaviour of the case organisations. The goal was manifested by the research question, "how does an organisation adapt through innovations?" The pilot study suggested that organisational adaptation behaviour can be conceptualised as a five-phase process model involving triggering, search, implementation, change, and retention (Figure 1), and that triggering involves the sub-phases of scanning and performance monitoring by which an organisation gets information about conditions that may require organisational adaptation or offer an opportunity for it.

Figure 1: Organisational adaptation process model according to the results of the pilot study.

The data for the phase model came from participant observations in Cases B, C, and E, and quality system documentation of Cases A, B, C, and D as described in chapter 3.1.1. The data concerned how organisations carried out specific organisational adaptation behaviours.

> In Cases B and E, the researcher had participated in activities which aimed at developing scanning practises of the organisations. The researcher had participated in development of performance monitoring in Case E and retention practices in Case B. The researcher's participation in strategic planning and annual planning activities in Case E offered data about the triggering phase. Through membership in management teams, the researcher had an opportunity to observe the search and implementation phases of development projects in which Case E participated. In Case C the researcher participated in activities to improve the practises of scanning and search. In all three cases, the current state of the domains developed was observable to the researcher during the development activities. The quality system documentation of Cases A, B, C, and D included descriptions of the organisation's performance monitoring and search practises to varying extents. It was concluded that implementation and change are separate phases through the observation that in some development activities the phases were carried out by different organisational entities. For example, the researcher participated in meetings in Case E where the case company management had communicated new features to the field organisations for adoption. In Cases B and C not all the employees of the organisations participated in the development sessions facilitated by the researcher. In the sessions, practises were developed for the whole organisation; those practises should be implemented to the rest of the organisation by some organisational entity, and the rest of the organisation should change according to the new practises.

Retention as a phase came out in Case B. In addition, a general assumption was made that an organisation cannot adapt if the new organisational features disappear right after adoption. Therefore, the organisational adaptation process must involve mechanisms that ensure the retention of the new features.

The pilot study also produced assumptions about the case organisations' stakeholder environments. Participant observations and quality system documentation offered evidence that an organisation's stakeholder portfolio may include owners, employees, customers, suppliers, competitors, local inhabitants, authorities, and neutral organisations and that the stakeholder environment can act as a source of demands, feedback, and opportunities for an organisation. "Neutral organisation" refers here to an organisation that is not a customer, supplier, owner, or competitor of the focal

organisation. The focal organisation can be affected by a neutral organisation through models the focal organisation imitates from the neutral organisation.

> In the pilot study local inhabitants and neutral organisations came out as stakeholders in Case B. Competitors came out as stakeholders in Case E. That the stakeholder environment acts as a source of demands was especially observable in Case C. Participants of the researcher's development sessions raised demands that the home plant customer had put on the case organisation. The stakeholder environment acts as a source of feedback as seen in the quality system documentation of Cases A, B, C, and D. The stakeholder environment as a source of opportunities was demonstrated in Case E. The researcher participated in meetings where development ideas suggested by the supplier environment were evaluated. Many of the ideas represented new opportunities for Case E.

The phases and the structure of the process model above were further explored in the study phase to reveal their more specific nature. The following chapters introduce the findings of the study phase. The findings of the five phases are described in the dedicated chapters which are structured further according to the categories that emerged during the study. The names of the categories are used as headlines for the chapters. In addition, Chapter 5.3 presents general findings that could not be located in any single phase of the organisational adaptation process. Chapter 5.4 summarises and visualises the findings on the organisational adaptation process.

5.2.1 TRIGGERING

The organisational adaptation process involved the triggering phase to produce information that motivated the process of organisational innovation. The identified types of triggering conditions were 1) change in the stakeholder environment; 2) performance gap; and 3) institutionalisation of innovation. Information about changes in the stakeholder environment was obtained through **scanning** and about performance gaps through **performance monitoring**. Institutionalisation of innovation was carried out by setting explicit expectations for organisational innovation. Whether or not the detected or predicted lack of fit or opportunity to improve the fit between the organisation and the environment triggered organisational adaptation was decided by the organisation in the **coping phase**. The identified phase structure of the triggering phase is visualised in Figure 2.

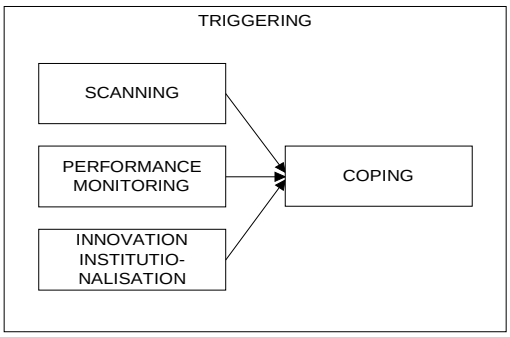

Figure 2: The triggering phase of the organisational adaptation process.

5.2.1.1 SCANNING

The case organisations had obtained information about the stakeholder environments through scanning. The identified types of mechanisms through which the case organisations had carried out scanning were institutionalised communication linkages, scanning activities, media monitoring, and by-product observation. The case organisations also had exposed to information about the stakeholder environments when stakeholders contacted the organisations.

Institutionalised communication linkages

The case organisations had got information about the stakeholder environment through institutionalised communication linkages between the organisation and the environment. Instutionalised communication linkages were identified between the case organisations and the owner (A, B, C, D, E), customer (B, C), employee (B, C, D, E), supplier (B), peer organisation (B, C, D), and competitor (D) environments.

Owner environment. All the case organisations had received profitability goal information from the owner environment through the institutionalised process of annual planning (A, B, C, D, E).

> **Annual planning**. The manager of Case A said that in the annual planning process the profitability goal had been set for the parent organisation of Case A. The manager had derived the profitability goal for Case A from the goal of the parent organisation. In one group interview in Case B, it came out that in the annual planning process the case organisation had got the profitability goal from the business division level. The manager of Case C said that in the annual planning process the case organisation had got the profitability goal from upper level of the organisational hierarchy. The manager of Case D said that the case organisation had got its profitability goal from upper level of the organisational hierarchy. The annual plan documents verified that the goal was set as part of an annual planning process. In Case E the researcher had observed directly that Case E had got its profitability goal from upper level of the organisational hierarchy in

the process of annual planning. The CEO of the case company introduced the goal and its origin in one meeting.

Customer environment. Institutionalised communication linkages with the customer environment included regular shared meetings (B, C) and shared planning procedures (B).

Regular shared meetings. The manager of Case B said the case organisation had had regular meetings with the home plant customer. In one group interview in Case C it came out that once a month the organisation and the home plant customer had met to discuss development matters.

Shared planning procedure. The manager of Case B said the case organisation shared a long-term planning procedure with the home plant customer.

Employee environment. In Cases B, C, D, and E, a meeting practice called "development discussion" was an institutionalised communication linkage with the employee environment.

Development discussion. In group interviews in Cases B, C, and D, it came out that the organisations used a formal practice called "development discussion" for scanning the demands of the employee environment. The researcher had participated in development discussions in Case E.

Neutral organisation environment. Cases B and D had institutionalised communication linkages with peer organisations through networks that arranged meetings for knowledge sharing purposes.

Peer organisation network meetings. In one group interview in Case B, it came out that one equipment manufacturer arranged regular meetings called "user-days" in which employees of the case organisation had participated. In the meetings, the companies that used the manufacturer's equipment shared their experiences with the equipment. The case organisation had got information about problems with equipment and solutions for the problems. In one group interview in Case D it came out that the case organisation was a member of one international industry specific peer organisation network. In network meetings, member organisations reported their experiences with technologies and technology suppliers. According to informants, the case organisation was also a member of one national domain specific peer organisation network that acted as a channel for sharing experiences.

Supplier environment. Cases B and D had institutionalised communication linkages with suppliers. Information about suppliers had been got by visiting exhibitions (B, D) and participating in peer organisation network meetings (D).

Visiting exhibitions. In one group interview in Case B the point was raised that the case organisation had got supplier information through annual participation in specific exhibitions of maintenance and industry represented by the home plant customer. In one group interview in Case D it came out that the case organisation

had participated in these exhibitions. It was evaluated that by participating in exhibitions it was possible to get information about development in fields of interest and find companies, addresses and persons.

Peer organisation network meetings. In one group interview in Case B, it came out that on "user days"—meetings arranged by one equipment manufacturer—the case organisation had got information about new technologies of the manufacturer.

Competitor environment. Institutionalised communication linkages with the competitor environment included trade union meetings (D) and Internet usage (E).

Trade union meetings. In one group interview in case D it came out that one of the informants had got competitor information by participating in trade union meetings. Also competitor companies had participated in meetings.

Internet. In Case E the vice-president responsible for quality and EHS said the case organisation had acquired information about competitors from the Internet as part of its regular strategic planning activity.

Scanning activities

The case organisations had acquired information about stakeholder environments through scanning activities. Scanning activities were temporally limited unique actions for information acquisition. Scanning activities had been carried out to get information about the customer (A, E), competitor (A), and neutral organisations (B, D).

Customer environment. Information about demands of the customer environment had been acquired through market research (A, E) and seminars for customers (E).

Market research. According to an internal news document, case A had conducted market research to scan future demand for its existing services. In Case E, the vice-president responsible for quality and EHS said the case organisation had acquired information about customers through market research as part of its strategic planning.

Seminars for customers. In Case E the vice-president responsible for marketing said he had got information about customer demands in seminars he had arranged for the customers.

Competitor environment. Information about the competitor environment had been acquired through personal contacts (A).

Personal contact. The group manager in Case A spoke about one personal discussion with an employee of a competitor. The manager said he had inquired about a competitor's specific organisational feature.

Neutral organisation environment. Information about the neutral organisation environment had been acquired through cross-auditing (B), benchmarking (B), mapping good practices (D), and exploring documents of model organisations (B).

> **Cross-auditing**. In one group interview in Case B it came out that the case organisation had participated in "cross-auditing" where one peer organisation internal to the case company audited the case organisation in relation to the auditing organisation. Through cross-audit, the case organisation got information about organisational features of the auditing organisation and vice versa.
>
> **Benchmarking**. In one group interview in Case B it came out that the case organisation had participated in "benchmarking," where peer organisations within the case company compared their performance to find models for better performance. Participation in benchmarking was verified by the document which summarised the results of the activity.
>
> **Mapping good practices**. In one group interview in case D it came out that the case organisation had participated in a project where good practices in one domain were collected from the plants of the case corporation. One of the informants said she had personally participated in the project.
>
> **Exploring documents of model organisations**. The manager of Case B said that when the case organisation developed its quality system, information about quality systems of peer organisations internal to the case company was acquired from a shared file server where other organisations had stored their quality system documents.

Media monitoring

The case organisations had got information about the stakeholder environments through the media. By monitoring the media, the case organisations had got information about the customer (C, E), supplier (A, E), and competitor (E) environments.

Customer environment. Information about the customer environment had been got from newspapers (C) and an electronic news monitoring system (E).

> **Newspapers**. In one group interview the manager of Case C said the case organisation had got information about the future of the customer environments from newspapers, finding news concerning economic trends and demand patterns in the customer environments.
>
> **Electronic news monitoring system**. In Case E the researcher observed that the case organisation used an electronic news monitoring system to scan the customer environment. The news from the media had been filtered and imported to the system in which they were accessible to the end-users. Use of the system for scanning customers was verified by one memo from the case company management.

Supplier environment. Information about the supplier environment had been got through trade magazines (A) and an electronic news monitoring system (E).

> **Trade magazines.** The manager of Case A spoke about one new technology of which he had got information by reading a trade magazine.
>
> **Electronic news monitoring system**. In Case E the researcher observed that the case organisation used an electronic news monitoring system to scan new technology offerings in the supplier environment. Also the researcher used the monitoring system. News monitoring was purchased as service from the supplier internal to the case corporation. The supplier filtered information according to the rules defined in Case E and located it in the monitoring system to which Case E had access.

Competitor environment. Information about the competitor environment had been got through an electronic news monitoring system (E).

> **Electronic news monitoring system**. In Case E the researcher observed that the case organisation used an electronic news monitoring system to scan the competitor environment. Use of the system for scanning competitors was verified by a memo from the case company management.

By-product observation

The case organisations had received stakeholder information as a by-product when they had interacted with stakeholders for purposes other than scanning. By-product information about the customer (B) and competitor environments (A,D,E) had been got.

Customer environment. Case B had got customer demand information through shared development activity with a customer.

> **Shared development activity**. The manager of Case B said he had participated in an activity which developed a new way of co-operation between the case organisation and the home plant customer. According to the manager, the new model will change roles between the case organisation and the customer in a way that reflects the demands of the customer.

Competitor environment. Information about the competitor environment had been got during sales activities (E), delivery activities (A), purchase activities (D), and through personal contacts (A). Information had been got from customers, suppliers, and directly from competitors.

> **Sales activities**. In Case E the manager responsible for sales in Division Z said it was normal for customers to transmit offerings of competitors to the case company and offerings of the case company to competitors.
>
> **Delivery activities**. In one group interview of workers in Case A the point was raised that informants had got to know competitors' employees by working in

shared customer sites over a period of 13-15 years. During the interview informants compared the case organisation to competitor organisations on the basis of the information they had heard from competitors.

Purchase activities. In one group interview in Case D one informant spoke about competitive bids the case organisation had lost. The informant said he had heard the price of the competitor's offering from one supplier when the case organisation bought services from the supplier.

Personal contact. In one group interview of workers in Case A one informant said he knew of one competitor because he had acquaintances in the competitor's organisation.

Exposure

The case organisations had exposed to information about the external stakeholder environments when stakeholders contacted organisations and gave them information. The organisations had exposed to information from the customer (A, C, D), supplier (E, D), and authority environments (A).

Customer environment. Exposure to information about demands of customers had taken place when customers had communicated offer requests to the case organisations (C, D).

Receiving an offer request. In one group interview in case C it came out that the home plant customer had called for bids about service delivery contents that the case organisation had never delivered before. The manager of Case D said the case organisation had received offering requests about service delivery contents that differed from the case organisation's current service portfolio.

Supplier environment. Exposure to information about offerings of suppliers had taken place when suppliers had contacted the case organisation to offer their resources (E). The supplier environment also had delivered model information about organisations that used a supplier's equipment (D).

Receiving an offer. The researcher had observed that in the autumn the case corporation technology centre had sent tens of product development project initiatives to Case E to get funding for the projects. Many of the initiatives were such that the case company had not requested them. The initiaves were offers that represented new technological possibilities for the case company. During a period of three years, the researcher had participated in making funding decisions for product development projects. All initiatives from this period were documented in the research data base.

Receiving model information. In one group interview in case D it came out that there had been two or three occasions where equipment suppliers had informed the case organisation about problems other users of a supplier's equipment had

had with equipment. Suppliers had also informed about actions to avoid the same problems.

Authority environment. Case A had exposed to information about the demands of authorities when authorities had informed the case organisation about the demands (A).

Receiving regulation. In one group interview of workers in Case A an incident was mentioned where authorities had informed the case organisation that the legislation had changed concerning which agents were considered toxicants.

5.2.1.2 PERFORMANCE MONITORING

The case organisations had monitored their performance, detected, and attributed gaps in the performance, and triggered organisational innovations on the basis of the performance gaps identified. The performance had been monitored through feedback the organisations had received about their own features and the features of the domains to which the organisations contributed through their outcomes. The two types of feedback the organisations had received were the **stakeholder feedback** and the **operational feedback.** Stakeholder feedback refers to the direct feedback that the stakeholder environment communicated to the organisation about its fitness in the stakeholder environment. The feedback indicated how the stakeholder perceived the organisation in relation to its demands and/or alternative sources of outcomes. Operational feedback was acquired by measuring domains with potential to contribute to the organisation's fitness in the stakeholder environment. In the attribution phase, the case organisations had discovered causes of the performance gaps indicated by the stakeholder or operational feedback. The phase structure of performance monitoring is illustrated in Figure 3.

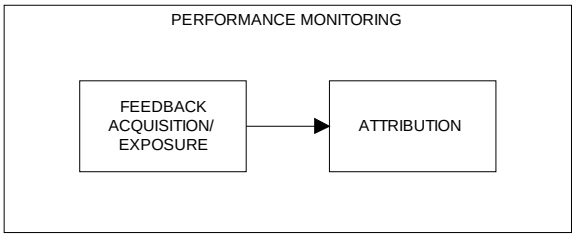

Figure 3: Phase structure of performance monitoring.

5.2.1.2.1 Stakeholder feedback acquisition/exposure

The stakeholder feedback expressed how the stakeholder perceived the organisation in relation to its demands and/or alternative sources of outcomes. The case organisations had got stakeholder feedback in three different types of situations. The first occurred when a stakeholder decided not to allocate its resources to the case organisation or when

a stakeholder was asked how it perceived the organisation as a potential target of resource allocations in the future. The feedback the case organisation had got from a stakeholder about its actual or imaginary selection decision is called "**selection feedback**." The case organisations had got selection feedback from the stakeholder environments that acted as actual or potential sources of resources for the case organisations. The second situation occurred when the case organisation delivered outcomes for a stakeholder and the stakeholder experienced outcomes against its demands. Stakeholder feedback about the experienced quality of outcomes of the case organisation is called "**experience feedback**." Experience feedback was received from the stakeholder environments to which the case organisations had produced outcomes. The third situation occurred when a stakeholder gave feedback about the case organisation's conformity to legislation or quality standards. This feedback type is called "**legitimacy feedback**." The case organisations had got legitimacy feedback from authorities, quality agents, and customers.

Selection feedback acquisition/exposure

Selection feedback was acquired from stakeholders before they had arrived to a selection situation and after they had made a decision not to select the case organisation as a target of resource allocations. In the former mode, selection feedback was imaginary because it indicated how a stakeholder perceived the case organisation as a potential target of resource allocations. In the latter mode the feedback was acquired to find out what kind of selection decision a stakeholder had made and how it rationalised the decision. Identified sources of selection feedback were customer (A, C, D, E), employee (E), and labour market (B) environments.

Customer environment. The case organisations had got selection feedback about qualities of their offerings during sales activities (A, C, D, E).

> **Sales activity**. In Case A the technician interviewed said the case organisation had got feedback from customers about why it had lost competitive bids. According to the informant, the case organisation had sometimes lost competitive bids because competitors had "bundled" offerings. In one group interview in Case C the point was raised that on the basis of customer feedback the case organisation had lost competitive biddings because its price was too high. In one group interview in Case D it came out that the case organisation had got feedback from customers if it had not won competitive bids. The feedback about reasons for loss was got to a varying extent. Informants spoke about two incidents of losses and the reasons for those losses. In the first incident, the reason mentioned for the loss was because the bid was too high. In the second incident, the delivery offered also included materials and the reason mentioned for the loss was the customer's belief that a competitor would deliver better materials more reliably than the case organisation. One general type of reason mentioned for losing competitive bids was the inability to deliver services on the expected schedule. In Case E, the executive vice-president said there was a period when the case company was unable to win competitive bids for long-term delivery contracts for maintenance because the service concept of one competitor was better than the

concept of the case company, according to the customer feedback. In Case E, the manager responsible for sales in Division Z spoke about a recent meeting where one customer refused to buy services the informant offered to the customer. The customer's representative said the services offered were too "high-tech" considering the customer's demands.

Employee environment. Selection feedback had been got from employees through personal departure discussions in situations where employees had decided to leave the organisation (E).

Departure discussion. The researcher had observed in Case E that between 1993 and 2000 there were several incidents where a new employee moved to the case organisation from a company external to the case corporation, spent a few years in Case E and moved to another company external to the case corporation. The researcher had talked with three of these employees about their reasons for leaving. One of leavers was the vice-president responsible for marketing. In a discussion about the reasons for his departure, the vice-president said that his three alternatives were 1) personal adaptation to culture of the case company; 2) fighting against windmills; or 3) leaving the organisation. The second departing employee had expressed a need to get a new job but her foreman had not arranged job rotation. Later the informant had seen an announcement in a newspaper recruiting new employees for her new employer. In a discussion with the vice-president responsible for product development it came out that also he had got selection feedback from the leaver. According to the vice-president, the leaver had said she had not been given career prospects and that her friends in other companies earned higher salaries. In a discussion with the third leaver it came out that the leaver knew that her salary was lower than the salary of the other employees in Case E.

During the research process, Case E developed and tested a standardised procedure for departure discussions. The researcher participated in the development of the procedure.

Labour market environment. Case B had got feedback about how stakeholders perceived the case organisation as a potential target of resource allocations. The case organisational had got prospective selection feedback from the labour market environment through the company image measurement.

Company image measurement. In one group interview in case B it came out that recently an image measurement had been conducted for the companies of the city where Case B was located and the case company. One of the dimensions measured was the extent to which local citizens could see local companies as their potential employers. As the local representative organisation of the case company, Case B acquired the results of the measurement. According to informants, the prospective selection feedback was quite positive in general. The case company was ranked fifth in terms of popularity of employers in the region.

Experience feedback acquisition/exposure

The case organisations had got experience feedback from stakeholders after the case organisations had produced outcomes for stakeholders and stakeholders had "experienced" outcomes. Experience feedback indicated the extent to which the case organisations had been able to satisfy stakeholder demands through organisational outcomes. Experience feedback covered either specific outcome or an aggregate of outcomes during a period of time. Sources identified for experience feedback were the owner (E), customer (A, C, D), local inhabitant (B, D), and employee environments (A, B, C, D, E).

Owner environment. In Case E the management had got aggregate experience feedback from the case corporation management.

> In Case E the executive vice-president said that when he was responsible for the Division Z he had got feedback from the case corporation CEO about the organisation's inability to win competitive bids and make profit in circumstances where a competitor was making profit.

Customer environment. The case organisations had got outcome specific experience feedback by receiving literal reclamation from the customer (A, C, D), receiving an evaluation form from the customer after delivery (A), and receiving feedback about delivery activity by meeting with the customer after the activity (C, D).

> **Literal reclamation**. Observed customer reclamation documents in Case A indicated that the case organisation had got outcome specific feedback from the customer environment. Examples of deviations expressed by the documented reclamations were that there was a fire in a customer's facilities that the case organisation had been working with and after the case organisation repaired certain faults in the customer's equipment, another problem occurred in the equipment. In one group interview in Case C, informants spoke about reclamation that the case organisation had got from the home plant customer through e-mail. A documented list of reclamations verified that the case organisation had got several reclamations from the home plant customer. Examples of deviations expressed by the reclamations were that 1) the organisation had not carried out agreed delivery activities; 2) carrying out agreed delivery activity was delayed; and 3) the invoice for the delivery activity was inadequate. In one group interview in Case D it came out that the case organisation had got project –specific reclamations from customers. This was verified by customer reclamation documents. Examples of deviations expressed by the documented reclamations were that the organisation had not carried out agreed delivery activity and sending the invoice to the customer had taken too long.
>
> **Evaluation form**. In Case A the group manager and the supervising engineer spoke about one customer who had filled out and submitted an acceptance form after delivery activity. In the form, the customer had also evaluated the delivery activity by standard criteria.

Meeting with the customer. The former manager of Case C spoke about a recent delivery project where, after the project, the case organisation had a meeting where it got feedback from the customer. In one group interview in Case D informants said that for the large delivery activities and for the delivery activities of a certain service type, special "feedback meetings" had been arranged between customers and the case organisation. Also in large projects, meetings had been arranged to get a customer's feedback about the projects.

The case organisations had got aggregate experience feedback from customers by surveying customer satisfaction (A, B, C, D) and having meetings where customers gave feedback to the case organisations (A, D).

Customer satisfaction survey. In interviews in Cases A, B, C, and D it came out that the organisations had measured customer satisfaction through surveys. For Cases A and C, the same external supplier had conducted the measurement and the measurement tool had come from the supplier. In Case B the home plant customer had carried out measurement with its own measurement tool. In Case D, the measurement had been carried out by the parent profit centre and the measurement tool originated in the profit centre. The measurement result documents verified that the satisfaction of customers of Cases A and C had been measured through surveys.

Meeting with the customer. In Case A the group manager and the supervising engineer said that one customer had arranged special occasions for giving aggregate feedback mutually. In one group interview in Case D, a belief was expressed that the manager of the case organisation had personally acquired aggregate feedback from customers in meetings with the customers. Aggregate customer feedback about outcomes that related to the long-term delivery contracts with customers had been got in meetings with customers.

Local inhabitant environment. Cases B and D had got experience feedback from local inhabitants. Case B had got aggregate experience feedback through an "open doors day."

In one group interview in Case D it came out that the case organisation had got aggregate negative feedback from local inhabitants about occupying a plant that was not in operation.

Open doors day. In Case B it came out that the case organisation had arranged an "open doors day" for local inhabitants and that the organisation had got good feedback from the participants.

Employee environment. From the employees aggregate experience feedback had been got through organisational climate surveys (A, C), development discussions (B, C, D, E), and development occasions for the whole organisation (B). Experience feedback also was got through daily interaction between management and subordinates (C, D).

In one group interview of workers in Case A it came out that informants had given feedback to the management about the behaviour of the management. The

manager of Case A, the group manager, and the supervising engineer mentioned an incident where employees had given feedback that the current practice for filling out work hour sheets was too laborious.

Organisational climate survey. In Cases A and C the organisational climate survey result documents showed that the survey included one question about employee satisfaction and a possibility to give experience feedback in a free text format.

Development discussion. The manager of Case B said that one purpose of a practise called "development discussion" was that employees gave feedback to foremen. According to the manager, the case organisation used development discussion practice in principle, but discussions had not been arranged for a long time. Also in one group interview in Case C the point was raised that one function of the development discussions was acquisition of feedback from employees. The former manager of Case C said that the case organisation had arranged development discussions to fulfill the requirements of the quality system, but the practise had not worked as expected. In one group interview in Case D informants said that development discussions had been arranged in the case organisation. The researcher had participated in the development discussions in Case E.

Development occasions for the whole organisation. The manager of Case B said that management had got feedback from employees during shared development occasions called "development days."

Daily interaction between foremen and subordinates. In one group interview in Case C, a supervisor said that management listened to employees continuously for feedback that required action. In a group interview in Case D, one informant, a foreman, said that he had got feedback from subordinates concerning ways of action almost daily.

Legitimacy feedback acquisition/exposure

The case organisations had got legitimacy feedback when stakeholders had audited the legitimacy of the organisations against legislation or quality standards. The sources of legitimacy feedback were authorities (A, B), quality agents (A, B, C, D), and customers (B, C). One of the case organisations had given legitimacy feedback to suppliers by auditing them against quality standards. The legitimacy feedback was cross-sectional by nature because it expressed the state of the measured entity only at the moment of the measurement.

Authority environment. Cases A and B had got legitimacy feedback from the authority environment through audits carried out by the authorities.

Auditing. The documentation of Case A indicated that the organisation had got cross-sectional experience feedback about the legitimacy of its features through

an audit carried out by a law firm. Before the environment, health, and safety systems were implemented in Case A, the law firm audited the case organisation to find out what parts of the current environment, occupational health, and safety legislation were relevant to the case organisation and to what extent the case organisation met the expectations of the legislation. An example of deviation mentioned in the audit report was that one container was located so that it impeded access to the emergency exit. In the quality system documents of Case B, there was a statement that the case organisation develops environmental protection matters on the basis of feedback it gets from the authorities. The documentation of Case B indicated that the organisation had got cross-sectional feedback about safety matters through an audit carried out by safety authorities. An example of deviation described in the audit memo was that not all containers had been marked with warning signs about their contents.

Quality agent environment. "Quality agent" refers to an organisation that honours other organisations with quality certificates and audits their conformity to quality standards. Cases A, B, C, and D had got legitimacy feedback from quality agents through quality audits. The audit evaluated the case organisation's conformity to its quality system and that system's conformity to standards.

In group interviews in Cases A, B, C, and D it came out that the organisations had certified quality systems. The quality systems of Cases A and C had been certified by quality standard associations, while the Case B's quality system had been certified by the home plant customer and the company management, and quality system of the parent profit centre of Case D had been certified by the company management. Also Cases B and D and their quality systems were expected to conform to certain quality standards of external quality standard associations.

Auditing. According to interviews, Cases A, B, C, and D and their quality systems had been audited. In one quality system document in Case A, there was a statement that audits would be conducted to ensure that the organisation acted according to quality systems and that the quality system conformed to internal and external requirements. The manager of Case B said that external quality audits were carried out at least once a year. Here "external" means that a quality agent external to the case organisation audited the organisation. According to one memo from external audit, Case B had been audited by employees of other organisations of the case company. In Case B, another external quality agent was expected to audit the case organisation against the home plant customer's certified environmental management system. One memo from the parent profit centre of Case C said that Case C had been audited by an external authorised quality agent and that deviations recognised by the agent had been fixed. One memo from the parent profit centre of Case D indicated that the profit centre and its quality system had been audited in external audit. According to one memo from external audit, Case D had been audited by a quality agent from the home plant customer organisation.

Customer environment. Cases B and C had got legitimacy feedback from customers through audits customers had made for the case organisation. In audits, customers had evaluated the case organisations against standards adopted by customers.

> **Auditing**. In one group interview in Case B it came out that every third year the home plant customer audited the case organisation in the domain of environmental management. Documented deviations recognised in one audit verified that the case organisation had been audited. Examples of the documented deviations were that the organisation had error in its emission calculation procedure, certain documents that should be archived were not found, and waste was not sorted as expected. In one group interview in Case C it came out that the home plant customer had recently audited the case organisation against the customer's environmental management system. Mentioned deviations recognised by the customer were that the case organisation was not able to use a customer's local tv system which offered information about chemicals, the case organisation had shortages in waste sorting, and the name of the manager was not updated in quality instructions after the new manager started.

5.2.1.2.2 Operational feedback acquisition/exposure

Operational feedback was acquired by measuring domains that potentially contributed to the organisation's fitness in the stakeholder environments. The operational feedback involved measures for organisational outcomes, organisational behaviours that produced outcomes, and resources that participated in producing behaviours and outcomes. Outcome measure–based feedback refers to measuring organisational outcomes to the stakeholder environments. Behavioural measure–based feedback refers to measuring the quality or quantity of organisational behaviour through which an organisation has produced outcomes for the stakeholder environments. Resource measure–based feedback refers to measuring resources that participate in producing behaviours through which an organisation produces outcomes for the stakeholders. The idea of calling factors that participate in producing behaviours "resources" is based on Penrose's concept (1995) that a firm has production processes to which bundles of resources contribute through the services the resources deliver to the processes.

<u>Outcome measure–based feedback</u>

Outcome measures gauged an organisation's contributions or inducements to stakeholder environments. Incidents of aggregate outcome measures were annual availability of the plant (B), annual amount of fires in the plant (B), and mean time between failures (C).

> **Annual availability of the plant**. Case B's measurement plan document included a measure for annual availability of the home plant. The plan document also described a goal for the measure. A memo from the case company CEO indicated that the measure had been adopted at the business division level.

Annual amount of fires in the plant. The measurement plan document of Case B included a measure for the annual amount of fires in the home plant. The document also said the case organisation had a zero goal for the measure.

Mean time between failures. In one group interview in Case C, it came out that the case organisation measured mean time between failures and had a goal for the measure. The measure originated in the home plant customer organisation.

Behavioural measure–based feedback

Behavioural measures gauged the quality or quantity of organisational behaviour through which the case organisations produced outcomes for stakeholder environments. Identified behavioural measures were 1) quality standard (A, B, C, D); 2) quality system (A, B, C, D); 3) Finnish Quality Award model (B); 4) European Foundation for Quality Management model (E); and 5) customer work percent (A, C, D). The customer work percent was an aggregate measure while the other measures were cross-sectional.

Quality standard and system. In addition to quality audits carried out by quality agents (5.2.1.2.1) Cases A, B, C, and D also had been targets of internal audits. In an internal audit, the case organisation audited itself against a quality system and standard. A memo from an internal audit of Case A showed that the internal audit had been carried out by the case organisation. The manager of Case B said that internal quality audits had been conducted at least once a year. In one group interview the manager of Case C said the case organisation had conducted internal audits. A memo from the parent profit centre of Case C showed that Case C had carried out an internal audit. A memo from the parent profit centre of Case D indicated that the profit centre and its quality system had had internal audits.

Conformity to quality systems and quality standards had been measured not only through cross-sectional audits but also on a continuous basis. In this mode the employees of the case organisations had reported deviations when detected. Case C had a documented list of deviations and Case D had a separate document for each individual deviation recognised through continuous evaluation.

Finnish Quality Award model. In one group interview in Case B, it came out that the case organisation had carried out self-evaluation against the Finnish Quality Award model twice.

European Foundation for Quality Management model. In Case E the vice-president responsible for quality and EHS said that Case E had carried out self-evaluations against the European Foundation for Quality Management (EFQM) model. The researcher had participated in the self-evaluations. An instruction memo for annual planning in 2001 from the company CEO showed that a goal had been set for scores from the self-evaluation.

Customer work percent. Cases A, C, and D had measured customer work percent as a predictor of profitability. According to the annual plan documents,

Cases A and D had annual goals for customer work percent. The manager of Case A spoke about the customer work percent level that the case organisation must have to achieve its profitability goal. In one group interview in Case C the point was raised that the profitability of the organisation was sensitive to the customer work percent. One annual plan document of Case D contained a statement that in order to achieve the profitability goal the case organisation had to achieve certain level of customer work percent.

Resource measure–based feedback

Resource measures gauged the states of the resources that participated in producing behaviours through which the case organisations produced outcomes for the stakeholder environments. Resource measures expressed the organisation's capability to produce outcomes for stakeholder environments. The case organisations had measures for economic and human resources. The identified measure for economic resources was profitability (A, B, C, D, E). Identified measures for human resources were 1) annual amount of occupational accidents (A, B, C, D); 2) annual amount of absence due to illness (A, B, C, D); 3) work stress (B); 4) working ability index (B); 5) organisational values (D); and 6) organisational climate (A, B, C). All the identified resource measures were aggregate by nature.

Profitability. All the case organisations measured profitability. According to the annual plan documents, Cases A and D had annual goals for profitability. Case B's measurement plan document showed that the organisation had an annual goal for profitability. The manager of Case C said the case organisation had a goal for profitability. In Case E the researcher had got monthly economic reports which showed that the profitability of the case company and its business divisions was measured. A memo from the company CEO indicated that profitability goals had been set for company and business division levels. This was verified by the annual plan documents for the business divisions.

Annual amount of occupational accidents and absences due to illness. The measurement plan document of the parent profit centre of Case A showed that the case organisation measured the annual occupational accident index and absences due to illness. The measurement plan documents of Case B and the parent profit centre of Case D showed that the case organisations measured the annual occupational accident index and absences due to illness, and had goals for these measures. In one group interview in Case C, it came out that the case organisation had annual goals for the occupational accident index and amount of absences due to illness. For the occupational accident index and absences due to illness the term "goal" referred to the maximum acceptable value for the measure.

Work stress and working ability index. In one group interview in Case B, it came out that the case organisation had measured work stress level and the "working ability index." Measurements were carried out and reported by a regional occupational health organisation.

Organisational values. One memo from the management team of the parent profit centre of Case D indicated that the case organisation had carried out value measurement. The manager responsible for quality matters of the profit centre said that values had been measured by a measurement tool adopted from the case company management. On the basis of the researcher's prior knowledge, the tool measured the extent to which the values of the organisation conformed to the values published by the case company management.

Organisational climate. Organisational climate had been measured through surveys in Cases A, B, and C. In one group interview in Case B, it came out that the organisation had participated in organisational climate measurement carried out at the case corporation level. In interviews in Cases A and C, it came out that the case organisations had measured organisational climate. Statements were verified by the measurement result documents. Measurements had been carried out by an external supplier with a survey tool from the supplier.

Additional categories for operational feedback

In the evidence on operational feedback some of the measures had explicit goals which institutionalised expectations for the future states of the measured domains. The goals were either **continuous** or **prospective**. A continuous goal represented a feature that the measured domain was expected to have until the goal was changed or abandoned. Quality standards described features that the organisations were expected to have not only at some specific moment in the future but at all times. Prospective goals were an expression of cross-sectional features that the measured domain was expected to have at some moment in the future. The annual goals for profitability and plant availability were manifestations of prospective goals.

5.2.1.2.3 Attribution

The case organisations had received performance feedback that indicated performance gaps. On the basis of the interviews and documentation from the case organisations, some of the performance gap types had specific names. Performance gap in the functional state of equipment was called a fault. Types of performance gaps in the functional states of human beings were occupational accident and illness. Reclamation was a name for the performance gap a customer had recognised in the case organisation's outcomes. Quality deviation referred to the performance gap that occurred when the features of the organisation did not match the expectations of the quality system or standard.

As a conclusion from the previous analysis on the types of the performance measures (5.2.1.2.1) the performance gap indicated a lack of fit between the organisation and the stakeholder environment, a gap between the organisation and its reference states, or both. The case organisations had got information about the lack of fit between the organisation and the stakeholder environment through **stakeholder feedback** (5.2.1.2.1). The operational feedback (5.2.1.2.2) had produced information about the gaps between the organisation and its reference states. The third mode occurred when

the case organisation had adopted a reference state directly from an individual stakeholder. In adopting the reference state from the individual stakeholder and integrating it into the organisation's explicit performance measurement system, the organisation institutionalised the demands of the stakeholder.

When the gaps occurred in stakeholder satisfaction, organisational outcomes, or organisational behaviour, structural features that needed to be changed to avoid the detected gaps in the future had been reasoned through attribution. In this study attribution refers to the process where an organisation detects the causes of gaps in the organisational performance.

Detected causes of the gaps were hypothetical until they were verified by the measured effects of the change made. The case organisations had attributed performance gaps indicated both by stakeholder feedback and operational feedback. The evidence did not involve attributions of the gaps indicated by the legitimacy feedback. Some of the organisations had faced several performance gaps simultaneously when state of the organisation had been measured with a questionnaire survey such as a customer satisfaction or climate survey. The case organisations had responded to the "multigap environment" by prioritising gaps according to explicit rules.

A. Attribution of stakeholder feedback

The evidence involved incidents of attributing both selection feedback and experience feedback. All the identified incidents of attributing stakeholder feedback were related to customer environments.

Attribution of selection feedback

Chapter 5.2.1.2.1 about stakeholder feedback acquisition/exposure described how some of the case organisations had got feedback from the customer and employee environments about why the environments had not selected the case organisations as targets of resource allocations. Some of the case organisations also had tried to find out a competitor's structural features that had enabled them to produce outcomes that possessed higher selection value than the outcomes of the case organisation. The type of attributed performance gap indicated by selection feedback was loss of competitive bidding (A, C, D).

> **Loss of competitive bidding**. The group manager in Case A said that in one service type competitive bids had been lost because the case organisation had had a delivery time that was two weeks longer than the delivery time of a competitor. According to the informant, the difference in the delivery time was because the case organisation and the competitor had different methods for carrying out certain stages of the service delivery. The competitor's method required expensive technology which the case organisation could not afford.

In one group interview in Case C, the new manager said that competitive bids had been lost where the case organisation had found that Case C being competitive in these bids would have required "steeling" materials for deliveries. In other words, it would not have been possible for Case C to offer deliveries with a competitive price. One supervisor verified that after losing some competitive bids due to a high price, the case organisation made calculations for the possibility to offer the competitor's price. The informant said it was a mystery how the competitor could offer such a low price.

In one group interview in Case D, it came out that the case organisation had lost competitive bids due to high bids. Some of the losses were because a competitor could deliver materials by itself instead of buying them from the sub-contractors, while the case organisation had to buy the materials from a competitor. The manager of Case D said the case organisation had lost competitive bids in services where a low delivery cycle had prevented the case organisation from accumulating a sufficient amount of experience of deliveries for pricing. Due to lack of experience the case organisation had not been able to price its deliveries competitively. According to the manager, the organisation had lost competitive bids to competitors who had delivered the service in question on daily basis while the case organisation had delivered the same service only once a year.

Attribution of experience feedback

Chapter 5.2.1.2.1 on stakeholder feedback acquisition/exposure described how the case organisations had got experience feedback from the stakeholders. The types of attributed performance gaps indicated by experience feedback were customer reclamation (A, B, D) and a gap in the results of the customer satisfaction measurement (B, C, D).

Customer reclamation. The documented responses of Case A to customer reclamations showed that organisation had tried to find out causes that had led to reclamations. The possible causes were described in response documents the organisation had sent to customers. In one group interview of workers in Case A, it came out that workers had not participated in processing reclamations. In one group interview in Case B, informants said that when the organisation had got customer reclamations due to interruptions in plant production, the organisation had tried to find out the causes of interruptions within two days. In one group interview in Case C, informants said the case organisation "processed" customer reclamations but the data did not reveal whether this meant attribution or something else. The manager of Case D spoke about customer reclamation that concerned erroneous invoicing. According to the manager, the detected causes of error were that employees who had worked with the delivery activity in question had allocated working hours erroneously to an activity and they had not informed the project manager or the accounting personnel about the rationale for allocations. The manager also said that sometimes the organisation had got negative feedback from customers about not keeping delivery schedules. According to the manager, the main cause of this performance gap had been that

employees who had worked with delivery activities had not been willing to acquire additional human resources for activities. The manager believed that the cause of unwillingness was that employees wanted to keep themselves employed.

Gap in the results of the customer satisfaction measurement. The manager of Case A said that the results of the customer satisfaction survey had been processed by the case organisation management. Processing involved drawing conclusions and deciding what action to take based on results. The upper level organisation Case A belonged to had instructions for processing performance gaps indicated by the results of the customer satisfaction survey in sub-organisations. According to the instructions, the three measured properties with the worst measurement result and the two measured properties with the best measurement results must be attributed. For these five targets, organisations must produce a development plan. In addition, organisations were expected to attribute changes from previous measurement results in properties with significant improvement or worsening in results and in total result. The manager of Case B said the management team of the case organisation had processed the results of the home plant customer satisfaction survey to detect domains that should be developed. The manager said it would be useful to attribute performance gaps indicated by the measurement results with customers because interactive processing could reveal the causes of a customer's dissatisfaction. The manager of Case C said that in customer satisfaction surveys, the three targets with the worst and the three targets with the best measurement results were selected for attribution. The manager had carried out preliminary attribution and discussed the causes of performance gaps with workers. Causes also had been discussed with the home plant customer to verify them. In one group interview in Case D, an informant said that when the measured value of a dimension in the customer satisfaction measurement survey tool had been much lower than average measurement results or the measured value of dimension had differed a lot between a customer and all other customers, the organisation had attributed performance gaps. Attribution had been carried out by management.

B. Attribution of operational feedback

Attribution of outcome measure–based feedback

Through their services Cases B and C potentially contributed to the occurrence of faults and production interruptions or limitations in the plants of the home plant customers. The organisations had used aggregate outcome measures that reflected the home plants' operational condition (5.2.1.2.2). The attribution of the gaps in the operational condition of the customer's production technology had taken place at the level of individual performance gap events.

Performance gap in customer's production technology. In one group interview in Case B one informant discussed the performance gap in production technology he had attributed. In another group interview, a production interruption that the case organisation had attributed to the fault in certain

electronic device was discussed. The informants stated that the thoroughness of attribution of the faults depended on how meaningful the fault was in terms of its impact on plant production, environment, or safety. The faults with high evaluated impact were attributed more thoroughly than other faults. Performance gaps in production technology were classified into two classes according to their meaning. Performance gaps of class 1 were attributed more carefully than performance gaps of class 2. If an equipment fault was categorised into class 1, chain of events was recalled in attribution phase to find the root causes for the performance gap. In one group interview in Case C, one informant said the organisation had carried out tasks to detect the causes of faults in the home plant customer's machines. In group interview of workers in a sub-organisation of Case C, one informant discussed a recent fault which the case organisation had attributed to the customer operator's erroneous action. In another group interview one supervisor talked about an upcoming task where machines with highest fault frequency would be recognised and the causes of the faults viewed. Then the need for changes to avoid recurrent faults would be evaluated.

Attribution of behavioural measure–based feedback

Data about the attribution of performance gaps indicated by the behavioural measures was scarce. The only behavioural measure whose gap had been attributed was customer work percent in Case D.

Gap in the customer work percent. The quarterly report documents of Case D showed that the case organisation had attributed a gap in customer work percent. The gap was because most delivery activities had a short duration and they came at short notice, which made it difficult to stretch them for longer time period.

Attribution of resource measure-based feedback

The types of attributed performance gaps indicated by resource measures were the gap in the profitability of an organisation (B, D), the gap in the gross-margin of delivery activity (A, D), the gap in the organisational climate (A), the gap in the work stress level (B), and occupational accidents (B, C).

Gap in the profitability of an organisation. In one group interview in Case B, it came out that the case organisation reported actual and predicted annual profitability to the case company management on monthly basis. If predicted profitability deviated from the budget or prediction of the previous month, the causes of the gap were reported in the monthly report. Based on the annual report documents the case organisation also had attributed the causes of gaps in the budgeted annual sales amount and profitability. The manager responsible for quality matters in the parent profit centre of Case D expressed a belief that the reasons for gaps in the economic performance had been reported in management team meetings. This was verified by the observed memos from the meetings. The

manager of Case D said the manager of the parent profit centre of Case D had recently reported to the business division management the reasons for the low profitability of the profit centre. According to the informant, one reason was that resource allocations to development lowered profitability. In one annual report document, low profitability had been attributed to the low customer work percent.

Gap in the gross-margin of delivery activity. The manager of Case A said the case organisation monitored gross margins of delivery activities and that if some activity failed in terms of gross margin, the causes of failure were explored. The economic performance of delivery activities and causes of the gaps were processed in management meetings in Case A and in meetings organised by the upper level of the organisational hierarchy. On the basis of the researcher's direct observations in one meeting organised by the upper level of the organisational hierarchy, the participants reported the causes of gaps that occurred in the economic performance of the delivery activities. In one group interview in Case D the point was raised that especially when the delivery activity failed in terms of economic performance, the causes of the failure were explored. The causes of the occurred failures mentioned were "bad chemistry" between individuals, lack of motivation to take responsibility for delivery activity, and insufficient delivery–related information from the customer.

Gap in the organisational climate. After the latest organisational climate measurement, the manager of Case A had wrote a memo attributing some of the performance gaps indicated by the measurement results. Attribution was carried out for three targets with the worst measurement result, three targets with the best measurement results, and three targets where measurement results deviated the most from the results of the previous measurement.

Gap in the work stress level. In one group interview in Case B, it came out that the case organisation had tried to find out why the results of the latest work stress level measurement had worsened from the previous measurement.

Occupational accident. In one group interview in Case B the informants spoke about occupational accidents that had been attributed and for which preventive actions had been defined. The case organisation also had tried to study "almost accidents." In one group interview in Case C, it came out that the case organisation used a formal procedure for studying occupational accidents and almost accidents.

5.2.1.3 INNOVATION INSTITUTIONALISATION

Organisational adaptation also took place in the case organisations in the absence of changes or performance gaps. Identified external motivators for this organisational adaptation were a competitive pressure for differentiation and the customer's expectations of continuous innovation. An organisational response to pressures for differentiation and continuous innovation was institutionalisation of innovation. Institutionalisation of innovation took place by setting goals to the organisational innovation and embedding expectations of organisational innovation to the exchange contract between the stakeholder and the focus organisation.

Competitive pressure for differentiation

Competitive pressure for differentiation was identified as a motivating external condition for organisational adaptation in Cases A, C, and E. Differentiating organisational outcomes through organisational innovation was mentioned as one determinant of competitiveness in customer environments.

> The manager of Case A said that competitiveness of the case organisation was helped by the organisation's ability to develop services its competitors did not have. In one group interview in Case C informants spoke about one new condition monitoring service the case organisation had implemented recently. The new manager of the case organisation said that when the current long-term delivery contract with the home plant customer expires and the new contract is negotiated, the new service can differentiate the case organisation from competitors and provide it with a competitive advantage. In a business plan document that the case company CEO wrote in 1992 to establish the case company, there was a statement that all the products and technologies developed through the product development function would not necessarily be commercialised as such. Instead, they would be integrated into service concepts of the company to increase their competitive advantage. In the case company strategic plan document (1999-2001), there was a statement that in the business environment of the company, the competition would intensify, increasing the importance of product development.

The case company product development function managed by Case E was the most notable manifestation of innovation institutionalisation that served to differentiate the case company outcomes in the customer environments. Institutionalisation of innovation had taken place by setting goals for the outcomes of the function.

> **Setting goals for product development**. On the basis of the researcher's experience of working for the product development function in Case E, every year the function was expected to produce new differentiating features for the case company outcomes for the customer environments. Some of the expectations were embedded in the company's strategic plans. In a business plan document that the case company CEO wrote in 1992 to establish the case company there was a statement that one of the main goals for the product

development function of the case company would be to improve the competitive position of the case company. The strategic plan document for 2000-2002 had a goal that the product development function must develop high-tech services to support the development of the case company image. Strategic plan documents for the product development function indicated that annual goals had been set for additional sales enabled by new services or service features and for the amount of accepted patents.

The explanation for that organisational adaptation behaviour was that as competitors were potentially able to produce new differentiating features and imitate differentiating features of the case organisations, maintaining a certain level of differentiation in competition situations required that organisations produce new differentiating features for the situations. Through the institutionalisation of innovation, organisations tried to ensure that in upcoming competitive situations they would have differentiating features to attract resources from the customer.

Customer's expectations of continuous development

In Cases C and D, the home plant customers expected the case organisations to develop continuously. Customers of Case A had expressed that they valued that the case organisation continuously developed.

In Case A the group manager said that customers appreciated that the case organisation actively and continuously carried out development activities independently of success of activities. In Case C, the home plant customer expected the case organisation to develop continuously. In one group interview the new manager of the case organisation said that in monthly meetings the home plant customer may ask how the case organisation had developed. He also expressed a belief that when the current contract expired and new contract is negotiated, the case organisation will have to show to customers how it had developed. In group interviews in Case D it came out that the home plant customer expected the case organisations to develop continuously. The customer expected that the case organisation continuously streamlined its services included in the long-term delivery contract.

Cases C and D had institutionalised innovation as a response to customer expectations for continuous development. Institutionalisation of innovation had taken place by 1) setting goals to development; and 2) embedding customer expectations of organisational innovation into the exchange contract between the customer and the case organisation.

Setting goals to development. The manager of Case C said the case organisation had a goal to develop continuously. In group interviews the point was raised that one function of the recently implemented suggestion system was to produce evidence for the home plant customer that the organisation had developed. Development ideas that had been written down as suggestions could be shown to customer as indications of development.

> **Embedding customer's expectations of organisational innovation into the exchange contract between the customer and the case organisation**. In one group interview in Case D, one informant said that an obligation for the case organisation to develop was embedded in the long-term delivery contract between the case organisation and the home plant customer.

The evidence of customer's expectations of continuous development suggests that an organisation's ability to produce innovation continuously was an adaptation in itself in customer environments. In contrast, the following evidence from Case B suggests that the ability to develop continuously had not been an adaptation in all the customer environments of the case organisations.

> The manager of Case B said the home plant customer had not set expectations for development. Instead, when the case organisation was integrated into the case company, it was advised not to interfere in problems in certain domains relating to the performance of the home plant. These problems were considered the customer's problems, not the case organisation's problems.

In conclusion, the evidence demonstrates that the organisation's ability to produce innovations continuously may have adaptive value in some customer environments but lack adaptive value in other customer environments.

5.2.1.4 COPING

The case organisations had triggered organisational adaptation in response to changes in the stakeholder environment, performance gaps, and the institutionalisation of innovation. Triggering organisational adaptation implied **active coping** with these condition types. In active coping, a lack of fit or opportunity to improve the fit between an organisation and environment triggers organisational adaptation. In some of the case organisations a phenomenon was observed where changes in the stakeholder environment or performance gaps did not trigger organisational adaptation. This study calls this form of organisational adaptation behaviour **passive coping**. In passive coping, a lack of fit or opportunity to improve the fit between an organisation and environment does not trigger organisational adaptation. In the process of organisational adaptation the phase of **coping** refers to a process where an organisation selects between active and passive coping when it finds a lack of fit or opportunity to improve the fit between the organisation and environment.

5.2.1.4.1 Active coping with changes in the stakeholder environment

Organisational adaptation had been triggered in the case organisations by predicted or actual conditional change(s) that decreased or increased the organisation's ability to satisfy the demands of its stakeholders. The types of the "change triggers" identified for organisational adaptation were change in stakeholder demand portfolio, change in technology or service offerings, change in an organisation's model knowledge, and change in an organisation's human and technology resource capacity.

A. Change in the stakeholder demand portfolio

The case organisations had been targets of the demands of the stakeholders. Changes in the stakeholder demand portfolios had triggered organisational adaptation in the case organisations. Organisational adaptation was triggered because the organisations also wanted to satisfy the new demands they faced. The demand portfolio changed when the organisation faced a new stakeholder environment whose demands differed from those of old stakeholders (C, E) or the demands of old stakeholders changed (A, B, C, D, E). The stakeholder environment is new for an organisation if the organisation has no prior exchanges with it and old if prior exchanges have taken place. The triggering demands originated in the owner (A, C, D, E), customer (A, B, C, D, E), and employee environments (C, E).

Facing new stakeholder environment

The case organisations had faced new stakeholder environments. Organisational adaptation had taken place when the demands of the new environment had differed from those of the old environments. The organisational innovations were produced to satisfy the demands of the new stakeholder environments. In the incidents identified the organisational adaptation had taken place in the owner, customer, and employee environments.

Owner environment. Case C faced a new owner environment after its former parent company outsourced the case organisation to the case company. One demand of the new owner environment was expressed to Case C in the form of a profitability goal. Right after Case C was established, its profitability was not at the expected level. The new organisational features identified by which Case C adapted to the demand for higher profitability were delivering separate services to the home plant customer (C) and delivering separate services to customers external to the home plant (C).

> **Delivering separate services to the home plant customer and to the customers external to the home plant**. The former manager of Case C said that before the integration into the case company, the employees of the case organisation conducted only maintenance tasks that now formed the content of the long-term delivery contract between the case organisation and the home plant customer. After integration, the case organisation also started to deliver separate services to the home plant customer and to customers external to the home plant. The services were separate because they were ordered and delivered one by one. In the home plant customer environment the separate services were not included the long-term delivery contract between the case organisation and the home plant customer. In one discussion, the former manager of Case C stated that if the case organisation did not carry out separate services its profitability would be negative. In one group interview the new manager of Case C said it was the separate services from which the case organisation earned its profit. In the interview it was evaluated that the more the price of the long-term delivery contract with the home plant customer decreases the more the case organisation will sell its services to the customers external to the home plant. In a group

interview of one sub-organisation of Case C it was evaluated that the trend in the case organisation was selling more and more services to external customers.

Customer environment. In Cases C and E facing the new customer environment had triggered organisational adaptation to the demands introduced by the environment. Case C faced the new home plant customer environment after the organisation was integrated into the case company. Case E faced new customer environments when it marketed the services of the case company to the potential customers. The new organisational features identified by which the organisations adapted to the demands of the new customer environments were suggestion systems (C), emergency duty practise (C), performance measures and goals for measures (C), and service concept (E).

Suggestion system. In the group interviews in Case C it came out that the home plant customer expected the case organisation to develop continuously. As a response to the demand the case organisation developed and implemented a suggestion system through which the organisation tried to motivate the employees to create and publish development ideas.

Emergency duty practise. The former manager of Case C mentioned that the home plant customer expected the case organisation to have an emergency duty practise. As a response to the customer demand, the case organisation arranged the emergency duty practise.

Performance measures and goals for the measures. In one group interview in Case C it came out that the home plant customer and the case organisation had set goals together for the measures that indicated the case organisation's contributions to the availability of the home plant. The measures and the goals for the measures were an expression of the features that the home plant customer wanted the case organisation to have. The case organisation adapted to demands of the home plant customer by embedding the measures and goals into the organisation's performance monitoring system.

Service concept. The case company management in Case E had participated in the marketing and sales of the case company services. The researcher participated in a meeting where the case company CEO said that one potential new customer said that the case company should have a comprehensive description for maintenance services it delivered according to long-term delivery contracts. The vice-president responsible for marketing and the executive vice-president of the case company mentioned the same event in their interviews. The executive vice-president said that a customer's suggestion had influence on triggering development activity to develop a concept which represented comprehensive descriptions of operation and maintenance services delivered to customers according to long-term delivery contracts.

Employee environment. In Cases C and E facing the new employee environment had triggered organisational adaptation to the demands introduced by the environment. The organisation faced the new employee environment when the new employee arrived in the organisation as a result from job rotation that took place in the case company. The new organisational features identified by which the organisations adapted to the demands of the new employee environment were abolition of the practise for monitoring product development projects (E), abolition of the practise for rewarding product development projects (E), abolition of the use of the concept of "high-tech" (E), and simplification of the procedure for carrying out product development projects (E). A new organisational feature by which Case C planned to adapt to the demands of the new employee environment was de-centralisation of responsibilities.

During the research period, the vice-president responsible for product development in the case company changed. Before the change the researcher was responsible for development of the function. On the basis of the researcher's direct observations the changes took place in the function after the vice-president responsible for the function changed.

Abolition of the practise for monitoring product development projects. After the vice-president responsible for product development had changed in Case E, the practise for monitoring product development projects was discontinued. In his interview the new vice-president verified the event. He rationalised the change by saying he disliked the high number of meetings. The meeting practise had been developed by the researcher to control and support product development projects and it had got positive evaluations from the project managers.

Abolition of the practise for rewarding product development projects. After the vice-president responsible for product development changed in Case E, the practise of rewarding product development projects was discontinued. The new vice-president verified the event.

Abolition of the use of the concept of "high-tech." After the vice-president responsible for product development changed in Case E, the use of the concept of "high-tech" as an attribute for the services of the case company was discontinued. In his interview the new vice-president verified the event. He rationalised the change by saying that he had read from literature that the term "high-tech" meant something other than what the management of the case company meant by "high-tech."

Simplification of the procedure for carrying out product development projects. On the basis of the researcher's direct observations, the change of the vice-president responsible for product development in Case E triggered modification to the standard procedure that defined how the product development projects were conducted. The old and new procedures were seen in the document models used to plan the product development projects. The vice-president verified the change. As a rationale for the change he said the previous procedure was complex. The previous procedure was developed by the researcher as a result of learning from experience during a period of three years.

> **De-centralisation of responsibilities**. During the interview period the manager of the case organisation in Case C changed. In one group interview the new manager of the organisation said that his predecessor had centralised much of the responsibility to himself. The new manager felt this was not good, and added that it was not good that one moped drove 250 kilometres per hour and the other mopeds drove only 30 kilometres per hour. Better results would be achieved if all mopeds drove 80 kilometres per hour. The manager said that next year the responsibility would be distributed to the lower levels of the organisational hierarchy.

The evidence from Case E suggests that organisational innovation to change the practise for monitoring product development projects and the procedure for carrying out product development projects was triggered because the new vice-president responsible for product development evaluated the adaptive value of the features of the function differently than the researcher. The evidence shows that the adaptive values of the features were also evaluated in relation to the demands of the employee environment consisting of the vice-president. After having moved to the new job the vice-president realised the existing features of the product development function could not satisfy his own demands. He did not like participating in a high amount of follow-up meetings. Concerning the concept of high-tech he wanted the conceptual system used by the case company to be consistent with the conceptual system offered by the literature. The procedure for carrying out the product development projects was too complex for his taste. The data did not reveal to what extent the vice-president evaluated the adaptive value of the features of the product development function from the point of view of the other stakeholders.

The changes the newcomer introduces to the organisational domain after arrival in the domain are called "**entrance changes**." This change occurs when the newcomer in the organisational domain evaluates the adaptive value of the features of the domain differently than his predecessor and the difference triggers organisational innovations through which the newcomer believes the domain would gain better performance.

Change in demands of old stakeholders

The case organisations' old stakeholders had introduced new demands to which the case organisations adapted or planned to adapt. The organisations triggered organisational innovation processes to satisfy the new demands of their old stakeholders. In the incidents presented, the organisational adaptation was triggered in the owner, customer, and employee environments.

Owner environment. The case company was owned by the case corporation. The central expression of the demands of the owner for the case company was profitability. The case corporation management communicated the profitability goal to the case company management which, in turn, communicated it to the lower levels of the organisational hierarchy. This pattern of behaviour was observed in 2000 when the researcher participated in a meeting where the case company management introduced the profitability goal for 2001. The pattern was verified by a memo the company CEO

wrote to instruct the annual planning for 2001. In 2000, a higher profitability goal was set for the case company. The new organisational features identified by which the organisations planned to adapt to the new profitability goal were 1) giving up small services (A); 2) e-concept for the services (D); 3) optimisation systems (D); 4) extranet- and internet–based services (D); 5) restructuring the operating concepts of the division (E); 6) outsourcing non-core activities (E); and 7) development of partnership arrangements (E).

> In the annual plan document of Case A the new profitability goal was taken into account through a statement that achieving the profitability goal in 2001 would require rationalisation and increase in efficiency. According to the plan, the organisation tried to increase the efficiency of resource usage by giving up small services.
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> The manager of Case D said the organisation had a plan to improve its profitability by developing new services with a higher profit margin than the existing services. The statement was verified by the presentation document that described central points of the case organisation's annual plan for 2001. The new organisational features mentioned in the document were e-concept for the services, optimisation systems, and extranet- and internet–based services.
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> In Case E the vice-president responsible for product development said he had heard from the heads of the business divisions of the case company that during the upcoming two years the business divisions would focus their development activities on improving efficiency of the existing services instead of developing new services. Also the case company CEO gave this kind of statement in a meeting where the researcher was present. The annual plan document for the parent business division of Case B stated that to achieve required cost-savings in 2001 the organisations and the operating concepts of the division would be restructured, non-core activities would be outsourced, and partnership arrangements developed. The plan was written by the head of the business division in Case E.

Customer environment. The old customers of the case organisations had communicated new demands to which the case organisations adapted or planned to adapt through new organisational features. The identified types of customer demands were 1) demand for new feature in existing services (A, B, C, D); 2) demand for new service (A); and 3) change in the amount of demand for existing services (A, B, D).

The customer's demands identified for **new features in existing services** were 1) new reporting practises (A); 2) update to long-term delivery contracts (B, C, D); 3) preventive maintenance programme for customer's plant (C); 4) improvements to the practises for spare part management (C); 5) increasing the service capacity (C); and 6) improvements to avoid recurrent faults in the customer's production technology (C). The customer's demand identified for a **new service** was a new analysis service for condition monitoring (A). The organisations adapted or planned to adapt to the demands for new service features or new services by new organisational features that

corresponded to the demands. The new organisational features identified by which the organisations adapted or planned to adapt to **decrease in demand** were spare equipment service (A), shrinking own service capacity (B, D), and increasing sales to other customers (D). Organisational adaptation to **increase in demand** was carried out by construction of the new workshop (A).

New reporting practise. A meeting memo between Case A and its old customer contained a statement where the customer's representative expressed a demand concerning reporting practices of one service of Case A. In the same memo there was a statement that the manager of Case A would produce suggestions about the new reporting practice to the customer.

Update to the long-term delivery contract. The manager of Case B said that after a manager in the home plant customer's organisation retired the customer's demands changed and the contents of long-term delivery contract between customer and the case organisation were updated accordingly. The manager of Case C said that the price of the long-term delivery contract between the case organisation and the home plant customer decreased annually according to customer demand. The demand was embedded in the contract. In one group interview in Case D a manager said that the contents of the long-term delivery contract between the case organisation and the home plant customer had been updated based on the customer's demands. The demands included simplification of the reporting practises, leaving out some of the service contents from the contract, and including new service contents in the contract.

Preventive maintenance programme for customer's plant. In one group interview in Case C it came out that the home plant customer had demanded that the case organisation should develop a new preventive maintenance programme for one of the customer's plants. According to the informants, the case organisation reacted to the demand by starting an activity to develop the preventive maintenance program.

Improvements to the practises for spare part management. In a group interview, one supervisor of Case C said the home plant customer had demanded that the case organisation should improve its practices of spare part management. According to informants, the case organisation reacted to the demand by starting an activity to improve the practises for spare part management.

Increasing the service capacity. In one group interview in Case C it came out that the home plant customer had demanded that the case organisation should have more service capacity in a certain knowledge domain. The case organisation adapted to the demand by recruiting additional resources.

Improvements to avoid recurrent faults in the customer's production technology. In the interviews and the documentation it came out that in Case C the home plant customer expected the case organisation to take care of the availability of production technology in the home plants. The availability of the production technology could decrease due to equipment faults. In one group interview in Case C it was raised that the case organisation had tried to recognise

recurrent faults in a customer's production technology and to make changes to avoid the faults in the future. Types of new organisational features mentioned through which organisation tried to get rid of faults were adding tasks to the preventive maintenance program of the faulted target, changing the construction of the faulted target and suggesting how the customer should change the faulted target.

Analysis service for condition monitoring. The manager of Case A said that one customer demanded that the case organisation develops a certain new analysis service for condition monitoring. The manager said the case organisation will trigger development of the service.

Spare equipment service. The manager of Case A said the case organisation suffered from a seasonal decrease in service demand. In winter, the demand was lower than in the summer. The situation in Case A improved after it was discovered that extra equipment of type X was available in the case corporation and the equipment could be loaned to customers. The developed spare equipment service made it possible for customers to overhaul their corresponding equipment during the winter. This resulted in demand for Case A's services in the winter and smoothed seasonal demand variation.

Shrinking organisation's service capacity. In Case B the manager of the case organisation said that demand for the organisation's services would decrease in near future because the home plant customer recently lost one of its customers for plant products. According to the manager, the organisation would adapt to the decrease in demand by shrinking its service capacity. In one group interview in Case D it came out that the demand for services in the home plant had decreased because the cumulative production amount of the plant had decreased. The manager of Case D said the case organisation adapted to the decrease in service demand by shrinking its own service capacity.

Increasing sales to other customers. The manager of Case D said that in addition to shrinking its own service capacity the case organisation also adapted to the decrease in service demand in the home plant by increasing sales to customers external to the home plant.

Construction of new workshop. According to an internal news sheet from the profit centre to which Case A belonged, the case organisation had conducted market research which predicted an increase in demand for its existing services. The organisation adapted to the predicted increase in demand by increasing its production capacity for services through construction of a new workshop. The construction project was discussed in an interview with the group manager and the supervising engineer in Case A, and outcomes of project were observable when the researcher visited the new work premises to conduct interviews.

Employee environment. In Case E, new demand from the employee environment had triggered organisational adaptation. The new organisational feature identified through which the organisation adapted to the new demand from the employee environment was new job for an employee.

New job for an employee. In a discussion with the researcher, one employee of Case E raised a demand for a new job. Another employee of Case E who had talked with the person who raised the demand said that the case organisation reacted to the demand of the employee by offering her a new job through the job rotation.

B. Change in technology or service offerings

The case organisations had used resources from the supplier environments to satisfy the demands of other stakeholders. Resource offerings from these environments could change in ways that decreased or increased the organisation's ability to satisfy the demands of other stakeholders. To use the opportunities and avoid the threats introduced by the supplier environment, the organisations had triggered organisational adaptation (A, B, C, E).

Supplier environment. The case organisations had detected new services and tool technologies in the supplier environment that enabled new organisational features. The new organisational features identified that the organisations had developed as responses to the opportunities offered by the supplier environment were 1) outsourcing own transportation service to an external transporting firm (A); 2) mobile condition analysis service (A); 3) service for cleaning medium (A); and 4) use of new vacuum cleaners (C).

Outsourcing own transportation service to an external transporting firm. The manager of Case A said the case organisation had maintained its own transportation service because it was not available on the supplier market. The service was outsourced after it became available on the market and lost its strategic status for the case organisation. The occurrence of the outsourcing activity and the rationale for the activity were verified by an internal news sheet.

Mobile condition analysis service. The manager of Case A said that when the case organisation saw there was equipment available on the supplier market for mobile condition analysis, the organisation evaluated how it could use the technology and developed a service to use the technology.

Service for cleaning medium. The manager of Case A said the case organisation had developed a new service for cleaning a medium that was used in equipment the case organisation maintained. The manager said he got the information from conference articles or magazines about the new technology, leading to the development of the service.

Use of new vacuum cleaners. In one group interview in Case C it came out that the organisation had acquired new vacuum cleaners. The acquisition of the new vacuum cleaners was positively influenced by the observation that such tools were available in the supplier environment.

The decrease in availability of resources in the supplier environment had threatened the case organisations' ability to maintain features through which the organisations satisfied the demands of their other stakeholders. The new organisational features identified by which the case organisations adapted or planned to adapt to the threats were 1) improvements to the maintenance supplier's activities (B); 2) service X (C); 3) using substitute technology (B); and 4) using substitute suppliers (C).

Improvements to the maintenance supplier's activities. The strategic plan for Case B for 2000–2002 stated that after having outsourced its maintenance activities in the home plant, Case B had not got maintenance services as expected. This had risked the availability of the home plant. The annual plan for 2000 said the maintenance activities would be developed to ensure the availability of the home plant.

Service X. In one group interview in Case C, informants said the case organisation should trigger the development of service X and start selling the service to the home plant customer and others. Previously, the case organisation had purchased service X from an external supplier. One rationale for triggering the development of service X was that in the current supplier environment the service wasn't always available.

Using substitute technology. In one group interview in Case B the point was raised that when the home plant's really old equipment were replaced it was not necessarily possible to get exactly the same type of equipment from the supplier. In these situations the case organisation acquired substitute technology and, as a result of implementation of the technology, the home plant changed. One investment plan document from Case B suggested changes to the home plant's old automation system because it was not possible to get spare parts for that system any more.

Using substitute supplier. In one group interview in Case C the point was raised that if a supplier stopped delivering screwdrivers, the case organisation bought them from other suppliers.

C. Change in organisation's model knowledge

The case organisations had received information about the organisational features of other organisations. The organisational feature possessed by another organisation is referred to as a "model." The organisation's knowledge base of the features of other organisations is called the "organisation's model knowledge." The evidence demonstrates that changes in the model knowledge had triggered organisational adaptation (B, E). Triggering change in the model knowledge took place when an organisation became aware of a model for the first time. It was possible but not necessary that the change in the model knowledge reflected actual changes in the model organisations. The host organisations of the models that had triggered organisational adaptation were located in the competitor (E), customer (E), supplier (E), and neutral organisation (B, E) environments.

Competitor environment. Models from the competitor environment had triggered organisational adaptation in Case E. The new organisational features identified whose development was motivated by a competitor model were 1) commercialisation of services (E); 2) concept for maintenance services (E); and 3) organisation unit for material management services (E). In all the incidents the competition took place in the customer environment.

> **Commercialisation of services**. On the basis of the researcher's prior knowledge the case company had carried out an activity to commercialise its services. In Case E the manager responsible for sales in Division Z evaluated that one condition which triggered commercialisation of services was that the services of a competitor were more commercialised than services of the case company.
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> **Concept for maintenance services**. In Case E the executive vice-president said the development of the concept for maintenance services was motivated by a competitor's model. According to the informant, customers claimed that one competitor had a better concept for maintenance services than the case company. The manager responsible for sales in Division Z said that if a supplier of contracted maintenance services introduced a new service, competitors imitated it quickly to avoid giving a competitive advantage to the supplier for too long.
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> **Organisation unit for material management services**. On the basis of the researcher's prior knowledge the case company had an organisational unit that specialised in material management services. In Case E the executive vice-president said the organisation used a model of the organisation unit for material management services from one foreign competitor, but the motivation for development came from that a Finnish competitor with a specialised organisation unit for material management got competitive advantage of the unit.

Customer environment. A model from the customer environment had triggered organisational adaptation in Case E. The new organisational feature identified whose development was motivated by a model from a customer was a **tool for communicating company policies** (E).

> **Tool for communicating company policies**. In Case E the vice-president responsible for the HR function said that the development of a tool for communicating company policies to field organisations was motivated by a model the case company CEO had seen in a customer organisation.

Supplier environment. A model from the supplier environment had triggered organisational adaptation in Case E. The new organisational feature identified whose development was motivated by a supplier model was using project management software to manage a product development project portfolio.

> **Using project management software to manage a product development project portfolio**. In Case E the vice-president responsible for product development said that the use of project management software to manage a product development project portfolio was motivated by the model of the case

corporation technology centre. The case corporation technology centre was a supplier of the case company.

Neutral organisation environment. A model from the neutral organisation environment had triggered organisational adaptation in Cases B and E. The new organisational features identified whose development was motivated by a model from a neutral organisation was 1) establishment of Case D's parent profit centre (E); 2) improvements to cleaning and guarding practises (B); and 3) modification of equipment (B).

Establishment of Case D's parent profit centre. In Case E the executive vice-president said that one condition that motivated the establishment of Case D's parent profit centre was that the case company CEO thought a target country had an interesting engineering office and thought the case company should have a similar organisation. For the case company, the engineering office was a neutral organisation until the establishment of the profit centre.

Improvements to cleaning and guarding practises. In one group interview in Case B the point was raised that triggering the development of the cleaning and guarding practises was motivated by models of the case company's peer organisations. In a benchmarking between the case organisation and the peer organisations it was discovered that the costs of guarding and cleaning were higher for the case organisation than in its peer organisations.

Modification of equipment. In one group interview in Case B interviewees mentioned an event where a neutral organisation external to the case corporation said it had a certain fault in specific equipment the case organisation also was using. After receiving this information the case organisation had triggered an activity to change its equipment to avoid the same problem.

Why did the models trigger organisational adaptation? The incidents where the model was located in the competitor environment suggested that the organisation triggered organisational adaptation to strengthen its ability to satisfy stakeholder demands. The ability to satisfy the demands of the customer environment had weakened because the competitor environment had introduced an organisational feature that could to provide it with a competitive advantage. The competitor's perceived advantage was eliminated by adopting the feature to which the competitive advantage was attributed. In "Improvements to cleaning and guarding practises" the organisational adaptation was triggered after the case organisation saw a model which explained why the model organisation performed better than the case organisation. The adoption of the model was believed to raise the performance of the case organisation. In "Modification of equipment," organisational adaptation was triggered because the adoption of the model allowed the case organisation to avoid a performance gap experienced by the model organisation. In each of these incidents the focal organisation used the model to explain the high or low performance of the model organisation. By adopting the model the focal organisation tried to achieve high performance or avoid the low performance of the model organisation.

D. Change in organisation's human and technology resource capacity

The case organisations used their own human and technology resources to satisfy stakeholder demands. In the resource capacities of the case organisations changes had occurred that decreased the organisations' ability to satisfy the demands of stakeholders. The evidence shows that the case organisations had reacted to these changes by triggering organisational adaptation (A, C, D). The changes had occurred in the employee (C, D) and technology environments (A).

Employee environment. In Cases C and D the availability of the organisation's human resource capacity had decreased due to retirement. The new organisational features by which the organisations adapted or planned to adapt to the loss of an employee by recruiting personnel (C) and sharing the work of the leaver with the organisation (D).

> **Recruiting personnel**. The manager of Case C said that two employees had retired from the case organisation part-time, five employees had retired before official age of retirement and a few employees had retired due to illness. The organisation adapted to the decrease in the human resource capacity by recruiting new personnel.
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> **Sharing the work of the leaver with the organisation**. In one group interview in Case D it came out that one of the informants would receive the duties of an employee planning to retire in the near future.

Technology environment. In one incident in Case A the availability of the organisation's tool technology capacity decreased due to a fault in the tool. The organisation adapted to the fault by acquiring an alarm system to avoid the same fault in the future.

> **Acquisition of an alarm system**. In a discussion with Case A's supervising engineer it came out that the crane located on the work premises of the case organisation had faulted. The informant said the case organisation was getting an alarm system to avoid the same fault in the future.

5.2.1.4.2 Active coping with performance gaps

The case organisations had coped actively with performance gaps indicated by stakeholder and operational feedback. The types of stakeholder feedback that had triggered organisational adaptation were experience and legitimacy feedback. The evidence did not involve incidents where selection feedback had triggered organisational adaptation. For operational feedback, organisational adaptation had been triggered by performance gaps indicated by behavioural and resource measures. The evidence did not involve incidents where performance gaps in outcome measures had triggered organisational adaptation.

Active coping with experience feedback

Performance gaps indicated by experience feedback had triggered organisational adaptation in the owner (E), customer (A, B, C), and employee environments (A, B, C).

Owner environment. A new organisational feature through which Case E adapted to a performance gap indicated by the experience feedback from the owner environment was service concept for long-term maintenance deliveries (E).

> **Service concept for long-term maintenance deliveries**. In Case E the executive vice-president said that negative feedback from the case corporation CEO motivated the development of the first version of a service concept for long-term maintenance deliveries.

Customer environment. New organisational features identified through which the case organisations adapted to the performance gaps indicated by experience feedback from the customer environment were 1) informing about the flammability of detergent (A); 2) updating checklists for delivery activities (A); 3) updating environment quality systems (B); 4) buying mobile phones for workers (C); and 5) revising the list of emergency duty phone numbers (C).

> **Informing about the flammability of detergent**. Case A received a customer reclamation due to a fire in the customer's facility during service delivery. According to the reclamation document, one reason for fire was that the case organisation had started using flammable detergent, but its flammability was not taken into account when using the detergent. The reclamation document stated that to avoid fires the employees of the case organisation would be informed about flammability of detergents in the future.
>
> **Updating checklists for delivery activities**. The manager of Case A spoke about deviation types where the organisation had forgotten to tighten a screw or to install a component during service delivery activity. Deviations had come out through customer reclamations. According to the manager, deviations triggered activities to improve checklists that guided delivery activities.
>
> **Updating environment quality systems**. In Case B, the home plant customer gave negative feedback to the case organisation concerning how the organisation managed environmental protection matters. Feedback was obtained through the customer satisfaction measurement. According to the manager of Case B, the organisation took the feedback into account when it developed its environmental quality system.
>
> **Buying mobile phones for workers**. In one group interview in Case C it came out that the case organisation had acquired more mobile phones for workers after the home plant customer had said through customer satisfaction measurement that it was not satisfied with the accessibility of the case organisation.
>
> **Revising the list of emergency duty phone numbers**. In one group interview in Case C it came out that the case organisation had responded to one customer

reclamation by revising the list of emergency duty phone numbers and sharing it with the customer.

Employee environment. New organisational features identified through which the case organisations adapted to the performance gaps indicated by the experience feedback from the employee environment were improvements to the technical working environment (A) and purchasing a data system (C). Case B planned to adapt to a performance gap indicated by the experience feedback from the employee environment by homogenisation and standardisation of plan document templates.

Improvements to technical working environment. In one group interview of workers in Case A one informant spoke about triggering development after finding that going to a specific maintenance target was too difficult because of material obstructions on the road to the target.

Purchasing a data system. In a group interview of workers in Case C, it came out that one of the informants had developed a purchase data system as a response to a problem managing purchase information. The organisation used the data system.

Homogenisation and standardisation of plan document templates. In one group interview the manager of Case B said he had a goal to standardise the action plan document types used by the case organisation to the format used in the co-operation plan between the case organisation and the home plant customer. The manager rationalised his intention by saying it was difficult to measure the fulfillment of the developmental goals because the goals were expressed in the form of prose in the current plan format.

Active coping with legitimacy feedback

Performance gaps indicated by legitimacy feedback had triggered organisational adaptation in the quality agent (A, B, D) and customer environments (B).

Quality agent environment. The documentation about the quality deviations in Cases A, B, and D involved descriptions of ideas of new organisational features through which the case organisations planned to avoid the same deviations in the future. Since the literal descriptions of the features were only short titles and because there were tens of these features, only some examples of the features are given here.

In the documentation about quality deviations, examples of ideas of new organisational features whose search was triggered by quality deviations were 1) identifying measuring devices in measuring reports (A); 2) a list of produced initiatives for monitoring their progression (B); 3) adding a table about monthly measurement results to the measurement plan document (B); and 4) including safety and environmental matters in the planning review routine (D).

Customer environment. In Case B the observed documentation about the deviations recognised in the customer's audit involved some descriptions of ideas of new organisational features through which the case organisation planned to fix the deviations and avoid them in the future.

> The documentation in Case B indicated that the response to the deviation in the emission calculation procedure was checking the coefficient used in the calculation. The response to the missing document was finding the document and archiving it properly.

Active coping with operational feedback

In the domain of operational feedback, organisational adaptation had been triggered by performance gaps indicated by behavioural and resource measures.

Behavioural measures. Performance gaps indicated by behavioural measures had triggered organisational adaptation in Cases B, D, and E.

> In one group interview in case B, it came out that in self-evaluations against the **Finnish Quality Award model, Case B had** recognised performance gaps in the co-operation between the case organisation and the maintenance supplier and the co-operation between the case organisation and the home plant customer. According to the informants, these two domains of deviations were under development.
>
> In Case E the researcher observed that in one self-evaluation against the **European Foundation for Quality Management model,** the case organisation had recognised performance gaps in the domains of co-operation with suppliers, information and analysis of information, and familiarity with markets and customers. The performance gaps had triggered development activities to improve scores in these domains. Triggering was verified by a memo from the management team that controlled quality matters in the case company.
>
> In Cases A and D, documentation of the performance gaps recognised in **internal audits** involved brief descriptions of ideas of new organisational features through which the case organisations had planned to avoid the same performance gaps in the future. The ideas of new organisational features in the documentation were 1) action principles for sorting waste (A); 2) instruction on principles and documentation of inspection of wells (A); 3) knowledge of personnel about environmental matters (A); 4) files about offerings and orders (D); and 5) the knowledge of personnel about reviewing offers (D).
>
> An annual plan document from Case D stated the case organisation had not ensured sufficient **customer work load** for the next year and therefore the organisation would strongly concentrate on marketing. Here "customer work" refers to work that could be charged to the customer. The load of customer work

is called customer work load. The **commercialisation of services** was mentioned as a development action to support marketing activities.

Resource measures. Performance gaps indicated by resource measures had triggered organisational adaptation in Cases B, C, D, and E. New organisational features identified through which the case organisations adapted were 1) changing the head of the division (E); 2) structural changes in the division (E); 3) rehabilitation (B); 4) slimming (B); 5) changing the regimen (B); 6) a group for physical exercise (B); and 7) increasing co-operation (D).

In one group interview in Case B, it came out that a performance gap recognised through a work stress level measurement had triggered an activity where the case organisation tried to improve the mental well-being of its employees with the aid of psychologist. In one group interview in Case C the new manager of the case organisation said that the results of the organisational climate measurement had triggered activities to find ways to improve the climate.

Changing the head of the division, structural changes in the division. In Case E, the researcher had observed that the profitability of Division Z dropped dramatically one year. The drop in profitability led to changing the head of the division and making structural changes in the division. In his interview the executive vice-president verified the drop in profitability and spoke about the mistakes that caused the drop. He also spoke about structural changes through which the new head of the division had fixed the deviation. The researcher observed that one of the structural changes was getting rid of a few unprofitable long-term delivery contracts between the business division and customers.

Rehabilitation, slimming, changing regimens, and establishing a group for physical exercise. According to the internal news sheet of Case B, the results of one working ability index measurement indicated good working ability on average. Improvement actions mentioned that had been triggered as responses to gaps in working ability were rehabilitation, slimming, changing regimens, and the establishment of a group for physical exercise.

Increasing co-operation. In one quarterly report from Case D, there was a statement that the results of the value measurement carried out in the case organisation had triggered the development of co-operation.

5.2.1.4.3 Active coping with innovation institutionalisation

Chapter 5.2.1.3 on “Innovation institutionalisation” showed that the institutionalisation of innovation had taken place by setting goals for the organisational innovation and embedding expectations of organisational innovation into the exchange contract between the stakeholder and the focal organisation. In Case E goals had been set for outcomes of the product development function, and in Case D expectations of organisational innovation had been embedded into the exchange contract between the case organisation and the home plant customer. The evidence shows that both modes of

institutionalisation of innovation had triggered organisational adaptation. The new organisational feature identified by which case D adapted to the institutionalisation of innovation was streamlining of services. Case E had carried out tens of product development projects to develop new organisational features as a response to innovation institutionalisation.

Triggering product development projects. Statistics, product development project lists, and the researcher's prior knowledge indicated that every year the product development function had carried out tens of projects. The researcher had participated in making funding decisions for the product development projects and monitoring the projects.

Streamlining of services. In one group interview in Case D, it came out that the case organisation had streamlined its services according to the home plant customer's expectations embedded in the long-term delivery contract between the case organisation and the customer.

5.2.1.4.4 Passive coping

In some of the case organisations, the phenomenon of "passive coping" came out where lack of fit between the organisation and environment did not trigger organisational adaptation. Organisations had coped passively with changes in the stakeholder environment and performance gaps. Changes in stakeholder demands that had not triggered organisational adaptation were detected in Cases C and E. Passive coping had taken place in the customer (C) and employee environments (E).

Offering services at fixed price. The manager of Case C said the home plant customer had communicated a new demand that the case organisation should offer large separate delivery activities at a fixed price. The case organisation did not change its pricing model according to customer demand.

Carrying out services by particular employees. In one group interview in Case C, it came out that the home plant customer had expressed a demand that particular employees of the case organisation must deliver services to the customer. Case C did not satisfy this demand.

Increasing level of knowledge in specific domain. In one group interview in Case C, it came out that the home plant customer had expressed a demand that the case organisation's level of knowledge should be higher in one specific domain. The case organisation did not acquire additional knowledge of the domain.

New job. In "departure discussions" in Case E (5.2.1.2.1) it came out that one employee had expressed a demand for a new job but the case organisation had not arranged the requested possibility for job rotation.

Performance gaps that had not triggered organisational adaptation were detected in Cases C and D. Passive coping had taken place in the customer (C) and employee environments (C, E).

Neglecting agreed emergency duty principles. The manager of Case C said that in the long-term delivery contract between the case organisation and the home plant customer, the parties had agreed on certain emergency duty principles. Despite negative customer feedback, Case C had not carried out the emergency duty principles as agreed in the contract.

Too high work load. In a group interview of workers in one sub-organisation of Case C, it came out that the employees of the organisation had given feedback to the management that the work load was too high, but the feedback had not triggered activities to improve the situation.

Problems in task assignments. In one group interview in Case D the point was raised that the management of the case organisation had for a long time admitted that the organisation had problems in task assignments related to delivery activities, but no developments had been triggered to improve the situation.

5.2.2 ORGANISATIONAL INNOVATION PROCESS

The organisational innovation process identified in the case organisations had the phases of search, implementation, and change (Figure 4). The search phase produced a blueprint of an organisational innovation. In the implementation phase the blueprint or the location of the blueprint was communicated to "changers," technological changes included in the feature were carried out, and the documentation about the change domain was updated. The term "changer" refers to an actor who is expected to adopt the blueprint of the new feature and express it through his or her own behaviour. The "change domain" refers to the segments of the reality that are to be changed through the processes of organisational innovation. In the change phase the actual changes took place in the domains the blueprint of the new feature instructed to change.

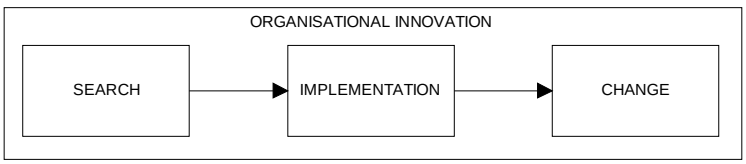

Figure 4: The phases of the organisational innovation process.

5.2.2.1 SEARCH

The search phase produced a blueprint of an organisational innovation. The blueprint was a tool the implementation phase used for communicating the new feature to those who were expected to adopt the feature and express it through their own behaviour. The blueprint also guided acquisition and construction of material artefacts included in the new feature. Equipment, tools, and work premises were examples of types of material artefacts detected in the case organisations. The blueprint of the feature also acted as a tool for retaining the feature in organisational memory.

The search phase involved **idea acquisition**, **evaluation,** and **elaboration tasks**. "Idea" refers to the description of a feature that is new for the domain it represents. Idea acquisition produced ideas by which a blueprint of a new feature was constructed. The blueprint of a new feature can be understood as a mosaic of ideas produced by idea acquisition tasks. It was possible to distinguish between the acquisition of a "seed" idea and the acquisition of "elementary" ideas. The seed idea condensed the essence of a new feature, while elementary ideas were building blocks by which the blueprint of the new feature was constructed around the seed idea. In a way the seed idea was like a key that opened an innovation space to be filled with elementary ideas about the new feature. Elementary ideas were acquired in "elaboration." The seed ideas, the elementary ideas, and the preliminary versions of the blueprints were evaluated in "evaluation" tasks. The described search pattern is illustrated in Figure 5.

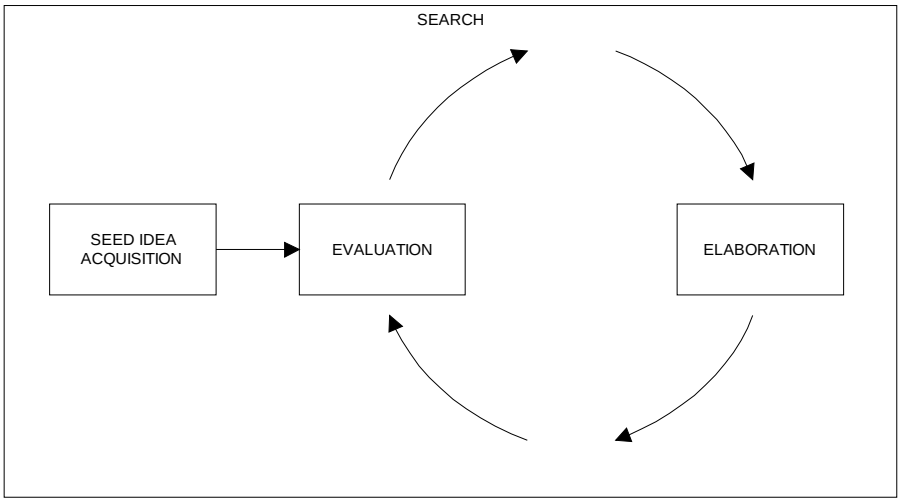

Figure 5 : General search pattern.

The occurrence of seed ideas was seen in the documentation where the seed ideas had been published in the case organisations. The seed ideas were identified through documented suggestions (A, C), initiatives (B, D, E), product development initiatives (A, D, E), strategic plans (B, E), annual plans (A, B, D, E), and reclamations (A, B, D).

Suggestion and initiative systems. In group interviews in cases A, B, C and D and in discussions in case E it came out that employees of Cases A and C had published "suggestions" and employees of Cases B, D and E had published "initiatives." The case organisations used the "initiative system" or "suggestion system" as a formal channel through which employees could publish ideas for evaluation and rewarding. In the systems the seed ideas were described briefly in suggestion or initiative documents. In Case A, publishing suggestions was verified because the researcher had access to the data system into which the suggestions had been recorded. Cases B and D delivered a documented list of initiatives that employees had published. In Case E discussions where two employees said they had published initiatives were documented in the discussion diary.

Product development initiatives.In Case E, the researcher observed that all of the initiatives for product development activities had been published through standard sheets. The sheets briefly described the seed ideas of the suggested new features. From sheets filed it was possible to observe that Cases A, D, and E had published product development initiatives.

Strategic plans. Seed ideas for new organisational features had been published in the strategic plan documents in Cases B and E.

Annual plans. Cases A, B, D, and E had published seed ideas for new organisational features through the annual plan documents.

Reclamation sheets. In standard sheets which Cases A, B, and D used for recording customer reclamations, the case organisations also had described seed ideas about how the performance gaps indicated by the reclamations could be avoided in the future. Filed reclamation documents were available for this study.

The seed ideas carried names for the new features. Examples of the names for the new features identified in the documentation of Case E were "Company university," "Virtual operator," "Material unit," "Remote support centre," and "Operation and maintenance help desk."

In the organisational adaptation process, seed ideas originated either in scanning or were acquired in the search phase. The findings on change triggers of organisational adaptation in Chapter 5.2.1.4.1 indicated that the case organisations had received seed ideas about the new features in the form of models, the demands of stakeholders, and the offerings of suppliers. In other words, the scanning phase also involved idea acquisition tasks. Chapter 5.2.1.4 on "Coping" showed that when the case organisations received seed ideas in the form of demands from the stakeholder environment, the organisations made a decision whether to trigger organisational adaptation. This suggests that also the coping phase included evaluation tasks. When the organisation coped actively with the "triggering" idea, the idea travelled to the search phase to be elaborated further. The search pattern where the seed idea acted as a triggering condition for organisational adaptation is illustrated in Figure 6.

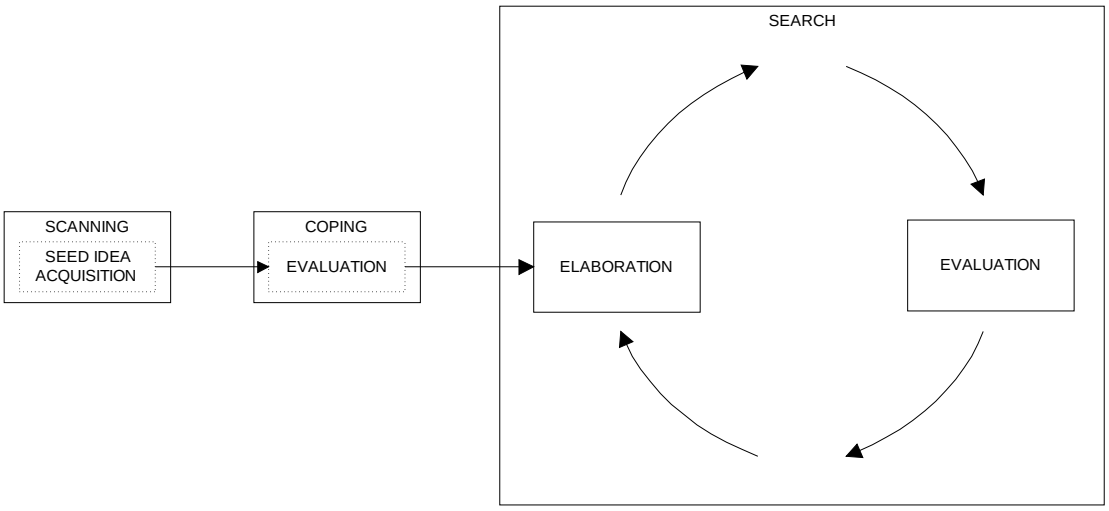

Figure 6: Search pattern for triggering seed ideas.

On the other hand, triggering condition types such as performance gaps or the institutionalisation of innovation did not involve seed ideas of the new features by which the case organisations should adapt to conditions. When these conditions triggered organisational adaptation the seed ideas of the new features had been acquired in the search phase as illustrated in Figure 5.

5.2.2.1.1 Idea acquisition

Idea acquisition tasks produced seed ideas and elementary ideas. It was possible to recognise three different idea acquisition tactics according to how the ideas arrived in the consciousness of an organisation. In “assimilation” and “imitation” the idea of a new feature originated in an organisation’s external stakeholder environment while in “creation” the organisation created the idea from its existing knowledge base. In “imitation” the idea represented a feature of a model organisation while in “assimilation” the idea did not have any references to model organisations.

Assimilation

In assimilation the idea of a new feature originated in the case organisation’s external stakeholder environment, but the idea did not have any references to model organisations. Assimilated ideas arrived in the case organisations through scanning and searching. When originating in the scanning phase, the ideas acted as potential or actual triggering conditions for organisational adaptation. The findings on assimilated triggering ideas were described in Chapter 5.2.1.4.1 on “Active coping with changes in the stakeholder environment.” On the other hand, Chapter 5.2.1.4 on “Coping”

demonstrated that not all the ideas introduced by the stakeholder triggered organisational adaptation.

The types of innovations identified where assimilated ideas originated in search phase were 1) fault repair procedure (A,C); 2) solution to a technological problem (B); and 3) improvements to the bonus system (E).

> **Fault repair procedure**. In a discussion with the supervising engineer in Case A, it came out that crane located on the work premises of the case organisation had faulted. The manager said the plan for repairing the fault came from an individual from the crane supplier. In a group interview of workers in Case C, one informant said that when you asked an equipment manufacturer how to repair a fault it was possible they would suggest something that seemed like an oversized act from the case organisation's point of view.
>
> **Solution to a technological problem**. In one group interview in Case B, it came out that when a technological problem was recognised in the home plant, the case organisation considered whether it should replace the problematic part or make improvements to it. During this process the organisation mapped the supplier environment to find alternative solutions to the problem. Informants mentioned the "pumping system" as an example of a technological problem area that was changed by using a solution found in the supplier environment.
>
> **Improvements to the bonus system**. In Case E the researcher had participated in the creation of improvements to the case company bonus system. The researcher observed that one idea source in elaboration was a book which described characteristics that compensation systems should have. The ideas from the book were assimilated and embedded into the bonus system.

In the above incidents that mechanisms of assimilation were contacting the supplier (A, B, C) and reading a book (E). The assimilated ideas originated in the supplier environment.

Imitation

In imitation the idea of a new feature originated in the case organisation's external stakeholder environment and the idea represented a feature of a model organisation. Imitated ideas arrived in the case organisations through scanning and search. When originating in the scanning phase, the idea acted as a triggering condition for organisational adaptation. The findings on imitated triggering ideas were described in Chapter 5.2.1.4.1 on "Active coping with changes in the stakeholder environment."

The identified incidents of new organisational features where imitated ideas originated in the search phase were 1) features of the paint shop (A); 2) quality systems (B, D); 3) improvements to the bonus system (E); 4) improvements to workwear care practise (A); 5) offering model (C); and 6) improvements to archiving practises (E).

Features of the paint shop. Case A had scanned the customer environment through market research. A predicted increase in service demand had triggered organisational adaptation where service capacity was increased by constructing new work premises (5.2.1.4.1). The manager of Case A said that the organisation searched and imitated some elements of painting the shop on the new work premises from an external painting company. Models were found by visiting painting shops.

Quality system. On the basis of the researcher's prior knowledge the development of the quality systems in the organisations of the case company was triggered by the company management. The case company CEO said that one motivating condition for the development of the quality systems was a need to acquire tools for development in customer interfaces. In a group interview in Case B and in an interview of the manager responsible for quality matters in Case D, it came out that when the case organisations developed their quality systems they imitated parts of systems from other organisations of the case company. Imitated organisations were ahead of the case organisations in the development of quality systems. Case B got model information from a shared file server where other organisations stored their quality system descriptions.

Improvements to the bonus system. When negative experiences with the case company bonus system triggered a development activity to improve the system, a task group assigned to carry out the development work acquired new ideas for the **elaboration** of the system from a company that manufactured mobile phones. Acquisition of the model information was conducted by contacting an acquaintance who worked for the model organisation. The researcher participated in the task group in Case E.

Improvements to work wear care practise. In a group interview of workers in Case A one interviewee said he did not like current workwear care practice and recalled better practices that were used by his former employer.

Offering model. The manager of Case C said that he recalled and implemented the offering model of his former employer.

Improvements to archiving practise. In Case E the vice-president for product development said that after he had realised that current archiving practices were insufficient in Case E he recalled an archiving practice that was used by one of his former employers.

In the incidents above, the **mechanisms** of imitation were 1) visiting model organisations (A); 2) visiting electronic archives of model organisations (B); 3) contacting acquaintances in model organisations (E); and 4) recalling features of a former employer (A, C, E). The ideas imitated originated in the neutral organisation (A, B, D) and supplier (E) environments.

Motives for imitation. Chapter 5.2.1.4.1 on "Active coping with changes in the stakeholder environment" described that when the model acted as a triggering condition for organisational adaptation, the imitation of the model took place because the case

organisation tried to achieve the high performance or avoid the low performance of the model organisation. The motive identified for imitation that took place in the search phase was the belief that the imitation consumed less resources than creation (A, B, E).

> The manager of Case A said that no one would finance development from scratch because it does not make sense to create ideas someone has created already. The manager suggested that an organisation must imitate and improve the ideas another organisation already has created. In one group interview in Case B it was evaluated that if an organisation had created something you would prefer imitating and modifying it to creating the same thing from scratch. Imitation was preferred due to laziness. In Case E the sales manager in Division Z said that he had observed that after the mid-1990s, resources in the organisations of the case company decreased and that this increased motivation to imitate between the organisations.

Creation

In creation the case organisation itself created the idea from its existing knowledge base. In interviews informants used several different terms to refer to the production of ideas for new features by themselves instead of acquiring the ideas from the environment. Terms used included "creating," "discovering," "inventing," "ideating," "generating ideas," "using own thinking," and "developing by self." All these terms were interpreted in this study as manifestations of the idea acquisition tactic "creation." The evidence about creation involved indications of places of creation, participation in creation, heuristics of creation, and motives for creation.

Places of creation. Creation had been carried out in various physical spaces. In addition to actual work premises, creation had taken place on coffee tables (B, D), in conference facilities external to the work place (B), home (C, E), car (A, E), and nature (E).

> **Coffee table**. In one group interview in case B one informant said that several times employees had created and published ideas on a shared coffee table. In one group interview in case D one informant said that the case organisation had created and published "crazy ideas" in coffee table discussions.
>
> **Conference facilities external to workplace**. In one group interview in Case B, it came out that the organisation had carried out strategic planning sessions in conference facilities external to the workplace.
>
> **Home**. In a group interview of workers in Case C the point was raised that sometimes when shifts ended before workers had figured out how to repair a fault, they continued ideation of repair procedures at home.
>
> **Car**. In Case A an interviewed technician said that he created ideas when driving alone on a business trip. In Case E the company CEO said that he had created a vision about company structure when driving to work. The vice-president responsible for marketing said that he comes up with lots of ideas when driving.

Nature. In Case E the vice-president responsible for the HR function said that sometimes when travelling by car on a business trip he had stopped and went onto cliffs or the shore of a lake to create ideas. In one discussion, the manager responsible for IT said that she had created ideas when jogging. Discussion was documented in the discussion diary.

Participation in creation. Creation had taken place both individually (A, C ,D, E) and collectively (B, D, E). New organisational features identified where creation took place individually were technical solutions (C) and measuring devices (C). Also the above incidents of creating at home (C), in nature (E), and in a car (A, E) manifested individual creation. New organisational features identified where creation had taken place collectively were shift systems (B), solutions to technological problems (D), solution to a problem in delivery activity (D), company level structures (E), vision (E), maintenance concept (E), and organisational structure of the business division (E). Also the above incidents of creating on a coffee table (B, D) and in a conference room (B) manifested collective creation.

Technical solution. One informant in a group interview of workers in the sub-organisation of Case C spoke about a technical solution he had discovered individually to avoid certain equipment fault in the future.

Measuring device. In a group interview of workers in the sub-organisation of Case C an informant showed a measurement device he had developed individually.

Shift system. The manager of Case B said that the case organisation had arranged ideation sessions to develop a new shift system. According to the manager, the blueprint for the shift system was created within the group.

Solutions to technological problems. In one group interview in Case D, it came out that the case organisation had arranged brainstorming sessions to solve technological problems faced by the home plant.

Solution to a problem in delivery activity. The manager of Case D discussed a problem with a delivery activity where he and another employee discovered a creative solution to a problem.

Company level structures. In Case E the vice-president responsible for the HR function said that to develop company-level structures, Case E had arranged and facilitated collective ideation sessions called “bees.”

Vision. The vice-president for quality and EHS said that collective idea sessions had been carried out to create the case company’s vision.

Maintenance concept. The executive vice-president said that he and another employee had created a maintenance concept for the case company.

Organisational structure of the business division. The manager responsible for sales in Division Z said that he and the executive vice-president of the case

company had created the current structure for regional organisation of the maintenance business.

General statements about participation patterns in creation were identified in cases A, D, and E.

In Case A the group manager and the supervising engineer said that creation in the case organisation had been conducted mostly individually. One group of workers and the technician interviewed said that collective ideation had not taken place in the case organisation. In one group interview in Case D one informant said that he sometimes contemplated ideas alone. In Case E the vice-president responsible for the HR function said that sometimes he went to a meeting room alone to create. In one group interview in Case D, an informant said that he sometimes contemplated ideas in a group.

Heuristics of creation. Identified heuristics the case organisations had used in creation were brainstorming (D), group work methods (E), and organisational transfer (B, C, D). "Organisational transfer" refers to creation heuristics where an organisation applies its existing features in a new context.

Brainstorming. In one group interview in Case D, it came out that the organisation had used techniques where ideation sessions were divided into separate creation and evaluation phases. At first a lot of ideas were created and recorded without immediate evaluation. Then ideas were evaluated and a sub-group of ideas was selected to be elaborated further.

Group working methods. In Case E, the vice-president responsible for the HR function said that group work methods had been applied in ideation sessions called "bees," and that sometimes the sessions had involved a separate pair working phase.

Organisational transfer. One creation heuristic observed in Cases B, C, and D was that the organisation applied its existing features in a new context. Following the analogy to the transfer of individual learning, this heuristic is called "organisational transfer." In one group interview in Case B, it came out that the case organisation had transferred a plan template from one planning domain to other domains. In one group interview in Case C, it came out that the case organisation had used programmes for other equipment in the creation of preventive maintenance programmes. The manager of Case C said that the case organisation had an idea to process performance gaps from the results of organisational climate measurement in the same ways as the performance gaps from the customer satisfaction measurement had been processed. In one group interview in Case D, it came out that the model of the delivery contract between the case organisation and the home plant customer had been transferred to a contract between the case organisation and the home plant's maintenance supplier.

Motives for creation. Chapter 5.2.1.3 on "Innovation institutionalisation" showed that some of the case organisations had faced competitive pressure for differentiation. In

search for new differentiating features, an organisation cannot rely solely on external idea sources because they are available to competitors as well. The use of creation as an idea acquisition tactic can facilitate differentiation because ideas are constructed from the knowledge base that is unique for the creating organisation. In addition to a need for differentiation, creation also had been motivated because the technologies required by the case organisations had not been available in the environment (A, C).

> In one group interview in Case A workers said that the case organisation had developed special tools for its services because the tools had not been available in the supplier environment. The manager of Case A said that when the case organisation built its new work premises, a special tool that was needed in service deliveries was created by the company because it was not available in the supplier environment. In an interview of workers in the sub-organisation of Case C, a need was raised to create preventive maintenance instructions for the home plant customer's new machines when machine deliveries did not involve instructions.

5.2.2.1.2 Evaluation

Seed ideas, elementary ideas, and preliminary versions of the blueprints were evaluated in "evaluation" tasks. The data about evaluation involved indications of participation in evaluation and the criteria of evaluation. Evaluation had been conducted by 1) a person who suggested an idea (A, D, E); 2) management of the case organisation (A, B, C, D, E); 3) management at upper levels in the organisational hierarchy (A, B, C, E); and 4) the stakeholder environment (A, B, C, D, E). Evaluation criteria identified are presented in relation to the type of evaluator.

Evaluation by a person who suggested an idea. In product development a person who published a seed idea through a product development initiative was expected to evaluate the idea or acquire an evaluation for the idea and record the results before presenting the initiative to product development management for evaluation. Initiatives were expected to be evaluated by standard criteria described in standard sheets used for publishing initiatives. In addition to standard evaluation, publishers of the product development initiatives also used "non-standard" criteria in evaluation.

> **Standard evaluation criteria**. In Case E the researcher had observed that the publisher of a product development initiative was expected to attach evaluations of benefits that would result from the new feature suggested by the initiative. Until 2000, a separate standard calculation of return on product development investment was attached to each initiative. Then, attaching economic calculations to initiatives became optional, but publishers of the initiatives were expected to evaluate the strategic fit of new features expressed by the initiatives. Suggested product development projects were categorised in project groups and employees were assigned to be responsible for groups. According to the vice-president responsible for product development, employees responsible for groups of projects were expected to evaluate the net present value for the project groups. Also criticalness for business and probability of success of the project groups was evaluated.

Non-standard evaluation criteria. In product development initiative documents from Cases A, D, and E, "non-standard" utility evaluations also were written into initiatives. Evaluations said the new feature expressed by the initiative eases and speeds up starting service deliveries in new the customer environment (D), improves the customer's ability to evaluate the benefits from different service methods (A), improves the customer's ability to detect a need for maintenance (A), improves the organisation's competition position (A), increases the speed of reporting results of analysis to customers (A), decreases costs of service (A), speeds up maintenance services (A), and increases speed and improves the focus of development in the case company organisations (E).

Evaluation by management of organisation. In the case organisations, management was a central actor who evaluated seed ideas of suggested new features. The management had evaluated seed ideas presented as formal suggestions (A, C), initiatives (B, D), and product development initiatives (E). The management also had evaluated seed ideas for the strategic plan (B) and ideas about training (D).

Suggestion system. In one group interview of workers in Case A one informant said that he had produced a suggestion and given it to his supervisor for evaluation. According to the informant, the supervisor decided if it was accepted and implemented. A quality instruction describing the "suggestion system" said that a suggestion was evaluated by the foreman of the employee who produced the suggestion. In the quality instruction document describing Case C's suggestion system, there was a statement that suggestions were evaluated by the case organisation's management team.

Initiative system. In one group interview in Case B, it came out that the management calculated the economic benefit of a new feature expressed by an initiative. The management team of the organisation decided about implementing the new feature. In the quality instruction document describing Case D's "initiative system," there was a statement that the management was responsible for evaluating initiatives and that it could use experts when needed. In one group interview in case D an informant verified that as a foreman he had evaluated the initiatives of subordinates. An informant who was responsible for the initiative system in Case D said that the system worked according to quality instructions.

Product development initiatives. In Case E the vice-president responsible for product development said that product development initiatives were evaluated by business management and/or a "product management team," and that initiatives were accepted by the informant.

Strategic plan. In one group interview in Case B it came out that in strategic planning, the management team of the case organisation selected ideas or development targets to be included in strategy.

Trainings. In one group interview in Case D, it came out that it was the employee's foreman who decided if an employee could attend training.

Evaluation criteria used by management. The evaluation criteria used by management included 1) utility in terms of operational measures (A, B, C, D); 2) compatibility (B, D, E); 3) rationality (A, B, C); and 4) novelty (B, D).

Utility in terms of operational measures. According to a quality instruction document describing the suggestion system in Case A, the utility of a suggestion could be economic or it could relate to quality, safety, or environmental matters. The beneficiary of a suggestion could be the case organisation or a customer or both. The manager of Case B said that the benefits and costs of initiatives from employees had to be evaluated. The quality instruction document describing the initiative system said that initiatives could also be targeted to improve quality, safety, and environmental matters. The quality instruction document describing Case C's suggestion system stated that when the economic utility of a suggestion was calculable, rewarding the suggestion was based on this utility. The quality instruction document describing Case D's initiative system said that as the main rule the economic consequences of an initiative should be calculated or evaluated. More detailed criteria described in the instructions were that a new feature should increase efficiency, fix a performance gap, or develop and boost the business of the case company. "Increase in efficiency" also was an evaluation criterion.

In one group interview in Case B, it came out that the shared long-term development plan with the home plant customer involved evaluations of profitability impacts of the new features suggested in the plan. In one group interview in Case C, it came out that the case organisation had produced ideas for the home plant customer to improve the customer's production technology. The point was raised that improving customer's technology would decrease the need for repair work but would increase the case organisation's work load in services not involved in the long-term delivery contract between the customer and the case organisation. This, in turn, would increase the profitability of the case organisation because separately ordered service deliveries were more profitable than the services included in long-term delivery contract. In a group interview of workers in Case C's sub-organisation, it came out that the case organisation had had an idea to establish a specialised group for carrying out preventive maintenance. The feature expressed by the idea had been evaluated as a potential new source of money for the case organisation.

Compatibility. The manager of Case B said that when the case organisation developed its quality system and looked at quality systems of peer organisations within the case company, the quality system of one peer organisation was too large and heavy for Case B to imitate. In one group interview in Case D, one informant said that he had evaluated suggestions of employees for going to training. The informant had used congruence between knowledge domain of the suggested training and the responsibility of employee as an evaluation criterion. In Case E the vice-president responsibe for product development said that the product management team ensured that new features expressed by product development initiatives were compatible with the main business concepts of the case company. Also compatibility with strategies and business goals of the case company was used as evaluation criteria for product development initiatives.

Rationality. In one group interview of workers in Case A, it came out that the management used the utility of the feature expressed by a suggestion as one criterion against which suggestions were evaluated. In a group interview in Case B the point was raised that the case organisation will start larger development in quality systems in the future only if it makes sense. The informants said that on "development day" occasions for employees good and bad sides of the ideas raised in occasions had been evaluated . In another group interview it was evaluated that training employees made sense only if it was possible to benefit from it. In one group interview in Case C one supervisor said that all ideas that were good and made sense in his sub-organisation were accepted and implemented.

Novelty. In one group interview in Case B informants spoke about incidents of suggested ideas that the management had not accept because the ideas had not been new to the case organisation. In a group interview in Case D one informant said that when he had evaluated initiatives from his subordinates he had used the novelty of the idea as one evaluation criterion.

Evaluation by management at upper levels in the organisational hierarchy. Seed ideas of new features for the case organisations had been evaluated by management at upper levels in the organisational hierarchy (A, B, C, E). The management had evaluated seed ideas published through annual plans (A, B), a "performance improvement programme" for the case company (E), and vision for the case company (E).

Annual plans. The annual plan documents of Cases A and B showed that the case organisations had produced annual plans which described ideas of new features that the organisations would develop during the planning period. The manager of Case A said that he had processed an annual plan for the case organisation with the manager responsible for the organisational unit represented by the next organisational hierarchy level upwards. In the quality system document describing the strategic planning process of Case B there was a statement that the management of the case company accepts the annual plans of Case B.

Performance improvement programme. In Case E the researcher had participated in a meeting for the profit centre managers where the case company CEO said that the performance improvement programme of the case company had been introduced to the case corporation management team and the team had accepted the programme. The programme described new features by which the case company had planned to improve its profitability.

Vision. In Case E the vice-president responsible for quality and EHS said that a newly created vision for the case company would be processed by the case corporation management team. According to the documentation, the vision included seed ideas of new features for the the case company.

Evaluation criteria used by management at upper levels in the organisational hierarchy. The evaluation criterion identified was a new feature's compatibility with the case company's strategic goals (B).

> **Compatibility**. On the basis of the researcher's prior knowledge the case company management had implemented a manual which described the central action principles of the company. The manual described evaluation routines for annual plans of the profit centres of the case company. According to the manual, the company management accepted annual plans from the profit centres and ensured that the new features suggested in the plans were compatible with the company-level strategic goals. A quality system document describing Case B's strategic planning process stated that the case company management checks correctness of the goals involved in Case B's annual plans.

Evaluation by organisation's stakeholders. Seed ideas of new features for the case organisations had been evaluated by stakeholders of the case organisations. The ideas had been evaluated by owner (E), customer (A, B, C, E), authority (A), and employee (A, B, C, D, E) environments.

> Owner environment
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> **Strategic plan**. The strategic plan documents of the case company involved seed ideas of new features for the case company. According to the manual that described action principles of the case company, the company management was responsible for producing a strategic plan for the company and the board of directors accepted the plan.
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> **Product development strategy**. The product development strategy documents of the case company involved seed ideas of new features for the case company. In Case E the vice-president responsible for product development also said that the case company's product development strategy had been processed and accepted by the company's board of directors.
>
> Customer environment
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> **Response to a reclamation**. The handling of a specific reclamation from customer was discussed in a group interview in Case C. An idea of how to fix the performance gap described by the reclamation had been presented to the customer and the customer had accepted the idea.
>
> **Fault repair plan**. In a group interview of the sub-organisation of Case C it came out that the sub-organisation had produced repair plans and introduced them to the home plant customer for evaluation.
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> **Suggestion system**. The quality instruction document describing Case C's "suggestion system," stated that if the home plant customer would benefit from a

new feature expressed by a suggestion, the suggestion was also given to the customer for evaluation.

Customer's initiative system. In one group interview in Case C, it came out that the case organisations had been able to produce development initiatives to the home plant customer through the customer's initiative system. According to the informants, some employees had produced an initiative to the home plant customer to improve the customer's production technology and the customer had accepted the initiative.

Upgrading maintenance. In one group interview in Case C, it came out that the case organisation had also suggested small improvements to the home plant customer's production technology that the customer could order. On the basis of the researcher's prior knowledge this kind of improvements were called "upgrading maintenance."

Maintenance service. In Case E the manager responsible for sales in Division Z spoke about a new maintenance service idea that had been introduced to customers. According to the manager, the customer environment had evaluated the idea positively.

Maintenance business. In Case E the executive vice-president said that when the case company's idea of starting a maintenance business had been introduced to potential customers outside the case corporation, the customers had evaluated the idea positively.

Condition monitoring service. The manager of Case C said that he had tried to start the development of condition monitoring services for the home plant, but the home plant customer had not accept the idea of development.

Service method. In interview of the group manager and the supervising engineer in Case A it came out that the group manager had produced an idea for a new service method and suggested it to a customer. According to the group manager, the customer had supported the idea and participated in financing the development of the service method.

Authority environment

Wrecking service. In a proceeding report of the product development project where Case A had developed a "wrecking" service there was a statement that the case organisation had asked for authorisation for the service from the authorities responsible for environmental matters.

Employee environment

During interviews employees evaluated ideas for new features and expressed the needs behind the evaluations. Identified needs behind the evaluations were the need to ease working (A, B, C, D, E), the need to avoid increasing their own work load (C), the need for cleanliness (A), and the need for equality (A, B).

Need to ease own work. In one group interview of workers in Case A the point was raised that a general mind-set in the case organisation was that if it was possible for workers to do something more easily, they changed their actions to ease working. In another group interview in Case A the informants said that for them the fundamental motive for development was a need to ease working. In one group interview in Case B, it came out that the case organisation had adopted a "work list" as a new organisational feature to ease management of the organisational development targets. The work list was a document through which the management monitored development activities. In one group interview in Case C one experienced supervisor expressed a belief that workers improved their ways of working in order to ease working. In a group interview of workers in the sub-organisation of Case C the point was raised that workers carried out developments to ease their own work. For example, the motive for making improvements to faulted equipment in the home plant customer's production technology was to avoid repairing the same fault again next week.

In one group interview in case D, one informant said that the current initiative system should be improved so that introducing an initiative was easier. In a discussion about an idea of scanning the stakeholder environment through the news monitoring system, one informant said that it would be really good if they could first get only news headlines to see their relevance instead of having to read the news to find their relevance. This approach would save time. One informant said that she had developed an IT-based tool which eased managing personal work activities. In Case E the vice-president responsible for marketing said that many of the innovations of Case E had been produced to ease personal work.

Need to avoid increasing own work load. In one group interview in Case C, one supervisor said that the home plant customer wanted the case organisation to be more active in recognising potential investment targets in a customer's production technology. In a group interview of workers in the sub-organisation of Case C the point was raised that in order to avoid an increase in work load, the informants did not necessarily share information about potential investment targets in production technology with the home plant customer. Investments increased the work load of the informants when the case organisation delivered services to investment activities. During the interviews, Case C was trying a new supervising model in the interviewed sub-organisation. In the interview the informants evaluated the new model based on its influence on their work load. One informant hoped that a new way of action would not increase work load.

Need for cleanliness. In a group interview in Case A, one employee suggested that the case organisation should improve its practice for workwear care so that

employees could have clean workwear. The informant said that that he did not like the current state of workwear care and added that at customer sites employees of other supplier organisations had worn clean workwear.

Need for equality. The manager of Case A said that the case organisation could not send employees to training abroad because it was not possible to send all the employees to training and those who were not sent experienced inequality and complained about not getting training. The manager of Case B said that the case organisation had tried a new way of action where a worker representative participated in development of new organisational structures. According to the manager, this "selective" participation caused inequality among workers and led to social conflicts in the case organisation.

The above evidence on "evaluation" indicates that organisational innovation was driven by prospective utility. After a seed idea for a new feature had been acquired, the organisation tried to reduce the uncertainty about its adaptive value by making predictions and evaluations about its effects in terms of operational measures and/or stakeholder perceptions, and by communicating ideas of the new feature to stakeholders for evaluation. Predictions and evaluations served as rationales for allocating resources to elaboration and implementation of the feature.

External stakeholders had evaluated suggested ideas in two different situations. In the first situation an organisation published the idea of the new feature to a stakeholder to test the feature's adaptive value in the stakeholder environment. Cases A, C, and E had suggested ideas of new features to customers. In Case E the case company management was expected to introduce the strategic plan to the owner. The strategic plan described the seed ideas of the new features management had planned to produce for the case company during the planning period. In the second situation, an external stakeholder evaluated an idea for a new feature when the feature's host domain was regulated by a stakeholder on the basis of legislation or ownership. In domains regulated by legislation, authorities evaluated the legitimacy of a new feature when legislation expected that the organisation acquired permission for changes in a regulated domain. This mode was observable in the evaluation of the idea of "wrecking service" in Case A. Ownership of the change domain legitimised the stakeholder's evaluation when the case organisations suggested new features to domains located in stakeholder organisations. In Case C the home plant customer had conducted evaluation when the case organisation had suggested changes to the customer's production technology.

5.2.2.1.3 Elaboration

Idea acquisition continued in "elaboration." Ideas acquired in elaboration represented elements or building blocks of the new feature under construction. The elaboration pattern identified was such that some actor acquired and published a seed idea or a preliminary version of a blueprint for the new feature, other actor(s) evaluated and commented on it, and then it was elaborated on the basis of the comments. On the basis of the researcher's prior knowledge and direct observations in Case E, "commenting" involved both evaluation and idea acquisition tasks. Thus, the evidence on elaboration also includes evidence on evaluation. Elaboration was identified in development of the

organisational structure (C), project number opening sheet (D), product development strategy (E), the case company vision (E), and internal university (E).

> **Organisational structure**. The former manager of Case C said that when a specific new organisational structure was developed for the case organisation, the search phase was conducted so that he developed the preliminary version of the structure, then the structure was discussed and elaborated with the "boys," and then the "boys" accepted it.
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> **Project number opening sheet**. In one group interview in Case D, one informant said that in the development of a project number opening sheet he produced the first version of the sheet, others commented on it, and then the sheet was modified based on the comments.
>
> **Product development strategy**. In Case E the researcher had observed that the product development strategy for the case company had been produced so that the researcher wrote the first version of the strategy, the vice-president for product development commented on the strategy, and the researcher modified the strategy on the basis of the comments. Then, the other management of the case company commented on the strategy and the board of directors commented on it.
>
> **Vision**. In Case E the vice-president for quality and EHS said that the first version of the case company vision was created and documented by task groups gathered from field organisations and Case E. In collective ideation sessions, participants evaluated preliminary ideas and selected those which were to be elaborated further. The final modifications to the vision were made by the case company management.
>
> **Internal university**. In one ideation session in Case E where the idea of the internal university for the case company was elaborated, the researcher, as a participant in a session, saw that elaboration of the seed idea was like constructing a mosaic about a new reality. The seed idea of the university became the essence around which further creation took place. Elaboration was stimulated by an implicit question "what should the university be like?" The blueprint of the university was visualised as the ideation went along. Participants produced new single elements to the mosaic and removed elements until the picture pleased participants.

The corresponding behavioural pattern without explicit indications of modifications to a preliminary version of a blueprint for a new feature was identified in the development of operation procedures (B), quality systems (B, D), standard models for preventive maintenance (D), and business strategy (E).

> **Operation procedures**. In one group interview in Case B, it came out that in a development activity where operation procedures were developed for production equipment, one shift created the procedures while the other shifts commented on them.

Quality system. In one group interview in case B it came out that in the development of Case B's quality system, ideas were published openly on the wall and they were commented on by employees. In one group interview in Case D, it came out that in the development of a quality system, ideation took place so that someone produced "a version to laugh at" concerning some part of the system and then others commented on this version.

Standard models for preventive maintenance. In one group interview in Case D, it came out that the organisation was developing "standard models" for preventive maintenance. Informants said that ideation will follow a pattern where someone produces "a version to laugh at" and then others comment on this version.

Business strategy. In Case E the vice-president responsible for quality and EHS said that field organisations of the case company had participated in company-level strategic planning by commenting on drafts of the strategic plan in meetings between the field organisations and management.

Chapter 5.2.2.1.1 on idea acquisition showed that the case organisations had used assimilation, imitation, and creation as idea acquisition tactics. The same three idea acquisition tactics had also been used in elaboration. One pattern identified in idea acquisition tactics was that the case organisation used different tactics in acquiring seed ideas than in acquiring elementary ideas. In search of an "Internal university" (E) and "Tool for communicating company policies" (E), imitation was used in seed idea acquisition while creation was used in elaboration.

Internal university. In Case E the executive vice-president said that the model of the internal university for the case company came from McDonald's. As a participant in ideation sessions, the researcher saw that the idea of internal university was elaborated through creation.

Tool for communicating company policies. Chapter 5.2.1.4.1 on "Active coping with changes in the stakeholder environment" indicated that the seed idea of the tool for communicating the case company policies to field organisations came from a customer organisation. The vice-president responsible for the HR function said that idea was elaborated in collective ideation sessions called "bees."

Another pattern identified in idea acquisition tactics was such that more than one idea acquisition tactic was used in elaboration. In elaboration of the case company "bonus system" (E), the tactics of imitation, assimilation, and creation were used while elaboration of "Service concept" (E) used the tactics of creation and assimilation.

Bonus system. Chapter 5.2.2.1.1 on "Idea acquisition" showed that in the development activity for improving the case company bonus system, Case E used imitation and assimilation as idea acquisition tactics. As a participant in ideation sessions, the researcher observed that in elaboration, creativity also was used as an idea acquisition tactic.

Service concept. In a meeting arranged for reflecting the development project where "Concept" was developed, it came out that an external consultant was used in the elaboration phase and a "zipper" idea had been assimilated from the consultant. The researcher facilitated the meeting and wrote a memo about it. Assimilation of the zipper idea was also found in the project documentation. In the reflection meeting, it also came out that literature was used to define the meaning of "concept." The researcher observed the use of creation as an idea acquisition tactic in elaboration when the researcher participated in an ideation session where the idea of "Concept" was elaborated.

These four incidents demonstrate that Case E used "mixed" idea acquisition tactics in the search phase. In other words, ideas that constituted the final blueprints of new features came from "here and there."

5.2.2.2 IMPLEMENTATION

In the implementation phase a blueprint of a new feature or the location of the blueprint was communicated to "changers," technological changes included in feature were conducted, and the documentation about the change was updated.

The mechanisms identified for communicating a blueprint of a new feature to changers were training (A, B, C, D, E), informing (A, B, C, D, E), and storing the blueprint on an external recording device or in an assigned person's mind (C, D, E) from which it could be retrieved when needed. When the change domains involved material artefacts such as equipment and machines, implementation was carried out by installing new technological features in the domains (A, B, C). Implementation also involved updating the documents that described the change domain in the institutionalised organisational memory (A, B, C, D, E). "Institutionalised organisational memory" refers to an organisation's set of shared memory devices external to employees.

Training. Training had been used as an implementation mechanism in the domains of both organisational structures and knowledge. For **organisational structures,** the new organisational features identified where training was used as an implementation mechanism were environment and safety systems (B), work hour recording systems (C), a condition measurement service (C), a project number opening sheet (D), budgeting practises (E), and a self-evaluation process (E).

Environment and safety system. The manager of Case B said that the case organisation used its internal occasion called "development day" to train the organisation in the developed environmental and safety systems.

Work hour recording system. The manager of Case C said that when the case organisation started using the new work hour recording system, training was arranged for employees in how to use the system.

Condition measurement service. In one group interview in Case C, it came out that the case organisation had developed a new condition measurement service and arranged training in how to carry out the service.

Project number opening sheet. In one group interview in Case D, it came out that when the case organisation implemented a project number opening sheet training was arranged in the use of the sheet.

Budgeting practises. In Case E the case company CEO said that when the case company was established, field organisations were trained in budgeting in the new company.

Self-evaluation process. The vice-president for quality and EHS said that when the case company implemented the self-evaluation process, training was arranged for field organisations in how to carry out the process.

For **knowledge,** the new organisational features identified where training was used as an implementation mechanism were 1) equipment maintenance (A); 2) plant operation (B); 3) change management (B); 4) negotiation (C); 5) customer service (C); 6) first aid and general knowledge about occupational safety (C); 7) project management (C, D); and 8) language skills (D).

Equipment maintenance. In interviews of workers Case A, it came out that the workers had participated in the equipment manufacturer's courses where they were trained to decommission and assemble equipment.

Plant operation. Case B's manager said that in the domain of plant operation, some employees participated in external training which aimed for examination.

Change management. The manager of Case B said that the management of the case organisation had participated in training in change management.

Project management. In group interviews in Cases C and D, it came out that employees of the case organisations had participated in training in project management.

In one group interview in Case C, informants said that employees of the case organisation had participated in training in negotiation, customer service, first aid, and occupational safety. In Case D, employees had participated in training in language skills and creativity.

Informing. New organisational features identified where informing was used as an implementation mechanism were 1) update to long-term delivery contract (B); 2) new ways of action (C, E); 3) Intranet (D); 4) quality systems (D); 5) practices for reporting delivery activities (D); 6) invoicing rules (E); 7) company action principles (E); and 8) profitability goals (E).

Update to long-term delivery contract. Case B's manager said that after the long-term delivery contract between the case organisation and the home plant

customer had been updated, the managers of the case organisation were informed by sharing the contract with them.

New ways of action. The manager of Case C said that the performance gap indicated by the results of the customer satisfaction measurement had triggered organisational adaptation in Case C. The new ways of action that had been developed as a response to the performance gap were implemented by informing the organisation about them in an informative meeting and by posting the description of the ways of action on a bulletin board.

Intranet. In one group interview in Case D, it came out that the case company Intranet had been implemented by sending few e-mails about the Intranet to the case organisation.

Quality system. In one group interview in Case D, it came out that the organisation's quality system had not been implemented through training, but instead by arranging only few meetings about it.

Practice for reporting delivery activities. The manager of Case D said that the practice for reporting delivery activities was implemented by informing changers about it.

Invoicing rules. In Case E the vice-president responsible for product development said that in the domain of product development new practises were implemented by informing them to changers. For example, the implementation of the new rules for invoicing for product development projects were implemented by sending instructions about the rules to the project managers.

Company action principles. In Case E the vice-president responsible for the HR function said that the action principles of the case company had been implemented by sending a booklet about them to the case company's personnel.

Profitability goals. In Case E the researcher observed that the case company management implemented the new profitability goals in the field organisations by informing the managers of the organisations of the goals. The researcher participated in meetings where the goals were shared.

Recording the blueprint of a new feature on an external recording device or in an assigned person's mind. The New organisational features identified where recording the blueprint of a new feature on an external recording device or in an assigned person's mind to be retrieved when needed was used as an implementation mechanism were fault repair procedure (C) and invoicing practices (D).

Fault repair procedure. In interview of workers in the sub-organisation of Case C, it came out that when equipment faults had occurred in the home plant customer's production technology, workers had recorded data about the faults and their repair procedures into the maintenance data system. Then, if the same fault occurred again, data about it was retrieved from the system and used in the repair work. One informant said that the data system also stored the name of the

employee who conducted the repair work and that when the same fault occurred again, it was possible to call this employee and ask how he had repaired the fault.

Invoicing practises. The manager of Case D said that the case organisation had put new invoicing practises into use. The case organisation had one person from whom employees were expected to ask how to carry out the new invoicing practice.

A more general statement about the use of this implementation mechanism was identified in Case E.

In Case E the vice-president responsible for marketing said that in the case organisation the typical implementation procedure was such that a new feature was documented on the shared file server from which it was expected to be retrieved by changers.

Installing. In the domains of equipment and machines, implementation had taken place by installing new technological features in the domains (A, B, C).

In one group interview of workers in Case A, informants spoke about one suggestion where implementation had been conducted by installing a new component to the customer's equipment. In group interviews in Cases B and C, it came out that the case organisations had produced blueprints of new features that had been implemented through installation in the home plant's production technology.

Updating documents. The case organisations had documented their features in the institutionalised organisational memory. When the features had been located in the change domain in the process of organisational adaptation, the documents describing the features had been updated. The types of documents that had been targets for updating as part of implementation were checklists for work activities (A), long-term delivery contracts (B, D), quality instructions (B, C, D), brochures (D), and process descriptions (E).

Checklists for work activities. The manager of Case A said that the case organisation had checklists for maintenance work activities which described the tasks that had to be done. Checklists were updated when new features were added to the maintenance work activities.

Long-term delivery contract. The manager of Case B said that the case organisation had undersigned an updated long-term delivery contract between the case organisation and the home plant customer. The updated contract was an outcome from the implementation of the new co-operation model between the case organisation and the home plant customer. In one group interview in Case D, it came out that when new features had been produced for the long-term delivery contract between the case organisation and the home plant customer, the contract document was updated.

Quality instructions. In interviews in Cases B, C, and D, quality instructions were mentioned as a target of implementation.

Brochures. The manager of Case D mentioned brochures as a target of implementation.

Process descriptions. In Case E the vice-president responsible for product development said that when new ways of action were put into use in the process of product development, related instructions were updated.

The found three modes of communicating blueprints of new features to changers can also be categorised as **push** and **pull** modes of implementation. In push mode a new feature was actively communicated to changers through training and informing, while in pull mode the changer was expected to acquire information about the feature from an external recording device or memory of an individual.

From the cognitive perspective the evidence above suggests modes of **light implementation** and **heavy implementation**. In light implementation, changers were not trained on the blueprint, but it was stored into external recording devices to be retrieved when needed. Of the incidents above, the implementation of fault repair procedure in Case C is light implementation. When equipment fault occurred and a repair procedure was produced to fix it, the procedure was not communicated to organisation but instead was stored in a maintenance data system to be retrieved when the same fault occurred in the future. In heavy implementation, the purpose was that changers learned blueprint of new feature permanently and retained it in their own memory. The other incidents on mechanisms for communicating a blueprint to changers are manifestations of heavy implementation.

Change domains were not confined to the case organisations. The case organisations not only had adjusted themselves to fit the stakeholder environment but they also tried to change the stakeholder environment to fit the organisations. The mode of organisational adaptation where an organisation changes itself to fit the environment is called here **inward directed adaptation**; the mode where an organisation changes the environment to fit the organisation is called **outward directed adaptation**. Incidents of inward directed adaptation were presented in Chapter 5.2.1.4.1 on "Active coping with changes in the stakeholder environment." In all the incidents the case organisations changed themselves to fit the stakeholder environments when the environments introduced new demands or feedback that indicated performance gaps. The outward directed adaptation was seen when the case organisations tried to change the customer environment's purchase behaviour to fit the case organisation's new service offerings that were not developed as a response to the demands or feedback from customers. Identified new organisational features of this type were 1) condition monitoring service (C); 2) maintenance planning service (D); and 3) new services (E).

Condition monitoring service. In interviews in Case C, it came out that the case organisation had developed a new condition monitoring service it tried to sell to the home plant customer. The organisation had arranged training on the service to employees and it had tested the service in the home plant. The customer did not buy the service.

Maintenance planning service. In one group interview in Case D, it came out that the case organisation had tried to make potential customer organisations outsource their maintenance planning functions to the case organisation. The case organisation did not succeed in its efforts to change the customer environment.

New services. In Case E the manager responsible for sales in the Division Z said that he recently tried to make one customer buy new services the case company had developed through product development. The customer did not buy the services.

5.2.2.3 CHANGE

In the change phase of the organisational adaptation process, the actual changes took place in the domains the blueprint of the new feature was to change. The change occurred in two stages. In the first stage, the changer's knowledge base changed so that the changer got informational potentials to express the new feature. The changer adopted a blueprint of a new feature or became aware of a location of organisational memory from which a blueprint could be retrieved to guide action when needed. This mode of change is called here "**cognitive adoption**." In the second stage, the changer began to express the new feature through its own behaviour. This mode of change is "**behavioural adoption**."

The evidence on behavioural adoption was presented in Chapter 5.2.1.4.1 on "Active coping with changes in the stakeholder environment." The chapter described behavioural changes that had taken place in the case organisations. That behavioural adoption was predeced by cognitive adoption was seen in the evidence indicating that although the changer got information about a new feature through implementation, it did not necessarily change its own behaviour to express the feature. The first evidence on cognitive adoption was presented in Chapter 5.2.2.2 on "Implementation." Cases C, D, and E had tried to change the purchase behaviour of the customer environment without success. The case organisations had informed customers about their new service offerings but the customer environment had not changed its behaviour. On the other hand, the case organisations had not been able to change their delivery behaviour because the customer environment had not changed its purchase behaviour. This was because it was not possible to store services. The incident from Case C about the new condition measurement service showed that an organisation can adopt a blueprint of the new feature without behavioural change in the customer environment or the case organisation. The case organisation had trained its employees to carry out the new service even though the customer had not purchased the service. The other incidents of new organisational features identified where only cognitive adoption had taken place were 1) new ways of action (A); 2) reporting practises (D); 3) invoicing practises (D); and 4) organisational structure (E).

New ways of action. In a group interview in Case A, one young worker said that if new workers suggested a new action to old workers, they resisted and rationalised resistance by saying that the current way of action had been practiced for 15 years.

Reporting practise. The manager of Case D spoke about an incident where one employee was told that from that point on he must report in certain way about delivery activities, but the employee did not start reporting.

Invoicing practise. The manager of Case D mentioned that the case organisation had received instructions about how to carry out invoicing in the future, but the organisation did not start acting according to the instructions.

Organisation structure. In Case E the executive vice-president said that when the case company management implemented a new organisational structure where the field organisations were expected to outsource maintenance functions from their organisations to Division Z, at first two of the field organisations did not carry out the expected change.

5.2.3 RETENTION

Retention refers to the processes through which an organisation or its stakeholder tries to ensure that the organisation possesses an existing organisational feature until it is purposefully removed or replaced through organisational innovation. The identified types of retention processes were inheritance activities (C, D, E); refresher cources (A, C); and controlling retention (A, B, C, D). Retention was found to be either temporal or permanent by nature. Temporal retention retained organisational features during delays between the organisational innovation process and performance monitoring. Retention of the feature shifted to permanent retention after the feedback from performance monitoring had proven the feature to possess sufficient adaptive value. In the process of organisational adaptation, retention occurred after coping, change and performance monitoring.

Retention processes

Inheritance activities. In the inheritance activities, the blueprints of organisational features were transferred between employees in circumstances of personnel turnover. Personnel turnover occurred when an employee left the job and was replaced by a successor. Identified types of inheritance activities were socialisation (C, D, E) and knowledge transfer through institutionalised organisational memory (D, E).

Socialisation. In one group interview in Case C the point was raised that newcomers were trained by co-workers. Newcomers learned by asking questions and watching how tasks were carried out by other workers. In the interview of workers in the sub-organisation of Case C, one informant said that after he had arrived at the organisation the best training had come from the working environment and co-workers. In one group interview in Case C, it came out that the new manager of the case organisation asked a secretary how performance measurement result information was shared within the organisation by the former manager.

In one group interview in Case D, it came out that one of the informants was to replace a retiring employee in near future—the informant had worked as an assistant to the retiring employee for several years. In Case E the researcher had observed that the organisation familiarised newcomers with the organisation through planned orientation programmes. During the programmes the newcomers were given presentations by employees responsible for different domains. The new vice-president responsible for product development was oriented to his job by his predecessor and the researcher. The information about the product development function was shared through personal discussions with the vice-president.

Knowledge transfer through institutionalised organisational memory. In Case D, one informant was to replace a retiring employee in near future. The informant spoke about one task that was new for him and for which he retrieved instruction from a shared data system. In Case E the researcher observed that one method used in sharing blueprints of the product development function with the new vice president responsible for product development was arranging access to shared file services that contained documented descriptions of the product development function.

Refresher courses. In Cases A and C, obligatory training had been conducted to avoid forgetting blueprints of certain features that authorities expected the case organisations to have.

The manager of Case A said that employees of the case organisation had participated in training that were obligatory on the basis of legislation. According to the manager, participation in training was controlled. Training was used to ensure retention of competence in task domains that were critical in terms of occupational safety. In interview of workers in the sub-organisation of Case C, it came out that the organisation had participated in training required by legislation.

Controlling retention. Retention had been controlled through quality audits (A, B, C, D), embedding expectations about retention to delivery contracts (C, D), and social expectations for retention (C).

Audits. In Cases A-D, quality audits had been used to ensure that the case organisations retained organisational features expected by quality standards and systems. The quality standard also expected documenting the quality system which, in turn, supported retention of blueprints of organisational features in institutionalised organisational memory. Features of Cases B and C had also been audited by the home plant customers.

Contracted expectations for retention. Cases C and D had organisational features whose retention was controlled by authorities through the home plant customers. The control came through the customers because they were targets of official supervision. In one group interview in Case D, the point was raised that some of the services included in a long-term delivery contract between the case organisation and the home plant customer were retained in contract because they were required by authorities. In one group interview in Case C, it came out that

the home plant customer expected that the case organisation was able to verify it had carried out certain maintenance tasks that had influence on a customer's ability to meet environmental obligations.

Social expectations for retention. In one group interview in Case C it was evaluated that certain ways of action were retained in the case organisation through that certain "old hand" communicated expected ways of action to a newcomer. One supervisor recalled that old hands had said to newcomers that if they did not act as the old hands expected they were in trouble.

Temporal and permanent retention

Delays had occurred between the organisational innovation process and performance monitoring.

> In one group interview in Case B, the point was raised that it took at least one year to get feedback about the economic utility of new solutions in the domain of home plant's production technology. In Case E strategic planning and "self-evaluation" (5.2.1.2.2) activities usually took place once a year. The vice-president responsible for quality and EHS said that procedures for carrying out the activities were not improved based on experiences right after the activities but only right before carrying out the activities next time.

The incident from Case B indicated that after the case organisation introduced the new feature through organisational innovation it did not necessarily get immediate feedback about the feature's adaptive value to make decisions for long-term retention. Because the case organisation did not get immediate feedback about the new feature's adaptive value, it had to retain the new feature "temporarily" until its adaptive value was verified through the feedback and decisions for more permanent retention could be made. The incident from Case E indicated that after having got feedback about a low adaptive value of the organisational feature, the case organisation did not necessarily trigger organisational innovation immediately to improve the feature. Because the case organisation did not trigger organisational innovation immediately to improve the feature, it had to retain the feature temporarily until the improvements were carried out. In both of the incidents the period of "temporal retention" was around one year.

The conclusion from the evidence from Cases B and E is that the phase of retention had modes of **temporal retention** and **permanent retention**. In the organisational adaptation process, temporal retention retained the feature during delays between organisational innovation and performance monitoring. Retention of the feature shifted to permanent retention after the feedback had proven the feature to possess sufficient adaptive value.

5.3 GENERAL CHARACTERISTICS OF THE ORGANISATIONAL ADAPTATION

The organisational adaptation process was found to have general characteristics that could not be located in any specific phase or phase sequence of the organisational adaptation process. Chapters 5.3.1 and 5.3.2 show that the process of organisational adaptation was circular by nature, involved adaptive organisational learning, and took place at multiple levels in the organisational hierarchy. The Chapter 5.3.3 demonstrates that an innovation through which an organisation adapts may increase the organisation's fit in one stakeholder environment but decrease its fit in another.

5.3.1 Circularity of organisational adaptation

In the case organisations incidents were identified which indicate that the organisational adaptation process had a circular nature. The organisational adaptation process involved "adaptation loops" through which organisational adaptation took place iteratively. The first cycle in the organisational adaptation process was carried out when an organisation produced a new feature in response to change trigger(s). After this the organisational adaptation process returned to the phase of performance monitoring when the organisation got feedback about the new feature's adaptive value. If the adaptive value was considered insufficient, the organisational innovation process was triggered for the second time and the feature was modified on the basis of the feedback. Again, the adaptive value of the modified feature was checked through performance monitoring, and organisational innovation was triggered if needed. The identified types of new organisational features that had been modified or were planned to be modified on the basis of the feedback about their low adaptive value were 1) long-term delivery contract (B, C, D, E); 2) preventive maintenance program (C); 3) performance monitoring routines (C, E); 4) incentive system (B, D, E); 5) organisation structure (C); 6) roles in delivery routines (A); 7) management team meeting routine (D); 8) invoicing routine (E); 9) production technology (A, B, C); and 10) tools (A, D, E).

> **Long-term delivery contract**. In one group interview in Case D, it came out that the long-term contract between the case organisation and the home plant customer had been evaluated and modified after the first version was created. To get rid of the experienced contract–related performance gaps, the case organisation and the home plant customer had developed the contract through an annual review. The informants evaluated that now the contract was quite satisfactory and that it did not much require development any more.. At the time of the research interviews the case organisation had had the long-term delivery contract with the home plant customer for almost three years.
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> In one group interview in Case B, it came out that the organisation had experienced that the long-term delivery contract with the home plant customer had not been satisfactory till date. The manager of the case organisation said that in 1999 the co-operation model between the organisation and the home plant customer was renewed and there was a new model in development in 2001. The case organisation started delivering services to the home plant customer on the basis of the long-term delivery contract ten years before this research interview took place.

In Case E the manager responsible for sales in Division Z said that the sales function had developed template materials for long-term delivery contracts to be used in the new maintenance customer contexts and that these materials had been updated based on the field organisations' experiences with the long-term delivery contracts. The latest version of the model materials for the long-term delivery contract was the third one.

The manager of Case C stated that the current long-term delivery contract between the case organisation and the home plant customer was poor in terms of profitability. He criticised that it was a mistake to make the contract which included a clause that the price of the contract would decrease a certain percent annually. The organisation had had to recruit new personnel instead of downsizing and the agreed pricing principle conflicted with this state of affairs. The contract also was criticised because of its lack of details. In one group interview it was evaluated that to avoid continuous bargaining with the home plant customer, the next version of the contract must involve more details than the current contract. The current contract period is five years.

Preventive maintenance programs. In the interviews in Case C, it came out that a machine's preventive maintenance program was a central structure that defined the task contents and the timing of the preventive maintenance for the machine. In one group interview the informants mentioned that the first versions for the preventive maintenance programs came from the equipment manufacturers. After having experienced the "consequences" of the preventive maintenance programs, the case organisation had changed the task contents and the timing of the programs. The informants said that the tasks for the newer equipment had been added to the programs and removed from the programs for the older equipment. Tasks had been added to the programs after a target had faulted repeatedly. Cleaning the electric motors was mentioned as an example of the task type that had been added to the program after the motors had failed because their cooling did not worked properly. Tasks had been removed from the program after having realised that the target never failed or that the task was too resource-consuming compared to the economic consequences of the possible faults in the target. In another group interview in Case C one informant said that in his sub-organisation the cycles of the recurrent preventive maintetance tasks had been changed based on the experiences of how the equipment had failed. In a group interview of workers in the sub-organisation of Case C the point was raised that the preventive maintenance programs had developed to a state where there wasn't much need to change the programs.

Performance monitoring routines. After Case C was established it started measuring customer satisfaction and organisational climate through surveys. The manager of Case C said that the first version of the routine for "processing" the customer satisfaction measurement results was changed after the experience that innovations triggered by the performance gaps in the measurement results did not lead to expected behavioural changes in the organisation. The inability to produce changes was attributed to that the workers did not participate in processing but the phase was carried out by the management alone. In the second version of the processing routine, also the workers participated in the processing

task. The manager said that after the observation that the employees had not actively answered the organisational climate survey, the manager decided to raffle tokens among those who answered to the survey. According to the manager, this prompted almost everyone to answer the survey. In Case E, the vice-president responsible for the HR function said that a new organisational climate measurement routine was under development in the case organisation. The new routine was to replace the survey–based measurement that had been used in Cases A and C. The development was triggered by the experience that the measurement results from the survey tool indicated the same performance gaps every year.

Incentive systems. The case company's bonus system had been developed in Case E. The vice-president responsible for the HR function said that every year the management had tried to improve the bonus system and every year the system had been criticised by the field organisations. In 2001, the researcher participated in the development activity that was triggered to improve the system after the field organisations had said the current system did not fit the local contexts. In one group interview in Case B the informants criticised the current initiative system and suggested development of a new system. They said the current system did not motivate producing the initiatives. Also, in group interviews in Case D the qualities of the current initiative system were recognised as one reason for the decrease in the annual amount of the initiatives produced. The suggestion was made that the system must be improved.

Organisation structure. In the interview the manager of Case C described several organisation structure "versions" through which the case organisation had come to its current shape after its establishment. According to the manager, the current case organisation structure was developed as a response to the experience that there were task domains where no one had responsibility.

Roles in delivery routines. In one group interview of workers in Case A, it came out that the organisation had tried a way of action where one employee was assigned to be responsible for maintained equipment from the beginning of the delivery activity to the end of the activity. After having realised that the arrangement did not work the organisation gave it up. One informant expressed a belief that the arrangement did not work because the dynamics of the business did not allow attaching an employee to a single task for four or five weeks.

Management team meeting routine. In one group interview in Case D, one informant said that earlier the organisation had a management team meeting and a "management review" meeting in same day, but after the experience that their agendas started to mix the meetings were separated.

Invoicing routine. In Case E the vice-president responsible for product development said that after the experience that invoicing from the case corporation technology centre took place mostly at the end of the year, explicit rules were developed for invoicing to smooth the seasonal pattern. On the basis of the researcher's personal experiences of invoicing, the "end-weighted" invoicing pattern had occurred for years.

Production technology. According to the interviews and documentation, Case A had recently established new work premises that doubled its service capacity. The supervising engineer expressed a belief that the recent high amount of suggestions produced by the workers was because the new work premises were not yet working properly. In one group interview the workers verified that a certain technological part of the new premises did not work as expected. In one group interview in case B the decrease in the annual amount of initiatives produced between 1998 and 2001 was attributed to the change in the motivational conditions. The informants evaluated that maybe in the domain of the plants' production technology there was not much more to develop. Right after the last large change in the production system in 1994, lots of initiatives were produced, but not any more. In one group interview in Case C the point was raised that in many equipment faults the organisation had made technological changes to the equipment to avoid the same faults in the future. If the change did not work, the organisation tried something else. In fault statistics it was possible to see if the machine had not faulted as much as before the improvements.

Tools. In Case A the group manager spoke about a performance gap in a specific tool the organisation used in service deliveries. According to the manager, the tool did not give any information about when it was possible to stop the working phase were the tool was used. At the moment of the interviews the organisation was carrying out the development activity to develop a technological solution which enabled getting information about when to stop the working phase. After Case D was established, it tried to increase the sales volume to the customer environments external to the home plant (5.2.1.4.1). In one group interview it came out that one of the new tools the organisation started to use to support its business efforts was a "project number opening sheet." The developer of the project number opening sheet mentioned that after he had developed the first version of the sheet, users started to evaluate it negatively. He got criticism about the sheet even after it had been in use for years. The informant expressed a belief that the reason the sheet had been modified several times was that different user groups had different demands. In Case E the manager responsible for sales in Division Z expressed a belief that the current standard sheet for acquiring customer information during customer contact was developed as a response to the experiences that every salesman had to remember what to ask of the customer and that something was always forgotten.

On the basis of the evidence above, organisational adaptation was an experimental process that involved learning from experience. The organisation tried a new feature, got feedback about its adaptive values, and modified the feature based on the feedback until a sufficient fit was achieved. The organisations learned from experience when an organisational feature had such a low adaptive value that the feature had to be modified through organisational innovation. They also learned from experience when an organisational feature achieved the level of adaptive value where further modifications were not needed. The process where an organisation learns from experience the adaptive value of its features is called here "**adaptive organisational learning.**"

The organisational adaptation process could temporally be divided in two stages. In the first stage, the first "version" of the new feature was produced as a response to the

change trigger(s). This feature can be called **primary innovation.** In the above incidents the primary innovations were the first versions of the long-term delivery contracts, preventive maintenance programs, organisation structure, etc. In the second stage, the feature was improved iteratively on the basis of the feedback from performance monitoring. Features produced in this stage are called **secondary innovations.** In the incident of the "long-term delivery contract," the updated versions of the contract were secondary innovations to the extent to which they differed from the previous versions.

The evidence above shows that once the organisational adaptation process has been triggered, it can produce several sequential generations of a feature until a sufficient level of fit is achieved. This was manifested by the evidence about modifying the long-term delivery contracts, the preventive maintenance programs, the organisation structure, and the incentive systems. The evidence about the long-term delivery contracts and the bonus systems indicates that the length of the adaptive coping cycle (Schein, 1994) may be several years.

The evidence on adaptation loops also supports the findings of Chapter 5.2.3 (p. 157) on "Retention," that between the organisational innovation process and performance monitoring, delays can occur which expect "temporal retention." The organisations retained primary innovations until they got feedback about their adaptive value to trigger development of secondary innovations. Shifting to a mode of permanent retention was implied by incidents where, according to the informants, an organisational feature had achieved sufficient adaptive value.

5.3.2 Multilevel adaptation

The evidence so far has introduced several innovations through which the case organisations had adapted in their stakeholder environments. However, all of the new features expressed by the case organisations did not result from local organisational adaptation but from adaptation that was carried out at higher levels in the organisational hierarchy. This "organisation family level adaptation" was manifested by that the case organisations also had features whose blueprints they had adopted from the upper levels of the organisational hierarchy. The phenomenon was identified in Cases A, B, and C.

> In the interviews in Cases B and C, came out incidents of features whose blueprints the organisations had adopted from the upper levels of the organisation. The features mentioned in Case C were the bonus system, performance measures, the development discussion model, customer satisfaction measurement tool, and personnel training program. The features mentioned in Case B were the bonus system, development discussion model, annual plan document model, document model for reporting economic performance, document models for offer requests, and a long-term delivery contract model. The documentation and the interviews indicated that Case A had adopted the customer satisfaction measurement tool from the parent business division level.

Some of the features whose blueprints had been adopted from the upper levels of the organisational hierarchy were **"frame structures" by nature** because they involved both the case organisation specific features and features that were shared between the

case organisation and other organisations of the family. The frame structures identified were long-term delivery contract (B), measurement plan (B, C), and the bonus system (C).

> The manager of Case B said that the long-term delivery contract with the home plant customer had been made both at the business division level and the case organisation level. The case organisation specific features of the contract were developed after the business division level features had been developed.
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> According to the case organisation, the business division and the case company level measurement plan documents, Cases B and C had adopted performance measures from the business division level, but also used measures that were not included in the measurement plan documents that described performance measures for the business division and the case company levels. In the interviews in Case C, it came out that the organisation had adopted some of its performance measures from the home plant customer.
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> The documented description of the case company bonus system showed that the reward criteria in the system were connected to the performance of the organisational units represented by different organisational hierarchy levels. In Case C some of the reward criteria were connected to the performance of Case C while some of the criteria were connected to the performance of the case company, the business division, and the regional profit centre. In addition, the bonus system allowed Case C to apply case organisation specific reward criteria that reflected the organisation's ability to satisfy the demands of the home plant customer. The structure of the bonus system was verified by the manager of Case C in one group interview.

The features whose blueprints the case organisations had adopted from the upper levels of the organisational hierarchy were not specific to the case organisation. The blueprints were to be adopted by the organisations below the hierarchy level of the adapting organisational unit. Cases A and C had adopted the customer satisfaction measurement tool from the business division level. The same tool was also used by the other organisations of the parent business division of Cases A and C. This was verified by the document that expressed the customer satisfaction measurement results. As the organisations of the business division used the tool, it was possible to say that the use of the tool was a feature of the business division as well as the individual organisations of the division. Starting the use of the customer satisfaction measurement tool in the organisations of the business division was an innovation by which organisational adaptation took place at the business division level. According to this logic the organisational hierarchy level and the organisational unit of adaptation was defined by the organisational domain that adopted the blueprint of the new feature.

5.3.3 Balance of adaptations

The case organisations had carried out organisational adaptation through innovations that increased the fit in some stakeholder environment(s) but decreased the fit in another stakeholder environment(s). The innovations where the phenomenon was identified

were 1) new work shop (A); 2) establishment of the parent profit centre of case D (D); and 3) cutting salaries and increasing customer work load (C).

> **New workshop.** In Case A, the organisation's internal technology environment changed when new work premises were put into use (5.2.1.4.1) as a response to a predicted increase in the service demand from the customer environment. In one discussion, the supervising engineer said that right after the change in work premises workers suggested several innovations to modify their working environment. In group interviews of workers, it came out that many of the suggested innovations were motivated by a need to ease working.
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> **Cutting salaries and increasing customer work load**. After Case C was established in 1998, it faced demands of new stakeholder environments (5.2.1.4.1). On the basis of the documented results of the organisational climate survey, the survey included one measure for employee satisfaction and this measure indicated a strong decrease in satisfaction between 1998 and 2000. Qualitative data from the latest survey indicated that compensation for employees had been cut to increase profitability. The most common comment in the qualitative data was that there was too much work compared to capacity. This, as one cause of dissatisfaction, was verified by two group interviews in Case C. Achieving the profitability goal required high customer work load which, in turn, caused experiences with too high work loads and increased dissatisfaction. In one group interview it came out that the case organisation had arranged a crisis meeting due to work overload experienced by employees.. Despite the meeting no actions were triggered to improve the situation.

In the above incidents, innovations that increased fit in one stakeholder environment decreased fit in another stakeholder environment. In Case A, the "new workshop" innovation increased the fit in the customer environment but decreased the fit in the employee environment. In Case C the innovations "cutting salaries" and "increasing customer work load" increased fit in the owner environment but decreased fit in the employee environment. The present study defined substantive "adaptation" (Chapter 5.1, p. 83) as a feature that contributes positively to an organisation's fitness in its stakeholder environment. A new organisational feature that increases an organisation's fit in an environment(s) and decreases its fit in other environment(s) can be called "**unbalanced adaptation.**" The incident in Case A demonstrates that an unbalanced adaptation may result in "**organisational adaptation chains**" where organisational adaptation in one stakeholder environment triggers adaptation to other stakeholder environments. In this incident increased fit in the customer environment decreased fit in the employee environment and triggered organisational adaptation to achieve better a fit in this environment. However, the incident from Case C shows that an unbalanced adaptation does not result necessarily in adaptation chain.

The case organisations also had produced new features that increased the organisation's fit in some environment(s) without decreasing their fit in others. The features of this type identified were 1) spare equipment service (A); 2) empowering role structures (C); and 3) improvements to customer's production technology (C).

Spare equipment service. Chapter 5.2.1.4.1 on "Active coping with changes in the stakeholder environment" described how Case A had adapted to a seasonal decrease in service demand by "spare equipment service" innovation. The case organisation discovered that extra equipments of type X were available in the case corporation and that the equipments could be loaned to customers. The innovation made it possible for customers also to overhaul their corresponding equipment during the winter. The manager of Case A said that storing extra equipment of type X had been a problem earlier for the case corporation, and allowing Case A to loan equipment solved this problem. In one group interview, workers said that now when you also had work in the winter, your motivation remained better than if you were laid off.

Empowering role structure. In a group interview of the sub-organisation of Case C, it came out that the sub-organisation was currently experimenting with a practice where supervision was rotated among workers. Workers saw this arrangement as good because it increased their freedom to plan, coordinate, and develop their own work. One informant stated that now they did not have to wait for someone to give orders of what to do. The arrangement also improved the fit in the owner environment because it decreased the need for a separate supervisor to manage the sub-organisation, which decreased costs and improved profitability. In interviews in Case C, it was stated that the home plant customer had been very satisfied with the sub-organisation. Empowering the sub-organisation was mentioned as condition that in part explained the high satisfaction of the customer.

Improvements to customer's production technology. In group interviews in Case C, it came out that workers had made improvements to the home plant customer's production technology. Improvements were attributed to that workers wanted to ease their own work. The workers did not want to carry out the same repair work repeatedly. As the home plant customer expected the case organisation to develop performance of the customer's production process (5.2.1.3), the workers' innovations contributed positively to the fit between the organisation and the customer environment. Also, the fit in the owner environment increased because the long-term delivery contract between the case organisation and the home plant customer had a fixed price and the organisation could use freed capacity to generate additional profit from external markets.

In the above three incidents the new features improved organisations' fit in the customer, owner, and employee environments. A new organisational feature that increases organisation's fit in some environment(s) without decreasing fit in other environments can be called as "**balanced adaptation**".

If it was possible for the case organisations to produce balanced adaptations like the evidence above suggested, why did unbalanced adaptations occur? The above incident "cutting salaries and increasing customer work load" from Case C suggests one explanation for unbalanced adaptations to be that the different stakeholders put conflicting demands on the case organisation. The owner environment expected the case organisation to improve its profitability and the innovations by which the case organisation did this decreased the organisation's ability to satisfy the demands of

employees for reasonable work load and agreed compensation. However, the balanced adaptations in Cases A and C demonstrated that the demands of different stakeholder groups did not conflict necessarily.

In the evidence above on unbalanced adaptations the "new workshop" incident in Case A did not indicate conflicting demands between different stakeholder groups to explain the occurrence of unbalanced adaptation. In Case A an adaptation loop occurred (5.3.1) where the "new workshop" was the primary innovation and the features suggested by employees were secondary innovations. Since the primary and the secondary innovations were motivated by the demands of different stakeholder groups, there is a possibility that the case organisation had "preference ordering" according to which it tried to satisfy the demands of different stakeholder groups. First, the organisation tried to satisfy the demands of the customer environment by the primary innovation and after that the secondary innovations were produced to satisfy the demands of the employee environment.

The preference ordering was found to be "fixed" between different stakeholder groups. Satisfying the demands of the customer and the employee environments were instrumental to satisfying the demands of the owner environment. Instrumentality was manifested because 1) organisations withdrew from exchanges with the customer and the employee environments to better meet the demands of the owner environment (D, E); 2) satisfying the demands of the owner environment was the main reward criteria in the case company bonus system (A, B, C, D, E); 3) evaluation criteria for initiatives and suggestions included net economic utility but not criteria relating to the customer or employee environments (E).

> **Withdrawal from exchange**. The case company CEO said that Division Z had given up some customer sites where the division had had non-satisfactory long-term delivery contracts. A management team memo from 2001 verified that the division had given up customer sites where it had had non-profitable long-term delivery contracts. The researcher's observations and the internal news sheet documents showed that Case E denounced employees in 2001 because it wanted to improve the profitability of the case company to better meet the demands of the owner. According to the management team memo from Case D, the organisation had denounced employees in 1999 to better meet its profitability goal.
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> **Rewarding criteria**. In Case E, the documents that described the case company bonus system indicated that profitability was the main reward criterion in the system. All the case organisations used the case company bonus system. The documentation showed that in the reward criteria for the parent business division of Cases A and C, customer satisfaction was included in the criteria while employee satisfaction was not.
>
> **Evaluation criteria**. In Case E, documentation of the evaluation criteria of initiatives and product development suggestions indicated that the main evaluation criterion was the economic net utility a new feature will generate. The demands of customers, employees, or other stakeholders were not explicitly involved in the criteria.

In Case C, satisfying the demands of the employees seemed to be instrumental to satisfying the demands of the customer environment.

> The manager of Case C rationalised triggering improvement activities on the basis of performance gaps indicated by the results of the organisational climate measurement by the belief that if employees felt bad at work it was probable the home plant customer sensed it.

In Case C, the fit between the organisation and the employee environment was considered less important than the fit between the organisation and the owner environment or organisation and the customer environment.

> In one group interview in Case C, one supervisor expressed a belief that in the case organisation employees' opinions were listened but they were not taken into account in the organisation's actions. This view got support from another group interview where informants said that the organisation had arranged a crisis meeting due to work overload experienced by employees. Despite the meeting, no actions were triggered to improve the situation. The work overload was because the organisation tried to achieve its profitability goal. The documents that described goal and measure portfolios of the case organisations indicated that satisfaction of personnel was not involved in portfolios, while profitability and customer satisfaction were involved.

The evidence above on the priority of satisfying the demands of the owner, customer, and employee environments showed that demands were satisfied according to "fixed preference order" where the owner came first, then came customers, and after that, employees.

5.4 SUMMARY

Stakeholder environments of organisations

The findings indicate that the case organisations adapted in their stakeholder environments through innovations. The identified types of stakeholders in the stakeholder environments of the case organisations were owners, employees, customers, suppliers, competitors, local inhabitants, authorities, quality agents, labour unions, labour markets, and neutral organisations (Figure 7). All the case organisations had customers, suppliers, employees, owners, and authorities in their stakeholder portfolio. The owner environment was shared between the case organisations. The organisations belonged indivisibly to the case company that was a wholly owned subsidiary of the case corporation. All the case organisations had the authority in their stakeholder portfolio as the organisations were subject to the Finnish legislation. The competitor came out as a stakeholder type for Cases A, C, D, and E, but not for Case B. This was probably because in 1999 more than 99 percent of Case B's annual turnover came from the case corporation. The quality agent belonged to the stakeholder portfolios of Cases A, B, C and D. Unlike Case E, these four case organisations had certified quality systems. Neutral organisations as the stakeholders of the case organisations came out in Cases A, B, D, and E, local inhabitants in Cases B and D, and labour market in Case B. The labour union as a stakeholder came out only in Case D. In Figure 7 the types of

stakeholder detected in the different case organisations are visualised as an "aggregate" stakeholder environment for a fictitious organisation.

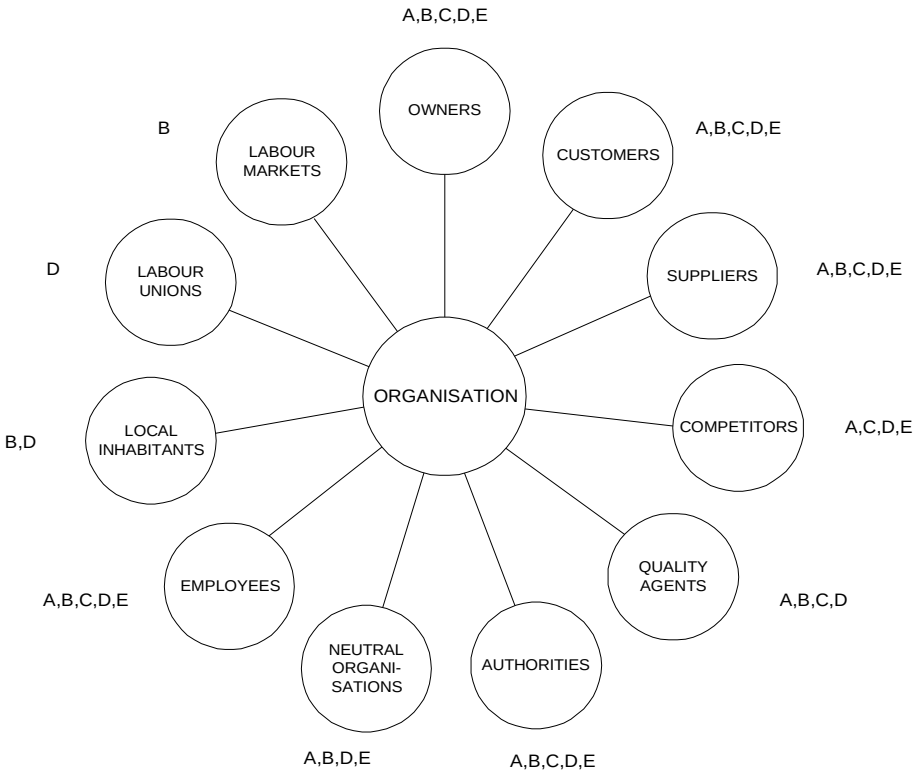

Figure 7: The identified types of the stakeholders (applied from Freeman, 1984).

Organisational adaptation process

The process through which organisational adaptation took place can be conceptualised with the phase model illustrated in Figure 8. The finding that the process of organisational adaptation was circular and iterative by nature suggests that organisational innovation can be triggered in two different stages in the process of organisational adaptation. Following the idea of "primary" and "secondary" innovations presented in Chapter 5.3.1 on "Circularity of organisational adaptation," the stages are called here "**primary triggering**" and "**secondary triggering**."

In primary triggering, organisations scanned their stakeholder environments to detect changes representing demands or opportunities for organisational adaptation, monitored performance to identify performance gaps, or institutionalised innovation. A performance gap detected in the primary triggering stage indicated that the performance of an organisation had decreased because an organisation had not reacted to change(s) in an organisation's environment. In the "coping" phase, an organisation decided whether it triggered the organisational innovation process as a response to the changes in the environment, performance gaps, or institutionalised innovation. In the mode of "active coping" an organisation triggered organisational innovation to produce a new feature through which it could adjust to fit its environment. The process of organisational innovation had sub-phases of "search," "implementation," and "change."

The search phase produced a blueprint of a new organisational feature. In the implementation phase, the blueprint or its location in the organisational memory was communicated to “changers,” technological changes included in the new feature were carried out, and the documentation about the change domain was updated in the organisational memory. In the change phase, the actual changes took place in the domains the blueprint of the new feature was to change.

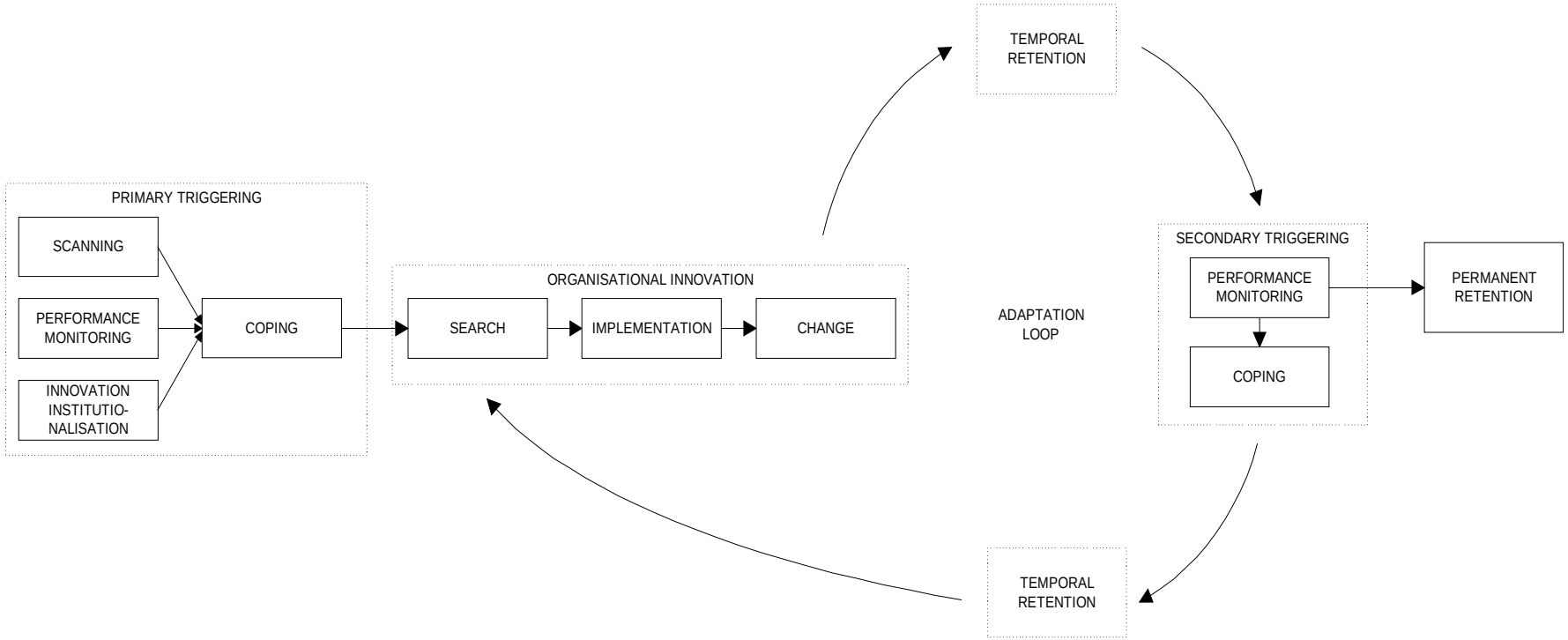

Figure 8: Organisational adaptation process

In the stage of secondary triggering, the performance impact achieved through innovation was monitored. The phase of "temporal retention" retained the new feature between the organisational innovation and secondary triggering. If feedback from performance monitoring indicated the new feature to possess sufficient adaptive value, the phase of "permanent retention" started to retain the new feature. A performance gap detected in secondary triggering indicated that the new feature produced through organisational innovation had not yet achieved sufficient adaptive value. If an organisation chose to cope actively with the performance gap, the process of organisational innovation was triggered again. The phase of "temporal retention" retained the new feature between the secondary triggering stage and the organisational innovation. The "adaptation loop" implied by the circle in the Figure 8 could continue until the new feature achieved sufficient adaptive value.

Categories of organisational adaptation behaviour

The findings in Chapters 5.2.1, 5.2.2, 5.2.3, and 5.3 characterised organisational adaptation behaviour in multiple ways. Tables 3, 4, and 5 summarise and classify the detected phenomena by the phases of the organisational adaptation process. Applying the terminology of Strauss and Corbin (1998), the tables introduce the identified "categories" of organisational adaptation behaviour. Block capital(s) after the category name indicates the case organisation(s) where the phenomenon represented by the category was found. Categories in the first column of Table 3 stand for the phenomena which were general for organisational adaptation because they could not be attached to any specific phase of the process of organisational adaptation.

ORGANISATIONAL ADAPTATION	
Types of adaptations	
Unbalanced adaptation	A,C,D
Balanced adaptation	A,C
Types of innovation	
Primary innovation	A,B,C,D,E
Secondary innovation	B,C,D,E
Multilevel adaptation	A,B,C
Frame structures	B,C
Organisational adaptation chain	A
Fixed preference ordering	C,E
Circularity of organisational adaptation	A,B,C,D,E
Adaptive organisational learning	A,B,C,D,E

SCANNING	
Mechanisms of scanning	
Institutionalised communication linkages	A,B,C,D,E
Scanning activities	A,B,D,E
Media monitoring	A,C,E
By-product observation	A,B,D,E
Exposure	A,C,D,E

PERFORMANCE MONITORING	
FEEDBACK ACQUISITION/EXPOSURE	
Types of feedback	
Stakeholder feedback	A,B,C,D,E
Selection feedback	A,B,C,D,E
Experience feedback	A,B,C,D,E
Legitimacy feedback	A,B,C,D
Operational feedback	A,B,C,D,E
Outcome measure -based feedback	B,C
Behavioural measure -based feedback	A,B,C,D,E
Resource measure -based feedback	A,B,C,D,E
Types of goals for operational feedback	
Continuous goals	A,B,C,D,E
Prospective goals	A,B,C,D,E
ATTRIBUTION	
Attribution of selection feedback	A,C,D
Attribution of experience feedback	A,B,C,D
Attribution of operational feedback	A,B,C,D
Attribution of outcome measure -based feedback	B,C
Attribution of behavioural measure -based feedback	D
Attribution of resource measure -based feedback	A,B,C,D

INNOVATION INSTITUTIONALISATION	
Mechanisms of institutionalising innovation	
Setting organisational goals for organisational innovation	C,E
Contracting expectations for organisational innovation	D
Motives for innovation institutionalisation	
Competitive pressure for differentiation	A,C,E
Customers' expectations of "continuous innovation"	C,D

COPING	
Modes of coping	
Active coping	A,B,C,D,E
Passive coping	C,D,E
Types of change triggers	
Change in stakeholder demand portfolio	A,B,C,D,E
Facing new stakeholder environment	C,E
Change in demands of "old" stakeholders	A,B,C,D,E
Change in technology or service offerings	A,B,C,E
Change in organisation's model knowledge	B,E
Change in organisation's human and technology resource capacity	A,C,D
Entrance changes	E

Table 3: Categories of organisational adaptation in general, scanning, performance monitoring, innovation institutionalisation, and coping.

SEARCH

IDEA ACQUISITION

Idea acquisition tactics	
Assimilation	A,B,C,D,E
Imitation	A,B,C,D,E
Creation	A,B,C,D,E
Mechanisms of idea acquisition	
Assimilation	
Contacting supplier	A,B,C
Reading a book	E
Imitation	
Visiting model organisations	A
Visiting electronic archives of model organisations	B
Contacting acquaintance in model organisation	E
Recalling features of the former employer organisation	A,C,E
Creation	
Brainstorming	D
Group work methods	E
Organisational transfer	B,C,D
Places of creation	
Work premises	A,B,C,D,E
Coffee table	B,D
Conference facilities external to work premises	B
Home	C,E
Car	A,E
Nature	E
Participation pattern in creation	
Individual	A,C,D,E
Collective	B,D,E
Motives for idea acquisition tactics	
Imitation	
Imitation consumes less resources than creation	A,B,E
Creation	
Competitive pressure for differentiation	A,C,E
Required technology is not available in the environment	A,C

EVALUATION

Evaluators	
Person who suggested idea	A,D,E
Management of organisation	A,B,C,D,E
Management at upper levels in the organisational hierarchy	A,B,C,E
The stakeholder environment	A,B,C,D,E
Evaluation criteria	
Utility in terms of operational measures	A,B,C,D,E
Compatibility	B,D,E
Rationality	A,B,C
Novelty	B,D
Needs behind evaluation of employees	
Need to ease working	A,B,C,D,E
Need to avoid increasing own work load	C
Need for cleanliness	A
Need for equitable compensation	A,B

ELABORATION

Mixed idea acquisition tactics	E

Table 4: Categories of search

IMPLEMENTATION		CHANGE		RETENTION	
Mechanisms of implementation		**Types of adoption**		**Modes of retention**	
Training	A,B,C,D,E	Cognitive adoption	A,C,D,E	Temporal retention	B,E
Informing	A,B,C,D,E	Behavioural adoption	A,B,C,D,E	Permanent retention	A,B,C,D,E
Storing blueprint on external recording device or assigned person's mind for retrieval	C,D,E				
Installing new technological features	A,B,C			**Mechanisms of retention**	
Updating documents in the institutionalised organisational memory	A,B,C,D,E			Inheritance activities	C,D,E
				Socialisation	C,D,E
Modes of implementation				Knowledge transfer through institutionalised organisational memory	D,E
Push mode	A,B,C,D,E			Refresher courses	A,C
Pull mode	C,D			Controlling retention	A,B,C,D
				Auditing	A,B,C,D
Light implementation	C			Contracting expectations for retention	C,D
Heavy implementation	A,B,C,D,E				
Modes of adaptation					
Inward directed adaptation	A,B,C,D,E				
Outward directed adaptation	C,D,E				

Table 5: Categories of implementation, change, and retention.

5.5 CONDITIONS OF ORGANISATIONAL ADAPTATION

The second research question of the present study was “which conditions enhance or impede organisational adaptation through innovations?” The pilot study produced preliminary assumptions that organisational adaptation requires resources, motivation, and processes. The assumptions were based on the data acquired through four interviews and one survey.

> The researcher acted as a trainer in four training sessions where the embryonic LWOD design was introduced to “workers” from different field organisations of the case company. In the sessions, the participants were asked to orally describe conditions which enhance or impede acting as suggested by the preliminary LWOD design. The preliminary LWOD design included ideas, for example, that organisations scan and adopt practices from other organisations and acquire and attribute feedback from the performance of their own organisation. The sessions did not involve participants from the case organisations. The parent profit centre of Case D arranged a Christmas party where the researcher carried out a questionnaire survey to map the conditions that enhance or impede acting according to the preliminary ideas of the LWOD design.
>
> Both the results of the interviews and the survey suggested mechanisms and types of resources and motivators required for acting according to the LWOD design. Examples of suggested processes which would enhance acting according to the LWOD design were 1) gathering participants of the delivery activity from different organisations to enhance transfer of good practises and 2) ideation in a group. Examples of suggested resources constraints were 1) lack of knowledge, 2) lack of money, 3) lack of time, and 4) lack of IT-tools. Examples of suggested motivational constraints were 1) 1ack of need for development, 2) lack of motivation, and 3) old attitudes.

The present chapter introduces the results of the study regarding conditions which enhance or impede organisational adaptation through innovations. The chapter introduces 20 categories which stand for the conditions that contribute to the process of organisational adaptation by enhancing or impeding its function. The categories found were organisational slack, information technologies, knowledgeability, documentation, remoteness, skilfulness, diversity, centralisation, incongruity of demands, instability, efficacy beliefs, organisational culture, organisational climate, organisational mood, expectations, receptivity, incentives, defensiveness, situational context favourability, and individual characteristics.

Each of the categories has a dedicated chapter. When the category involves more than one condition, the conditions are introduced in sub-chapters. For each condition the evidence for the condition and its influences on organisational adaptation are presented in an indented paragraph. Also, the immediate preceding conditions for the conditions are presented when the preceding conditions were suggested by data. For example, preceding conditions for the condition “economic slack” refer to conditions that were found to have influence on the amount of economic slack.

Most of the categories involve more than one condition that was found enhance or impede organisational adaptation. The study describes the phases of the organisational adaptation process where each condition has influence and what kind of influence. The phase model developed for the organisational adaptation process in Chapter 5.2 indicated that the process has a hierarchical structure that can be conceptualised at different levels of abstraction. Also the conditions and their influences occured at various process hierarchy levels. For example, some conditions had influence on the organisational innovation process as a whole, while some conditions had influence only on a sub-phase of the innovation process. This study assumes that when the findings show that a condition has influence on a sub-phase of the organisational adaptation process, the influence also can also be seen between the condition and the phase where the sub-phase belongs. For example, if a condition impedes creation as an idea acquisition tactic, it also impedes search because idea acquisition is a sub-phase of the search phase. The condition also impedes organisational adaptation because search is a phase of it. Therefore, the research question "which conditions enhance or impede organisational adaptation through innovations?" is answered by introducing conditions that have influence on separate phases or sequences in the process of organisational adaptation.

According to the findings, conditions that enhance or impede organisational adaptation also can influence each other. These indirect influences on organisational adaptation are introduced in the chapters for the categories involving conditions that influence conditions in other categories. For example, the relationship between organisational slack and incentives is presented in the chapter for organisational slack because the direction of the influence is from organisational slack to incentives. Because of this manner of presentation, some of the categories appear in the text before the dedicated chapters for the categories. The categories involving conditions with indirect influences on organisational adaptation were organisational slack, information technologies, remoteness, centralisation, instability, efficacy beliefs, incentives, and situational context favourability.

5.5.1 Organisational slack

Organisational slack refers to money and manpower not committed to ongoing activities of the organisation (March and Simon, 1958). The two types of organisational slack identified in the case organisations were 1) economic slack and 2) time slack.

5.5.1.1 Economic slack

Economic slack refers here to the cumulative amount of money an organisation can use for adaptation tasks within a given time period without sacrificing its expected contributions to the stakeholder environments. A lack of economic slack had impeded performance monitoring (D), implementation (C), and change (D). It was also found to constrain incentives (C).

Influences on performance monitoring. In Case D low economic slack had impeded performance monitoring by constraining acquisition of outcome specific experience feedback.

> In one group interview in Case D, it came out that after large delivery activities, the case organisation had tried to arrange meetings with customers to get outcome specific experience feedback. Arranging meetings was constrained because it increased costs for delivery activities. In addition, after a delivery activity its cost pool was closed, making it impossible to allocate the costs of feedback acquisition to the delivery activity.

Influences on implementation. In Case C, low economic slack had constrained the possibility of training for acquisition of individual skills and knowledge.

> In a group interview of workers in the sub-organisation of Case C, it came out that in the case organisation no training had been arranged based on demands expressed by the workers. According to the informants, this was because the case organisation's economic capacity for training was small and it had been allocated in training arranged by the company management.

Influences on change. In Case D, low economic slack had led to the use of implementation mechanisms that consumed little slack but did not produce the expected changes. The slack consumption varied between implementation mechanisms.

> The manager of Case D said that the case organisation did not implement a quality system through training because it was too expensive. Instead, according to the manager responsible for quality matters in the parent profit centre of Case D, the implementation of a quality system was carried out in such a way that employees were expected to make themselves familiar with quality instructions and guide each other. The manager of Case D said that the lack of training explained why the organisation had not adopted the quality system. The manager said that the organisation also had had problems with adoption of the new invoicing practice. Implementation of practice was carried so that employees were expected to acquire information about the practice from the foremen and the project managers. The manager responsible for quality matters in the parent profit centre of Case D said that the implementation mechanisms that would lead to behavioural changes in the profit centre organisation consumed more resources than the organisation could afford.

Influences on Incentives. In Case C, the organisation's low economic slack was suggested to constrain incentives. Slack was found to have influence on the economic value of the rewards the case organisation could afford when it rewarded the contributions of individual employees to idea acquisition.

> In a group interview of workers in one sub-organisation of Case C, the belief was expressed that the case organisation could not afford rewards that would increase motivation to create and publish ideas through a suggestion system because of low economic slack.

Preceding conditions for economic slack

The case organisations had increased their economic slack by acquiring external funding for development activities. External funding was acquired from the upper levels of the organisational hierarchy (A, D, E), customers (A, B, C), and public sources of financing (E). In Case D, it was suggested that the case organisation could increase its ecomic slack through innovation.

Acquiring funding from the upper levels of the organisational hierarchy. Economic slack had accumulated to the different organisational hierarchy levels. It had been possible for cases A, B, C, and D to use the case company-level slack in their development activities. Use of the company-level slack was controlled by the company management through the company-level product development function and personnel training programmes. Case E used case corporation-level slack in product development activities.

> In interviews it came out that all the case organisations had used company-level slack by participating in company-wide personnel training programmes. It was possible to get financing for training included in the programme from the training programme. Cases A and D had used company-level slack available through the product development function, while cases B and C had been passive in utilisation. In Case B explanations given for the low level of utilisation were that 1) the case organisation was unable to create such "big" ideas that their development could not be financed by the case organisation and 2) slack was believed to be reserved for development activities related to the case company vision instead of innovations in the domains relevant for Case B. In Case E the researcher had observed that the case company product development function had used the case corporation-level slack when economic volume of a development activity and uncertainty of getting a return on development investment were high. The researcher had participated in acquiring the funding from the corporation-level.

Acquiring funding from customers. Cases A, B, and C had used their customer's economic capacity for development activities. Customers had participated in financing development activities of the case organisations in the domains of customer's technologies and services of the case organisations.

> In the interview of the group manager and supervising engineer in Case A, it came out that customers had participated in financing shared development activities between the parties. In group interviews in cases B and C, it came out that the home plant customer had participated in financing initiatives suggested by the case organisation for the customer's production technology. In Case C the home plant customer also had participated in financing development activities in the domain of services of Case C.

Acquiring funding from public sources of financing. Case E used public funding sources in product development activities.

> In Case E the researcher had observed that the case company also had used public funding sources to finance product development activities. Case E had constructed product development programmes for which it got public financing from national institutions. The researcher had participated in constructing the programmes and writing the applications for funding.

Increasing profitability through organisational innovation. The possibility of increasing economic slack through innovation was raised in Case D.

> The manager of Case D said that raising the price of services in the case organisation would increase the organisation's economic capacity for development, but it would also expect developing services that include higher level of expertise than current services.

The above findings on influences of organisational slack on organisational adaptation and influences of organisational innovation on economic slack suggest that economic slack as a condition can occur in amplifying loop with organisational adaptability. Economic slack can enhance organisational adaptation and organisational adaptation can increase economic slack.

5.5.1.2 Time slack

Time slack refers here to the cumulative amount of time an organisation can use for adaptation within given time period without sacrificing its other expected contributions to stakeholder environments. A lack of time slack had impeded scanning (A, B, E), performance monitoring (D, E), retention (D), search (A, C, D), implementation (A, C, D), change (C, E), and organisational innovation (B, C, E).

Influences on scanning. Low time slack had impeded scanning in cases A, B, and E.

> The manager of Case A said that that because there was no time and the available time was fragmented, it was difficult to scan new technologies and knowledge. For example, it was random if you found time to read a trade magazine before it was thrown away. The manager of Case B said that he had used to participate in certain external seminars where companies from different industries had presented their ways of action but during the last two years he had had no time to participate in seminars. In Case E, the vice-president responsible for quality and EHS said that scanning the competitor environment had not worked in Case E because the employees had no time for scanning. In one discussion, the informant said that he had no time to go through all the information offered by the current IT-based scanning system.

Influences on performance monitoring. In cases D and E low time slack had impeded performance monitoring. Low time slack had constrained attribution.

> In one group interview in Case D, the informants said that the lack of time had prohibited arranging a meeting for attributing one failed delivery activity. In Case E the vice-president responsible for quality and EHS said that he had not been

able to attribute deviations he had recognised in the initial data acquisition and storing practices in the domain of strategic planning because of a lack of time.

Influences on retention. In Cases D low time slack had impeded retention.

In interviews in Case D, it came out that carrying out internal quality audits had stopped. The manager responsible for quality matters in the parent profit centre of Case D said that one reason for stopping audits was that the employees responsible for auditing did not have time for it.

Influences on search. A lack of time slack had impeded search in general in Cases A, C, and D and evaluation tasks involved in the search in cases B and D.

Search in general. In one group interview of workers in Case A, it was evaluated that there was not enough time for development. The manager of Case A said that the lack of time for development had always been a problem and it had decreased in the past years. One worker stated in a group interview in Case C that in his sub-organisation it was difficult to achieve any developmental results because employees did not have time to contribute to development. A lack of time was mentioned as a condition that mostly impeded development work in the organisation. In a group interview in Case D, one informant said that he had tried to get one employee of Case D to contribute to development of standard programmes for preventive maintenance but the employee had had no time to participate.

Evaluation. The manager of Case B said that the case organisation had recognised that the current initiative system did not work as expected and needed improvement. According to the manager, one possible solution could have been a suggestion system used by a maintenance supplier internal to the case company but the case organisation had had no time to evaluate the system's applicability. The manager responsible for quality matters in the parent profit centre of Case D said that not all the participants of the development activity for the quality system had enough time to evaluate the activity's outcomes.

Influences on implementation. In cases A, C and D low time slack had impeded implementation.

In one group of workers in Case A, the point was raised that sometimes they were so busy there was no time to implement suggestions. Implementation of some suggestions had been delayed because the management had had no time to participate in implementation. In one group interview in Case C, it came out that a lack of time had impeded implementation of a new measurement service. Arranging training on the measurement system to be used in the new service was problematic because the training would have taken half a day. The manager of Case D said that employees did not have time enough to adopt new things. In one group interview, it came out that a lack of time had prevented the case organisation from updating the new corporate logo to the organisation's document templates after the name of the case corporation changed.

Influences on change. In Case C low time slack had impeded change, and availability of time slack had enabled change in Case E.

> In one group interview Case C, it came out that the organisation had not been able to start new practice called site meetings because the changers did not have time for new meetings. When the case organisation started using the new recording system for working hours, workers who did not start using system in the first place said that they did not have time for the new action. As an employee of Case E it was possible for the researcher to observe how the case company managed its human resource capacity in 1992-2001. During 1993-2000 the case company more than tripled its turnover. Much of the additional turnover was generated by the new plant operation organisations the company had established abroad and by the maintenance organisations the customers had outsourced to the case company. General policy in staffing the new organisations was that management came from the existing organisations of the case company. This was possible because the case company had rationalised its organisations at the same time with the growth, which freed management's time for the new organisations. In the integrated maintenance organisations, rationalisation had freed time capacity for local organic growth generated by these organisations.

Influences on organisational innovation. In cases B, C, and E a lack of time slack had impeded conducting development activities.

> The manager of Case B said that the case organisation did not have time to participate in product development activities. In one group interview in Case C, the point was raised that the case organisation did not currently have any development projects going on because it did not have time for development projects. In Case E the vice-president responsible for quality and EHS stated that a lack of time for development was one reason why development activities triggered by the self-evaluations had not proceeded as expected.

The evidence above on the influence of time slack on change indicates that if the end-state resulting from change consumes more time capacity than the initial state of an organisation and the organisation does not increase its human resource capacity for the end-state, the organisation has to have time slack to be able to change. The change absorbs time slack to the extent to which the consumption of the time capacity after the change exceeds the organisation's initial state. Change may be prevented without the time slack expected by the new feature.

Preceding conditions for time slack

Time slack for organisational adaptation was constrained by an organisation's customer work load unless it was possible to 1) carry out an adaptation task and customer work at the same time or 2) charge an adaptation task to the customer.

Carrying out adaptation task and customer work at the same time. According to evidence from cases A, D, and E, carrying out idea acquisition through creation and

delivery or another main task at the same time was possible if the main task's cognitive load was low enough. Task's cognitive load refers here to the extent to which performing a specific task requires the performer's conscious attention.

> In one group interview of workers in Case A, one informant mentioned that because many of the work tasks were routine, it was possible to think of development matters while working. Another informant mentioned that making a gasket was a task during which he had been able to create an idea for suggestion. Creation also had been carried out while driving a car (A, D, E), jogging (E), and walking (D). The evidence for these main task types will be presented in Chapter 5.5.19 on "Situational context favourability" as the incidents came out in association with this category of conditions.

> In group interviews in Case D, partial explanations given for the decrease in the annual amount of initiatives created since 1999 were that after the latest changes in the case organisation both the customer work load and the cognitive load of the delivery tasks had increased and the focus of creation had changed. Because of the high customer work load resulting from the deliveries to external customers there had not been time for the home plant-oriented creation. The cognitive load of work tasks had increased because work activities were less defined than before, activities had more variation and were more difficult than before, activities involved new task contents, schedules in work activities were tight, and an individual now had more than one work activity going on at the same time.

Charging adaptation task to the customer. In Case C, customer work load did not constrain time slack available for adaptation tasks when the organisation could charge the tasks to the customer.

> In group interviews in Case C, it came out that the case organisation had carried out development work to improve the home plant customer's production technology and Case C had charged the work to the customer. From Case C's point of view, the improvements to the customer's production technology were manifestations of organisational adaptation because the customer expected the case organisation to develop continuously. Also development of organisation's services had been possible to charge to the home plant customer when the development work had been triggered by specific demands from the customer.

5.5.2 Information technologies

"Information technologies" refers here to the extent to which an organisation uses adequate information technologies (IT) to carry out adaptation tasks. The two indicators of the information technologies were 1) use of IT tools and 2) adequacy of IT tools.

Use of IT tools

"Use of IT tools" refers here to the extent to which an organisation uses information technologies to carry out adaptation tasks. The use of IT tools had enhanced scanning (B, D, E) but impeded search through its effects on situational context favourability (A, B, C).

Influences of scanning. In cases B, D, and E, the use of IT tools had enhanced scanning. Scanning was enhanced by the use of shared information storages that offered easy access to information about stakeholder organisations.

> The manager of Case B said that the case organisation had used the company-level shared file server in scanning models of the peer organisations in the case company. Peer organisations stored their quality system descriptions to the shared file server where they were accessible to Case B. Compared to travelling to meet peer organisations, the use of IT offered quick and structured access to the information. In one group interview in Case D the point was raised that use of IT tools in media monitoring had decreased the amount of time required for scanning. In Case E the researcher had observed that a dedicated Web interface was available to the case company management for scanning the market environment. The vice-president responsible for quality and EHS said that the Internet was a useful tool for scanning the competitor environment.

Influences on Situational context favourability. In cases A, B, and C, the use of IT tools was found to reduce situational context favourability. The use of mobile phones had increased the frequency of interruptions experienced by employees involved in organisational adaptation tasks.

> The group manager in Case A said that the use of mobile phones had increased the frequency of interruptions in creation tasks. In a group interview in Case B, it came out that the case organisation had carried out strategic planning activities outside the actual work premises in order to avoid interruptions. The informants said that now the use of mobile phones had ruined this possibility of escaping interruptions. The researcher observed that the research interview sessions in Case C were interrupted several times by the participants' mobile phones and the resulting exits of participants.

Adequacy of IT tools

"Adequacy of IT tools" refers here to the extent to which the IT tools an organisation uses to carry out adaptation tasks are adequate for the tasks. The low adequacy of IT tools had impeded scanning (E) and performance monitoring (C).

Influences on scanning. Low adequacy of used IT tools had impeded scanning in Case E.

> In Case E the vice-president responsible for quality and EHS evaluated that one reason for failure in starting continuous scanning of the external stakeholder environment was that the tools for scanning were insufficient.

Influences on performance monitoring. The low adequacy of IT tools used had impeded performance monitoring in Case C. The low adequacy of the IT tools had constrained attribution.

> In one group interview in Case C, it came out that attributing equipment faults in the home plant was impeded by the poor quality of the pre-programmed fault codes used to classify the fault data in the maintenance data system. The fault codes were used to detect and select recurrent faults for attribution.

5.5.3 Knowledgeability

"Knowledgeability" refers here to the extent to which actors who contribute to the organisational adaptation process have knowledge that enhances or impedes organisational adaptation. Knowledgeability excludes here "cultural beliefs" as a type of knowledge because there is a dedicated chapter 5.5.12 for "Organisational culture". "Cultural beliefs" refers here to an organisation's deeply rooted, long-lived beliefs that rationalise current organisational features. The identified types of knowledge influential in organisational adaptation were 1) domain knowledge, 2) knowledge of sources of resources, 3) knowledge of a new feature, 4) knowledge of reference states, and 5) blocking beliefs.

Domain knowledge

"Domain knowledge" refers here to 1) the knowledge the domain of performance gap or 2) the knowledge of change domain. The domain of performance gap refers to the domain of reality which does not meet the performance criteria for the domain. Knowledge of the domain of performance gap was found to enhance performance monitoring (A, B, C) and knowledge of change domain was found to enhance search (A, C).

Influences on performance monitoring. In Case B, customer's knowledge of the domain of performance gap was suggested to enhance performance monitoring in general. In cases A, B, and C, the organisation's knowledge and in Case C the customer's knowledge of the domain of performance gap, was found to enhance attribution. Contribution of the organisation's knowledge to attribution was concluded from that the case organisations had used their employee's domain knowledge as a selection criterion when they had selected participants for attribution tasks.

> **Influences on performance monitoring in general.** In one group interview in Case B, it was evaluated that in order to give useful feedback to the case organisation, the home plant customer organisation needed knowledge about the case organisation. According to the informants, the usefulness of feedback the home plant customer had given through its evaluation tool was restricted because

there was maybe only one person in the customer organisation who knew Case B, but also other people had participated in the evaluation. Familiarising the home plant customer with the case organisation was recognised as one development target.

Influences on attribution. The manager of Case A said that attribution of gaps in the economic performance of the service delivery projects was carried out by supervisors with knowledge of the projects. In one group interview in Case B, the point was raised that selection of participants for attributing unplanned production interruptions in the home plant was guided by the knowledge requirements of tasks. Accordingly, performance gaps in the environment, health, and safety matters were analysed by employees with knowledge of the gaps. In one group interview in Case C, the point was raised that causes of equipment faults were explored by the case organisation itself to the extent it had sufficient knowledge for the tasks.

In Case C, knowledge related to equipment faults in the home plant was distributed between the organisation and the home plant customer. In one group interview in Case C, informants said that the home plant customer made fault descriptions which it delivered to the case organisation as the initial information for the fault repair work. The quality of the fault description was mentioned as a condition that has influence on the success of attributing the fault. It was evaluated that the extent to which a customer's operators had familiarised themselves with the machines contributed to the usefulness of the information they shared with the case organisation for attribution of faults in the machines.

Influences on search. In all the case organisations knowledge of the change domain was found to enhance search. In addition, in cases A and C, evaluation of ideas was found to be enhanced by the knowledge of the domain of the idea. Domain knowledge was found to enhance evaluation of the consequences of the new feature expressed by the idea.

Influences on search in general. The manager of Case A stated that developers had to have knowledge about the ways of action to be developed and the technologies used in the action. In one group interview in Case B, it came out that a search of actions through which the case organisation tried to fix and prevent unplanned production interruptions in the home plant was carried out by the employees who had knowledge in the relevant domains.

The manager of Case C said that participation of workers in the search for features by which to prevent detected performance gaps was important because the workers had the best knowledge of the field. The manager also evaluated that the case company management had not contributed much to the development of the case organisation. The explanation given for the low contribution was that the company management did not have sufficient knowledge of Case C's local conditions to develop features compatible with the case organisation. The manager mentioned the current long-term delivery contract with the home plant customer as an example of a low quality feature the management of the parent business division of Case C had developed. He said that the pricing of the initial

contract was based on the belief that one of four sub-organisations of Case C had 16 employees, although in reality it had 20. As a result, the contract was underpriced. The emergency duty practice agreed in the contract was based on the assumption that employees located at any of the four plants were also able to carry out maintenance in the three other plants. However, in reality this was not possible because the production technologies of the four plants were so different that the employees of one plant did not have expertise necessary for maintenance of other plants.

In Case E the vice-president responsible for marketing evaluated that because the case company management was not familiar with the ways of action in the field organisations, the new features the management had searched for the field organisations were of low quality. The manager responsible for sales in Division Z said that when the division searched division level standards for long-term delivery contracts, managers from the field organisations participated in the search because they had experience-based knowledge about contracts. In one group interview in Case D, the expertise of participants in the domain of ideation was mentioned as a condition that contributed positively to the outcomes of an ideation session.

Influences on evaluation. In a discussion with the supervising engineer in Case A, it came out that the crane located in the work premises of the case organisation had faulted. The engineer said that he did not know how to repair the fault because he did not know the structure of the crane enough to evaluate how cutting some wire rope will affect the crane. In one group interview in Case A, workers evaluated that the suggestion system used by the organisation was better than the initiative system because suggestions were evaluated locally by people with knowledge of the suggested change domain, while initiatives were evaluated at the upper level of the organisational hierarchy by a centralised committee without knowledge of the local change domains. In one group interview in Case C, one supevisor said that because the case organisation had now accumulated performance monitoring data about the organisation's maintenance activities, it was possible to evaluate new economic parameters of the maintenance contract when negotiating for the new contract with the home plant customer.

The above evidence from cases A, C, and E on the influence of knowledge on search shows that **centralisation** of a search may impede organisational innovation. The evidence from cases C and E on influences of the domain knowledge on search in general indicate that a centralised search can produce features incompatible with the organisations at the lower level in the organisational hierarchy because the upper level of the hierarchy does not have sufficient knowledge of the domains to be changed through the search outcomes. The explanation gets support from the evidence from Case A on influences of the domain knowledge on evaluation of the initiatives. The incident from Case A suggests that evaluation of an idea requires knowledge of the change domain the idea tries to change.

Knowledge of sources of resources

"Knowledge of sources of resources" refers here to the knowledge of the sources from which an organisation can acquire resources to contribute to organisational adaptation. Knowledge of the sources of resources had enhanced search in Case E.

> **Influences on search**. Case E had arranged and facilitated collective ideation sessions called "bees" for ideating new company-level structures (5.2.2.1.1). The vice-president responsible for the HR function said that employees from the field organisations and Case E had participated in the bees. The vice-president evaluated that finding suitable employees from the field organisations for bees was easier now than before because employees were better known than before.

Knowledge of a new feature

"Knowledge of a new feature" refers here to the knowledge that the potential changers have about a new feature. A lack of knowledge of a new feature had impeded performance monitoring (D) and change (A, D).

Influences on performance monitoring. In Case D, the customer lacked knowledge of a new contract as a reference state against which it evaluated the case organisation and gave it experience feedback.

> In one group interview in Case D, it came out that in the beginning of co-operation between the case organisation and the home plant customer the case organisation had got negative feedback from the customer about not delivering all the services agreed to in the long-term delivery contract. One informant attributed the negative feedback to that not all the employees of the customer organisation had knowledge of the contents of the contract. The management of the customer organisation had made the contract and employees at lower organisational hierarchy levels did not have knowledge of the contents of the contract.

Influences on change. In cases A and D, a lack of knowledge of a new feature had impeded change. It was not possible to start expressing a new feature without knowledge of the feature.

> In one group interview of workers in Case A, one informant said that he could not start using the suggestion system because he did not know about the system. In one group interview in Case D, it came out that only a few people in the case organisation used the media monitoring systems available in the case corporation. One reason mentioned for the small amount of users was that the employees in the organisation did not know the systems existed.

Blocking beliefs

The case organisations' knowledge contained beliefs that potentially blocked active coping. The types of "blocking beliefs" identified were "Permission beliefs", "Naturalness beliefs", and "Unchangeability beliefs."

Permission beliefs. Permission belief holds that changes cannot be made in the domain where a performance gap exists because the domain is in the territory of another organisation. Permission belief was detected in Case C.

> In one group interview in Case C, it came out that the same occupational accident had occurred twice in the organisation. After the first accident, attribution was carried out as required by the protocol but no changes were made to remove the cause of accident. When the researcher asked why the accident happened again, the informants said that the technical structure that had caused the accident was located in the home plant customer's work premises and therefore could not be changed by the case organisation. According to the informants, the same accident could occur again because activities had not been triggered to remove the cause of the accident. The researcher's general impression after the interview was that the informants could not imagine any way to get the technical structure changed.

Naturalness beliefs. Naturalness belief holds that experiencing certain performance gaps in the organisation is a natural and inevitable feature of organisational life. Naturalness beliefs were detected in cases C and E.

> The manager of Case C and the vice-president responsible for the HR function in Case E said that the current organisational climate survey always indicated the same performance gaps: 1) information was not shared enough, 2) salaries were too low, and 3) the boss was stupid. The manager of Case C evaluated that because it was generally known that employees always had these perceptions there was no need to acquire this information through the climate survey. The vice-president evaluated that the current climate measurement tool was not useful for the development of the climate because of recurring results, The manager of Case C said that he had discussed the topic with the vice-president.

Unchangeability beliefs. Unchangeability belief holds that some domain is unchangeable. Unchangeability beliefs were detected in cases A and C. The beliefs were expressed in the context where the informants had recognised performance gaps in the domains that were believed to be unchangeable.

> In their interview the group manager and the supervising engineer of Case A strongly expressed a belief that the workers of Case A who had never been active could not become active. In one group interview in Case C, beliefs were expressed that a human being or behaviour of the old workers could not be changed. Also a belief was expressed that influencing workers' motivation to create and publish suggestions was not possible through external factors. In a group interview of workers in a sub-organisation of Case C, it was evaluated that the relationship between the management and the workers had always been a problem and will always be a problem.

Influences on coping. The permission belief identified in Case C seemed to impede active coping. The possible alternative explanation for passive coping was that the home plant customer had prohibited changing its property. However, this explanation is unlikely because the customer expected the case organisation to develop both the performance of the organisation and the performance of the customer's production technology continuously (5.2.1.3). Influences of the two other blocking beliefs on coping were not observed. However, it can be logically concluded that these beliefs potentially impeded active coping. If the actor believes that a specific performance gap will always occur in the organisation or that a domain where a performance gap occurs cannot be changed to eliminate the gap, it seems quite probable that these gaps do not trigger organisational adaptation.

5.5.4 Documentation

"Documentation" refers here to the extent to which knowledge outcomes of adaptation tasks have been recorded to external recording devices. A high level of documentation was found to enhance performance monitoring (C), active coping (E), and implementation (B) and also was found to impede performance monitoring (C). Documentation has positive influence on organisational adaptation because delays can occur between two sequential phases in the organisational adaptation process and documentation retains knowledge outcomes of the former phase to be used in the latter phase.

Influences on performance monitoring. In Case C documentation was found to enhance and impede performance monitoring. Documentation of the feedback had enhanced attribution of faults but impeded acquisition of feedback in the development discussions. Documentation had retained knowledge during the delay between feedback acquisition/exposure and attribution.

> In one group interview in Case C, the point was raised that faults in the home plant customer's production technology were not necessarily attributed until they occurred again. To detect recurrence of some fault, information about faults was recorded in the maintenance data system. Recording fault descriptions in the maintenance data system was mentioned as a condition that enhanced attributing faults. In one group interview in Case C, it was evaluated that in the development discussions workers were less motivated to publish performance gaps they had experienced if contents of the discussions were written down.

Influences on coping. In Case E, documentation was found to enhance active coping. Documentation had retained knowledge during the delay between scanning and coping.

> In Case E the vice-president responsible for quality and EHS evaluated that because a delay could occur between observation and utilisation of the information from scanning, the observer did not necessarily remember the information in the moment of utilisation, and this was why information should be stored in documents for two years, for example.

Influences on implementation. In Case B, documentation was found to enhance implementation. Documentation had retained knowledge during the delay between search and implementation.

> In a group interview in Case B, the point was raised implementing new features in the customer's production technology was not necessarily possible until the production process was in a state that enabled implementation. When the state of the production process delayed implementation, a blueprint of the new feature was recorded in the maintenance data system to wait for a favourable moment for implementation.

5.5.5 Remoteness

"Remoteness" refers here to the physical distance between actors. The two types of remoteness identified in the case organisations were 1) remoteness of organisations and 2) remoteness of an organisation's employees.

Remoteness of organisations

"Remoteness of organisations" refers here to the physical distance between the focal organisation and other organisations. Low remoteness of organisations was found to enhance search (B).

Influences on search. In Case B low remoteness of organisations was found to enhance idea acquisition through imitation in the search phase.

> In one group interview in Case B, the point was raised that the existing communication channels with the companies geographically near Case B should be utilised in imitation because it was possible to get quicker access to the topics of interest through these channels.

Remoteness of an organisation's employees

"Remoteness of an organisation's employees" refers here to the physical distance between the employees of an organisation. In Case D high remoteness of employees was found to **reduce "Organisational skilfulness in adaptation".** High remoteness had impeded carrying out search and implementation tasks interactively.

> In one group interview in Case D, long geographical distance between the employees of the organisation was mentioned as a condition that constrained possibilities to carry out search and implementation tasks interactively. Since a large number of employees were working in geographically distributed customer sites, gathering the individuals together would have caused high travel expenses.

5.5.6 Skilfulness

"Skilfulness" refers here to the level of an organisation's skills of adaptation. The concept implies that an organisation can carry out the phases of organisational adaptation process through multiple ways and that some ways produce better outcomes than others. The types of skilfulness identified were 1) organisational skilfulness in adaptation and 2) individual skilfulness in adaptation.

5.5.6.1 Organisational skilfulness in adaptation

"Organisational skilfulness in adaptation" refers here to the level of organisational skills in carrying out the organisational adaptation process. The indicators of organisational skilfulness in adaptation identified were 1) completeness of scanning, 2) formalisation of organisational adaptation behaviour, 3) interactiveness in an adaptation tasks, 3) specificity of performance monitoring, 4) resolution of performance monitoring, 5) managerial control in development activities, 6) abstraction level of blueprints for new features, 7) abstraction level of an organisation's self-descriptions, 8) size of target of comparison, 9) structuring and prioritising performance gaps, 10) rationalising change, 11) commercialising search products, 12) communicating search products appropriately, and 13) supporting change personally.

Completeness of scanning

"Completeness of scanning" refers here to the extent to which an organisation's portfolio of scanning behaviours covers all the relevant stakeholder environments. In cases A, B, C, and D, incompleteness of scanning was found to **impede organisational adaptation**. In cases A, B, and D the influence of incompleteness of scanning on organisational adaptation was demonstrated by that the case organisations recognised incompleteness as a performance gap.

> In Case A, a technician interviewed recognised scanning new technologies as a development target. The manager of Case A said that the organisation did not have routines for scanning new technologies, although it should. In one group interview in Case B, it came out that the organisation did not have routines for scanning changes in legislation, which was recognised as a development target. In one group interview in Case C, it came out that the case organisation did not have routines for scanning new technologies in the supplier environment. It was evaluated that the case organisation should have routines for acquiring information about new technologies available in the supplier environment to be able to introduce new technology based innovations to customers. In one group interview in Case D, it came out that the organisation did not have routines for scanning the competitor environment. Scanning the external stakeholder environment in general was recognised as a development target.

Formalisation of organisational adaptation behaviour

According to Evan and Black (1967) and Aiken and Hage (1971) "formalisation" refers to the extent to which explicit rules, regulations, policies, and procedures govern organisational activities. Following this definition, "formalisation of organisational adaptation behaviour" refers here to the extent to which explicit rules, regulations, policies, and procedures govern organisational adaptation behaviour. Formalisation was found to enhance organisational innovation (E) and implementation (E), but impede scanning (E).

Influences on organisational innovation. In Case E formalisation of carrying out development activities was found to enhance organisational innovation.

> In Case E, the vice-president responsible for quality and EHS matters evaluated that carrying out development activity as a formal project increased activity performance.

Influences on scanning. In Case E, a lack of formalisation in scanning model organisations was found to enhance scanning.

> In Case E, the vice-president responsible for product development evaluated that it was more effective to scan model organisations informally than through formal procedures.

Influences on implementation. In Case E, a lack of formalisation in implementation was found to impede implementation.

> In Case E, the researcher had participated in an activity which tried to detect conditions that had impeded implementation of new features developed in product development activities. One of the conditions detected was that there were no formal procedures for implementation.

Interactiveness in adaptation task

"Interactiveness in adaptation task" refers here to the extent to which carrying out an adaptation task involves interactive communication. Interactiveness was found to enhance performance monitoring (B, D), search (B, D), and change (D, E).

Influences on performance monitoring. In Case D interactiveness was found to enhance acquisition of experience feedback and in Case B attribution of experience feedback.

> In one group interview in Case D, discussion with customers was evaluated a better way of getting useful experience feedback than surveying because surveys were generic and did not necessarily reflect the demands of a specific customer. In one group interview in Case B, it was evaluated that interactive attribution

with the home plant customer revealed causes of gaps in customer satisfaction more effectively than the current non-interactive practice.

Influences on search. In Case B, interactiveness was found to enhance idea acquisition through creation, and in Case D interactiveness was found to enhance the evaluation of ideas.

In one group interview in Case B, it was evaluated that an interactive creation situation offered stimulating and informative environment for creation. In one group interview in Case D, it was evaluated that interactive creation enhanced achieving consensus about qualities of a new feature and understanding it.

Influences on change. In cases D and E intercativeness in implementation was found to enhance change.

In one group interview in Case D and in interview of the executive vice-president in Case E, beliefs were expressed that interactive implementation enhanced change. Through interactive implementation changers could get a better understanding of a new feature than through one-way communication.

Preceding conditions for interactiveness in adaptation tasks. Two-way on-line communication as a form of interactiveness in adaptation task expected that participants had shared time for the task. A lack of shared time was found to impede arranging interactive occasions for adaptation tasks (A, D).

In one group interview of workers in Case A, it was evaluated that the lack of shared time prohibited creating suggestions collectively. In one group interview in Case D, the point was raised that in delivery activities, experience feedback was not systematically collected from the participating employees or diffused in the case organisation because a lack of time made it difficult to arrange meetings for doing this. A lack of shared time was also mentioned as a condition that impeded carrying out implementation interactively through meetings. In the interviews in cases A and D it came out that work mobility had constrained shared time for adaptation tasks.

Specificity of performance monitoring

"Specificity of performance monitoring" refers here to the extent to which performance indicators used by an organisation are specific for an organisation or organisation-environment relationship. High specificity was found to impede scanning (B) and low specificity was found to impede performance monitoring (C, D).

Influences on scanning. In Case B, a high specificity of operational feedback had impeded scanning through benchmarking.

The manager of Case B said that one problem in the benchmarking between Case B and the peer organisations of the case company had been differences in the contents of the economic performance indicators used by the organisations. The

> organisations used the same measures for measuring different things. This, according to the manager, had impeded explaining performance differences between Case B and its peer organisations.

Influences on performance monitoring. In cases C and D, low specificity of stakeholder feedback had impeded performance monitoring.

> The parent business division of Case C had used a standard survey tool for measuring customer satisfaction (5.2.1.2.1). The tool originated in an external supplier company and was also used by other customer companies of the supplier. The manager of Case C criticised the survey because it was general and it did not necessarily reflect the demands of any real customers. Case D used a customer satisfaction survey unique to the case organisation (5.2.1.2.1). The case organisation used the same survey tool for all its customers. In one group interview in Case D, the point was raised that the same survey questions were not suitable for all customers.

In the above incident in Case B, the organisations that participated in benchmarking used operational measures reflecting high specificity of performance monitoring in that the contents of the similarly named measures were organisation specific. The high specificity made it difficult to explain differences in the organisations' performances. This, in turn, made it difficult for Case B to detect organisational features it could imitate from peer organisations. Cases C and D had used customer satisfaction measures that reflected low specificity of performance monitoring for the organisation-environment relationship. Case C had used measures other organisations had used in different customer environments than Case C. The measures Case D had used were specific for Case D, but they had been used in different customer environments. Logically, use of the same standard indicator in different stakeholder environments reflects an assumption that organisational features expressed by the indicator have adaptive value in all the environments where measurements are carried out. To the extent to which this assumption is incorrect, the indicator is unable to indicate fit between organisations and their environments. On the other hand, as the incident from Case B indicated, use of the same standard indicators by a group of organisations can enhance the detection of models for imitation because the standard indicators enable comparisons between organisations.

Resolution of performance monitoring

"Resolution of performance monitoring" refers here to the hierarchy level having a specific performance indicator within the hierarchical entity whose performance is monitored by the indicator. The lower the hierarchy level, the higher the resolution. In Case C, low resolution of performance monitoring had **impeded performance monitoring** by interfering with attribution of operational feedback.

> Case C consisted of four sub-organisations located in four different plants of the home plant customer. In one group interview it came out that the case

organisation had had problems in attributing gaps in the organisation's economic performance because it was not measured at the sub-organisation level.

Managerial control in development activities

"Managerial control in development activities" refers here to the extent to which development activities carried out by an organisation are controlled by management. A lack of managerial control in development activities was found to impede change (C) and organisational innovation in general (C).

Influences on change. In Case C, a lack of managerial control in development activities had impeded change.

> In one group interview in Case C, it was evaluated that the case organisation had not adopted new features whose search was triggered by performance gaps indicated by the customer satisfaction survey because no one had committed to monitor and control adoption.

Influences on organisational innovation. In Case C, a lack of managerial control in development activities had impeded organisational innovation.

> In the interviews in Case C, it came out that the case organisation had had serious problems managing development activities. Some of the activities had not succeeded although provided with sufficient resources and motivated externally by the home plant customer and the management of the case organisation. A lack of sufficient managerial control in activities was recognised as one explanation of why activities did not succeed.

Abstraction level of blueprints for new features

"Abstraction level of blueprints for new features" refers here to the abstraction level at which blueprints of new features are introduced to changers. A high abstraction level of a blueprint for new feature was found to **impede** (B, C) and **enhance change** (D). In cases B and C high abstraction level of a blueprint for new feature had impeded adoption of a new feature searched at the case company level. In Case D, an abstraction level that was high enough was found to enhance adoption of a new feature.

> In one group interview in Case B and in interview of the manager of Case C, it was evaluated that the case company **vision** had been presented at such a high abstraction level that it was difficult to adopt. In Case B, it was evaluated that measuring the case organisation's conformity to published values of the case company through a **survey** failed because respondents did not understand the questions because of their high level of abstraction. The measurement tool was developed by the case company management. The manager of Case D said that it was important to describe a new way of action at a high enough level of

> abstraction to get it implemented, because there was so much context-dependent variation in the actions of the changers.

Abstraction level of organisation's self-descriptions

"Abstraction level of organisation's self-descriptions" refers here to the abstraction level at which an organisation has described itself in its documents. A high-abstraction level of self-descriptions was found to **impede scanning** through benchmarking (B).

> The manager of Case B mentioned a high abstraction level of the organisation's documented self-descriptions as an impediment to benchmarking. A high abstraction level made it difficult to compare ways of action between organisations.

Size of target of comparison

"Size of target of comparison" refers here to the size of the target an organisation compares to the model organisation. A small size of target of comparison was found to **enhance scanning** through benchmarking (B).

> The manager of Case B recognised sizing an organisational target to be bechmarked small enough as a condition that enhanced benchmarking.

Structuring and prioritising performance gaps

"Structuring and proritising performance gaps" refers here to that when performance monitoring simultaneously indicates several performance gaps, they are structured and prioritised. Structuring and prioritising performance gaps was found to **enhance search** (B).

> In one group interview in Case B, structuring a portfolio of performance gaps recognised in self-evaluation and prioritising gaps were evaluated to enhance search.

Rationalising change

"Rationalising change" refers here to that change resulting from adoption of a new feature is rationalised to changers during implementation. Rationalising change was found to **enhance change** (A, B, C, D).

> In one group interview of workers in Case A, one worker said that he had not adopted a new work method used in the case organisation because he did not

understand why things should be done in the suggested new way. He criticised that no one had rationalised the change to him. In one group interview in Case B, it was evaluated that some employees had not adopted the development discussion practice because they did not know why such discussions were carried out. In interviews in Case C it came out that the case organisation was starting a new practice where the results of the customer satisfaction survey were processed in meetings between management and workers. In one group interview the belief was expressed that workers will adopt the new practise if they were rationalised the practise by that reacting to survey results produces common benefit for whole organisation. In one group interview in Case D, the belief was expressed that adoption of a new way of action could be motivated by rationalising change. You must be able to tell why something is done and what it influences.

Commercialising search product

"Commercialising search product" refers here to putting a blueprint of a new feature into a commercial form. Commercialising search product was found to **enhance change** (E).

In Case E, the researcher had observed that the case company had had problems implementing the outcomes of product development activities. Case E carried out a separate attribution activity to discover the causes behind the problem and the researcher participated in the activity. One reason discovered why implementation of product development outcomes had not produced change was that the outcomes had not been commercialised.

Communicating search product appropriately

"Communicating search product appropriately" refers here to that the search product is communicated to changers intensively and continuously. Communicating search product appropriately was found to **enhance change** (C, D).

In a group interview of workers in the sub-organisation of Case C, it was evaluated that it was necessary to communicate search product intensively and continuously every day to get changes to happen in the case organisation. In one group interview it was evaluated that implementing search products whose production was triggered by performance gaps indicated by the results of the customer satisfaction survey would have required more continuous "drumming" and directing attention to new things. The manager responsible for quality matters in the parent profit centre of Case D evaluated that new ways of action had to be "drummed" intensively and for a long time in order for change to happen.

Supporting change personally

"Supporting change personally" refers here to that changer gets personal support for change. Supporting change personally was found to **enhance change** (D).

> The manager responsible for quality matters in the parent profit centre of Case D evaluated that to change a way of action the changer should get sufficient personal guidance, support, and feedback about the new way of action.

5.5.6.2 Individual skilfulness in adaptation

"Individual skilfulness in adaptation" refers here to the extent to which employees who contribute to organisational adaptation possess skills for organisational adaptation. The identified skills contributing to organisational adaptation were 1) skills of leadership, 2) skills of combining knowledge, and 3) skills of conceptualising search product.

Skilfulness in leadership

"Leadership" refers to a process in which leader and followers interact in a way that enables the leader to influence the actions of the followers in a non-coercive way, towards the achievement of certain aims or objectives (Rollinson and Broadfield, 2002). Following this definition, skills of leadership refer here to the extent to which a leader possesses the skills of carrying out a process in which leader and followers interact in a way that enables the leader to influence the actions of the followers in a non-coercive way, towards the achievement of certain aims or objectives. Skills of leadership were found to **enhance organisational innovation** (E).

> In Case E, the vice-president responsible for quality and EHS said that in Case E, the problem was making busy individuals give a portion of their time capacity to some development activity. You could not order individuals to work for an activity because most individuals were able to decide by themselves how they used their own time capacity. Instead, you had to be able to motivate individuals to use their time capacity to a development activity. The vice-president responsible for product development evaluated that leadership abilities had influence on innovativeness in an organisation and that the case company had much to improve in leadership abilities.

Skilfulness in combining knowledge

"Skilfulness in combining knowledge" refers here to the extent to which an individual has skills of combining knowledge from different domains. Skills of combining knowledge of change domain and knowledge of new technologies were found to **enhance search** (A).

The manager of Case A evaluated that developers had to possess skills for combining domain knowledge and knowledge of new technologies.

Skilfulness in conceptualising search product

"Skilfulness in conceptualising search product" refers here to the extent to which an employee has skills of conceptualising the outcomes of creation. Skills of conceptualising search product were found to **enhance search** (D). The skills were found to enhance acquisition of ideas through creation in the **search phase** (D).

In one group interview in Case D, conceptualising was mentioned as a specific individual skill that contributed to outcomes of ideation sessions. The ability to find the essential information in a large amount of data was evaluated to be crucial for success in conceptualising.

5.5.7 Diversity

"Diversity" refers to the extent to which objects of a group of objects differ. The types of diversity identified were 1) environmental diversity and 2) organisational diversity.

5.5.7.1 Environmental diversity

"Environmental diversity" refers here to the extent to which the environments of a group of organisations differ. A high level of environmental diversity was found to **impede change** in the organisational adaptation that took place in the level of organisation family (B, C). In cases B and C environmental diversity in the organisation families of the case organisations had impeded the adoption of blueprints of the new features implemented to the families. Environmental diversity had impeded the adoption of case company vision (B) and goals for plant availability (C) and it was predicted to impede adoption of the service concept (B).

Vision. The case company management had created a vision for the company. The manager of Case B evaluated that adoption of the vision was difficult due to its incompatibility with the market situation in Case B and other organisations of the same business division. The vision was based on strong growth ambitions, but such a growth was not possible for Case B because of a lack of market required for the growth. On the basis of the researcher's prior knowledge, market environment of the parent business division of Case B differed from that of Case C in that there was a growth market for the parent business division of Case C.

Goals for plant availability. The case company management had set goal levels for availability of the plants operated and/or maintained by the case company. The manager of Case C stated that considering local conditions related to the home plant customer's production process, the suggested goal level was not applicable in Case C. The manager said that the goal level was applicable to the organisations of the parent business division of Case B but not to Case C. The explanation given for this was that the production technology environments of

Case C and organisations of the parent business division of Case B were different.

Service concept. The manager of Case B expressed suspicions of a service concept (5.2.2.1.3) that was under development at the case company level during the research interviews. He said that the ways of action in the customer interfaces were so different between the organisations of the parent business division of Case B that it was difficult to see how the concept could be applied in all the organisations of the division.

5.5.7.2 Organisational diversity

"Organisational diversity" refers here to the extent to which organisations within a group differ. The measures for organisational diversity identified were "Organisational analogy", "Methodological disparity", and "Morphological disparity".

Organisational analogy

"Organisational analogy" refers here to the extent to which organisations carry out the same functions. Organisational analogy was found to **enhance change** (A, B, E). In cases A, B, and E organisational analogy between the case organisation and other organisations had enhanced the adoption of features from other organisations.

In Case E it came out that both one potential customer company and the case company had the function "communication of strategy to organisations", and this organisational analogy made it possible for the case company to adopt the idea of a communication tool from the potential customer organisation to the case company (5.2.1.4.1). Both the case company and McDonald's had the function "transferring business concepts to field organisations", and this analogy enabled the adoption of the idea of an internal university to take care of the transfer (5.2.2.1.1). A painting company and Case A had the function "painting", and this organisational analogy enabled adoption of painting shop features from a painting company to Case A (5.2.2.1.1). Both Case B and one of its sister organisations in the same business division had the function "cleaning", and this organisational analogy enabled the adoption of cleaning practices from the sister organisation to Case B (5.2.1.4.1).

Functional disparity

"Functional disparity" refers here the extent to which ways of carrying out analogous functions in organisations differ. A high functional disparity was found to impede **change** (B) and low functional disparity was found to enhance **change** (B). In Case B, a high functional disparity was found to impede adoption of features from other organisations and low functional disparity was found to enhance it.

> In one group interview in Case B, it was evaluated that among the organisations of the parent business division of Case B, differences in certain production-related areas of action decreased potential utility from benchmarking between the organisations. The organisations carried out analogous functions so differently that they could not adopt practices from each other. Similarity of the production technologies operated by the organisations was evaluated to increase the potential for sharing good practices between the organisations in the domain of production technology.

Morphological disparity

"Morphological disparity" refers here to the extent to which organisations are different shapes in terms of size or problems faced by the organisations. Low morphological disparity was found to **enhance change** (B). In Case B, low morphological disparity in terms of size and problems of organisations was found to enhance the adoption of features from other organisations.

> In one group interview in Case B, it was evaluated that benchmarking will succeed if a model organisation is of the same size and has the same kinds of problems as the target organisation.

5.5.8 Centralisation

"Centralisation" refers here to division of labour in the search phase between the organisational hierarchy level which is expected to adopt the new feature and level responsible for carrying out the search for the new feature. In one extreme, the expected adopter does not participate in the search at all while in the other an extreme search is carried out by the adopter. A high level of centralisation was found to impede change (C). De-centralisation was found to enhace search (C) and change (B, C). De-centralisation was also found to increase "Knowledgeability" in the search phase (C, E).

Influences on search. In Case C, a low level of centralisation was found to enhance search.

> The chapter 5.2.1.3 on "Institutionalisation of innovation" indicated that in Case C the home plant customer expected the case organisation to develop continuously. The manager of Case C said that the sub-organisation of Case C interviewed had got very positive experience feedback from the home plant customer on its ability to develop. In a group interview in the sub-organisation, the point was raised that both the management of Case C and the home plant customer had empowered the sub-organisation for development. It was evaluated that because of a low level of external managerial control, the organisation acted like a private entrepreneur. It had been able to develop things in the direction it had wanted because the home plant customer had given such possibilities to the organisation.

Influences on change. In Case C, a high level of centralisation was found to impede adoption of search products. In Case B, de-centralisation of search was found to enhance adoption of search products. In Case C de-centralisation was found to improve the usefulness of the search product to the adopting organisation. The identified mechanism of de-centralisation was that the adopting organisation was allowed to modify the search product to fit the local context.

> The manager of Case C said that the case organisation recently had started a new practice where also workers participated in attributing performance gaps indicated by the results of the customer satisfaction measurements and the ideation of new features by which these performance gaps could be avoided in the future. Earlier when search had been carried out by the management alone the workers had not adopted the new features suggested by the management. The manager of Case C believed that workers' participation in the search phase will enhance adoption. In one group interview in Case B, the modifiability of a search product from an organisation family-level search was mentioned as a condition that enhanced the adoption of a product. In one group interview in Case C, modifiability of the case company bonus system to the local context was mentioned as a condition that improved the usefulness of the system to the organisation.

Influences on "Knowledgeability". In cases C and E, de-centralisation of search was found to enhance search through "Knowledgeability". In cases C and E, a high level of centralisation was suggested to impede search through "Knowledgeability".

> **De-centralisation**.The manager of Case C rationalised the participation of workers in the search for features by which the performance gaps indicated by the results of the measurement could be avoided in the future by that the workers had the best knowledge of the field. In Case E, the manager responsible for sales in Division Z said that managers from the field organisations participated in search for division level standards for long-term delivery contracts, because they had experience-based knowledge about contracts.
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> **A high level of centralistion**. The manager of Case C said that the case company management had not contributed much to the development of the case organisation. The explanation given for the low contribution was that the company management did not have sufficient knowledge of the local conditions of Case C to develop features compatible with the case organisation. The manager mentioned the current long-term delivery contract with the home plant customer as an example of a feature of low quality that the management of the parent business of Case C had developed. He said that the pricing of the initial contract was based on knowledge that one of the four sub-organisations of Case C had 16 employees, although in reality it had 20. As a result, the contract was underpriced. Emergency duty practice agreed upon in the contract was based on the assumption that employees located at any of the four plants were able to carry out maintenance in the three other plants. However, in reality this was not possible because production technologies at the four plants were so different that the employees of one plant did not have the expertise maintain the other plants. In Case E, the vice-president responsible for marketing evaluated that because

the case company management was not familiar with the ways of action in the field organisations, the new features the management had searched for the field organisations were of low quality.

The evidence above demonstrates that positive influences of de-centralisation on search occur because de-centralisation brings knowledge about change domain to search. A potential adopter of the search product had knowledge about the context for which a new feature was searched and the utilisation of this knowledge in the search increased the new feature's fit to the context of adoption. Another explanation was that when the adopters participated in the search, they formed a positive attitude to the search product to be adopted.

Formation of positive attitude to search product. In Case E, the vice-president responsible for the HR function said he had observed that sometimes when employees from the field organisations participated in search for case company-level features they changed their attitude toward the feature from negative to positive during the search.

5.5.9 Incongruity of demands

"Incongruity of demands" refers here to the extent to which the demands of stakeholders that will be affected by an innovation conflict with each other. In Case C, incongruity of demands between the employee environment and the customer environment was found to **impede change**.

In a group interview in the sub-organisation of Case C, it came out that the home plant customer expected the sub-organisation to create maintenance instructions for the new machines that the customer acquires. The informants expressed resistance to adoption of this way of action because they did not have time to create instructions during normal working hours and they did not want to work overtime.

In one group interview in Case C, it was stated that the home plant customer expected the case organisation to recognise potential investment targets in the customer's production technology. In a group interview in the sub-organisation of Case C, it was evaluated that recognising potential investment targets in the home plant customer's production technology was not necessarily wise because investment activities increased the sub-organisation's work load.

The chapter 5.3.3 on "Balance of adaptations" showed that an organisation may produce unbalanced adaptations which increase the fit in one stakeholder environment but decrease the fit in another. The evidence above from Case C indicates that a new feature may face resistance in a stakeholder environment where it is predicted to decrease fit. The features "making maintenance instructions to customer" and "recognising investment targets in customer's production technology" were resisted because they would have decreased the fit in the employee environment by increasing work load. On the other hand, the adoption of features would have increased the fit in the customer environment.

5.5.10 Instability

"Instability" refers here to instability experienced by an organisation because of actual or predicted changes in the organisation, upper levels of the organisational hierarchy, or stakeholder environment. The types of manifestations of instability identified were 1) transtitional state, 2) personnel turnover, and 3) termination of retaining structure. In addition, the evidence indicates that a lack of changes in the domain can result in a state called "fixation".

Transitional state

"Transitional state" refers here to a state where an actor has an expectation that change will take place in the near future and a belief that the actor may be influenced by the change. Expectations of change are due to ongoing development activities in an organisation or at upper levels of the organisational hierarchy, or they are anchored in known time triggers. Transitional states were found to impede scanning (B), active coping (D), retention (A), search (B, D), change (A), and organisational innovation in general (D, E). Transitional states were also found to have influence on "Organisational climate" (B, C) and "Organisational mood" (D).

Influences on scanning. In Case B, a transitional state was found to impede scanning.

> The manager of Case B said that ongoing organisation-level developments in the case organisation were why development discussions had not been arranged in the organisation in 2001.

Influences on coping. In Case D, a transitional state was found to impede active coping.

> In one group interview in Case D, the point was raised that the case organisation had certain development targets for the current year, but there were so many open questions in the ongoing company-level developments that the case organisation could not proceed with its own development.

Influences on retention. In Case A, a transitional state was found to impede retention.

> In the interview of the group manager and supervising engineer in Case A, it came out that the management had started a regular practise of sharing information with workers, but the practise had stopped. One explanation given for stopping the practise was that there was no point to share information about the future with workers because of expectations of forthcoming case corporation-level changes. If you shared information about some prospects, the next week the case corporation CEO shot down everything and announced a new direction for the corporation.

Influences on search. A transitional state was found to impede search in Case B and evaluation of ideas in Case D.

> The manager of Case B said that the ongoing development of the partnership model between the case organisation and the home plant customer, and development of the action model with the maintenance supplier had weakened the possibility of planning individual level developments in the case organisation. The manager of Case D said that the evaluation of trainings suggested by employees was problematic because the case organisation's strategy could change so much in the near future that the knowledge acquired in the trainings would be useless.

Influences on change. In cases A and B, transitional state was found to impede change. Change expectations were related to retiring as a type of change anchored in time trigger.

> In one group interview of workers in Case A, a part-time retired worker who had not published any suggestions stated that he may not have time to start making suggestions any more because of his upcoming retirement. During the interview the informant said that he wished he was allowed to retire. In interviews in Case B, it came out that the case organisation had arranged occasions where the whole organisation could participate in the development of the organisation. These occasions had been used to detect performance gaps, search, and implement. In one group interview it came out that some employees had not been motivated to participate in these occasions. It was evaluated that these employees were not interested in affairs of the case organisation any more and that one reason for the lack of interest was their upcoming retirement.

Influences on organisational innovation. In cases D and E, a transitional state was found to impede organisational innovation.

> The manager of Case D said that the development activity for commercialising services had been driven to a hold state because the case company-level development caused uncertainty about which services the case organisation will have in the future. In Case E the executive vice-president said that after the recent structural change in the case corporation the development activity where so called "Concept" was under development in Case E had been driven to a hold state. The vice-president evaluated that after the recent structural change in the case corporation one challenge for the case company was avoiding interruption of development.

Influences on "Organisational climate". In cases B and C, a transitional state was found to have a negative influence on organisational climate if the organisation evaluated the expected change negatively.

> In group interviews in cases B and C a belief was expressed that if the organisational climate measurement was carried out at the same time as changes in the organisation, measurement results reflected how the organisation evaluated changes. If the changes were evaluated negatively, the measurement results could be distorted to indicate an organisational climate worse than the "real" aggregate climate during the measurement period.

Influences on "Organisational mood". In Case D, a transitional state was found to be detrimental to organisational mood.

> In one group interview in Case D, it was evaluated that the current unstable situation in the case corporation had lowered the mood in the case organisation.

The evidence above on influences of transitional states on organisational adaptation indicates that expectations of change can shift an actor to a developmental "wait state" where the actor lacks motivation to carry out organisational adaptation. As an organisation level phenomenon, the wait state occurs when expectations of changes resulting from organisational adaptation at some level of the organisational hierarchy reduce motivation for organisational adaptation at lower levels of the organisational hierarchy. One explanation for the phenomenon is that uncertainty of what features the upper level of the organisational hierarchy will have causes uncertainty of the evaluation criteria by which the compatibility of the case organisation's innovations should be evaluated. The findings in chapter 5.2.2.1.2 on "Evaluation" indicated that the case organisations had used "compatibility" as one evaluation criteria for new features. In the above incident from Case D about the influences of transitional state on organisational innovation, the case organisation drove the development activity for commercialising services to a hold state because the case company-level developments caused uncertainty about which services the case organisation will have in the future. Uncertainty of compatibility of services of Case D with the new case company-level features reduced motivation to carry out commercialisation.

Personnel turnover

"Personnel turnover" refers here to a change where an employee leaves his or her position in an organisation. Personnel turnover had impeded organisational innovation (B, E), scanning (D), performance monitoring (D), and search (B, D). Low personnel turnover had enhanced performance monitoring (E). Influential personnel turnover had taken place in the case organisations, customer organisations, and neutral organisations.

Influences on organisational innovation. In cases B and E, personnel turnover had impeded organisational innovation.

> In one group interview in Case B, it came out that the case organisation had developed a new measurement system. The development was delayed when the employee responsible for the development activity moved to another organisation in the case company. In Case E the vice-president responsible for the HR function said that development of the internal university for the case company was delayed when the manager of the development project moved to a new job in the case corporation.

Influences on scanning. In Case D, personnel turnover had impeded scanning.

> In one group interview in Case D, it came out that the case organisation had participated in the scanning activity where best practices in the domain X were

collected from the plants of the case corporation. When the manager of the scanning activity moved to another company in the case corporation, the activity stopped and did not start again.

Influences on performance monitoring. In Case E, low personnel turnover had enhanced performance monitoring. In Case D personnel turnover in a customer organisation had impeded attribution.

In Case E the vice-president responsible for quality and EHS said that personnel turnover had been low in the task organisation that had carried out annual self-evaluations against EFQM-model (5.2.1.2.2). According to the vice-president, low personnel turnover had eased utilisation of experiences when improving the self-evaluation procedure. Retaining experiences between the previous and the next evaluation was important because improvements to the evaluation procedure were made right before the task, not right after the task. Experiences were not institutionalised but instead were retained by task participants only. In one group interview in Case D, the point was raised that personnel turnover in the home plant customer organisation had made it difficult to attribute positive changes in the results of the customer satisfaction measurement to any specific new feature of the case organisation. Changes in the measurement results could occur because evaluations of the customer's new employees differed from those of the former employees.

Influences on search. Personnel turnover had impeded search in general in Case B and evaluation of ideas in Case D.

In one group interview in Case B, it came out that the case organisation had tried to acquire knowledge for one development activity from the peer organisations in the case company without success. The informants explained that **personnel turnover** in the peer organisations made it impossible to contact the people with the knowledge the case organisation tried to acquire for search. In one group interview in Case D, the point was raised that because the case corporation was constantly under development, it was difficult to identify an organisation where send change initiatives for evaluation in the domain of production technology. It was possible you had just discussed an initiative with someone, soon that **person moved to another organisation,** and your initiative drowned.

Termination of retaining structure

"Termination of retaining structure" refers here to a change which destroys structure that has retained a specific organisational feature. Termination of retaining structure had **impeded scanning** (B, D).

In interviews in Case B it came out that earlier the case organisation had participated in the peer organisation network meetings called "maintenance days" for sharing experiences and model knowledge, but the meetings were not arranged any more. On the basis of the researcher's prior knowledge, the

> maintenance days practise had been maintained by an internal supplier organisation that was physically located on the same work premises as Case E. After the supplier organisation was stopped, the maintenance days stopped. The researcher was employed by the mentioned supplier organisation before the organisation was stopped. In one group interview in Case D, it came out that the case organisation had participated in regular meetings of the international industry specific peer organisation network, but meetings were not arranged last year because participants from one company could not get financing for participation. In the meetings of the network, Case D had got information on experiences other companies had had with technologies and technology suppliers.

Fixation

"Fixation" refers here to a state where an actor is not willing to give up an object that relates to actor self. Fixation was found to impede scanning (C), search (D), and change (A, B, C, D).

Influences on scanning. In Case C, fixation had impeded scanning. Fixation to a specific supplier environment had reduced motivation to scan alternative suppliers.

> In one group interview in Case C, one supervisor said that the organisation's fixation to existing supplier environment had reduced motivation to scan alternative suppliers. Buying from familiar sources was evaluated as easier than searching for alternative suppliers and buying from them.

Influences on search. In Case D, fixation had impeded search. The customer's fixation to the case organisation's employees competent in search had constrained employees' participation in search.

> In group interviews in Case D, the point was raised that customers were fixed to certain persons in the case organisation in that they always ordered the same employees for deliveries. The case organisation had got reclamation from one customer after having changed employee in the service delivery activity. According to the informants, the most wanted employees were the case organisation's most active and competent persons also in development activities. Their high work load resulting from the customer's fixation constrained their participation in development activities.

Influences on change. In cases A, B, C, and D fixation was found to impede change. In Case B fixation was found to impede change in general. In cases A and C, fixation to current ways of action was found to impede changing the ways of action. In Case C fixation to specific customer environment and in Case B fixation to specific employee environment were found to impede moving to new customer and employee environments.

> In one group interview of workers in Case A, one young worker claimed that if you suggested a new way of action to old workers, they resisted and rationalised resistance by saying that the current way of action had been practiced for 15 years. The informant expressed a belief that old workers had got into a rut. In one group interview in Case B, getting into rut was raised as a condition that prohibited change in the case organisation. In one group interview in Case D, it was evaluated that some ways of action did not change because they had become habit over the years.
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> The manager of the Case C evaluated that starting a practise for using human resources between four plants of the home plant customer had failed, because sub-organisations wanted to stay in their own plants. According to the manager, when the organisation started to deliver services to external customers, employees feared a lot moving to a new environment. In one group interview in Case B, it came out that the organisation had arranged possibilities for job rotation between shifts, but no one wanted to move to a new social environment although their jobs would have remained the same.

Preceding conditions for fixation. In the above evidence on fixation to ways of action in cases A, B, and C, fixation had resulted from lack of changes in the domain of ways of action. Correspondingly, fixation to environment in cases B and D may have resulted from lack of changes in the environments faced by employees. That fixation to environment as a phenomenon was not observed in cases A and D may indicate that a long period of activity in the same environment can raise the threshold of moving to the new environment. In cases B and C the customer environment and the technological environment of employees historically had constrained to the home plant to large extent while in cases A and D, high work mobility had caused environmental variability.

5.5.11 Efficacy beliefs

"Efficacy beliefs" refers here to beliefs about an organisation's abilities to carry out a task. The two types of efficacy beliefs identified in the case organisations were 1) organisational self-efficacy and 2) organisational else-efficacy.

Organisational self-efficacy

According to Bandura (1986), "self-efficacy" refers to an individual's beliefs in his or her ability to act in a certain way. Following this definition, "organisational self-efficacy" refers here to an organisation's beliefs in its ability to carry out a task. In Case C, low organisational self-efficacy in organisational innovation was found to **impede organisational innovation**. Previous failures in development activities had weakened management's belief in the organisation's ability to carry out development activities and decreased the motivation to carry out activities.

> In one group interview in Case C it came out that the case organisation had had an idea that it could have specialised maintenance groups that work for all four plants of the home plant customer. Blueprints for this feature had been created

but the development activity did not proceed any further. One informant said that already in the beginning of the development activity it seemed that the participants did not believe that the activity will succeed. He explained that because so many development activities in the case organisation had fallen down before they had even started properly, the organisation had lost its belief in development. Another informant stated that the current working environment had made it difficult to carry out development activities and because of the experienced inability to carry out activities you had lost hope. The informants also evaluated that workers were not motivated to participate in the development activities because of prior experiences that activities had not produced results.

Organisational else-efficacy

"Organisational else-efficacy" refers here to an organisation's beliefs about another organisation's ability to carry out a task. Low else-efficacy in Case E was found to **increase "Centralisation"** in the case company. The organisational hierarchy level where the contents of the trainings for the case company organisations were defined had been heightened due to belief that the organisations were not able to take care of their trainings.

In Case E the vice-president responsible for the HR function said that one rationale for establishing the company-level personnel training programme had been the experience that the organisations of the case company had not been able to spend their own training budgets. The informant evaluated that in the service business a lack of sufficient training would lead to destruction. Through the company-level personnel training programme the case company management had defined the domains of knowledge to be developed in the case company organisations and controlled participation in the programme.

5.5.12 Organisational culture

"Organisational culture" refers to a pattern of basic assumptions – invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration – that has worked well enough to be considered valuable and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems (Schein, 1992). The identified manifestations of organisational culture that contributed to organisational adaptation were 1) valuation of adaptation behaviour and 2) conflicting cultural beliefs.

Valuation of adaptation behaviour

"Valuation of adaptation behaviour" refers to the extent to which certain adaptation behaviour is valued in an organisation. Low valuation was found to **impede search** (B, D). In Case B, low valuation of the initiative system was found to impede idea

acquisition through the initiative system. In Case D, low valuation of development tasks was found to reduce motivation to participate in development.

> In one group interview in Case B, it was evaluated that the initiative system was not valued any more as a channel for publishing development ideas. A lack of valuation was presented as one reason why the annual amount of published initiatives had decreased in the case organisation. The manager of Case D stated that the case organisation emphasised the importance of customer work and that this explained in part why employees were not motivated to participate in development activities. According to the manager, customer work was also preferred to development tasks in situations where it was possible to charge development tasks to customers or other external sources of funding. The manager believed that low valuation of development tasks had reduced employees' motivation to allocate available time slack to development tasks.

The evidence above indicates that low valuation of specific adaptation behaviour can reduce motivation to carry out the behaviour in question. The incident from Case D demonstrates that though an organisation has organisational slack for search, low valuation of search may inhibit it from allocating the slack to search.

Conflicting cultural beliefs

"Conflicting cultural beliefs" refers here to an organisation's deeply rooted, long-lived beliefs that rationalise current organisational features and conflict with beliefs that rationalise new organisational features. Conflicting cultural beliefs were found to **impede change** in all the cases. In Case D, conflicting cultural beliefs seemed to impede adoption of practises for performance monitoring and in Case E practises for scanning. In cases A, B, and C, conflicting cultural beliefs seemed to impede adoption of practises for search. Case B did not succeed in the adoption of a practise where workers participate in development of the organisation. Case C did not succeeded in the adoption of a suggestion system. Cases A did not succeeded in getting the older workers to adopt a suggestion system.

> **Adoption of a practise for performance monitoring**. In one group interview in Case D, one constraint mentioned for acquiring customer feedback was that asking for feedback was easily forgotten because in history the case organisation had learned to act in an environment where it had no real customers. In his interview the case company CEO stated that when the case company was established in 1992, one big mental change for the personnel was the emergence of customers. The case company was established to take care of the operation and maintenance activities of the plants of the case corporation and those of customers external to the case corporation. Thus, plant owners became actual or potential customers of the case company.
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> **Adoption of practises for scanning**. In Case E the vice-president responsible for quality and EHS matters evaluated that scanning had not worked as expected in Case E. The vice-president responsible for marketing evaluated that the case

organisation had not succeeded in the adoption of practises for scanning external environment because the information about external environment had not been thought to possess any value for Case E. According to the informant, actions of the case organisation were not controlled by the world external to the organisation but by the internal world. In one discussion in Case E, the purchase manager of the case company recalled how earlier in the company's history an external training supplier used the case corporation as an example of a company without any substantive interaction with customers or suppliers. On the basis of the researcher's prior knowledge, the case corporation had had a dominating market position in one of its main product areas in its home country earlier in its history, but that was not the case anymore.

Adoption of practise for making workers participate in development activities. Case B had had problems in adopting a new practise where workers participated in development of the organisation. The manager of Case B said that the case organisation had tried a way of action where a worker representative participated in the development of new personnel arrangements through which the organisation was to adapt to a decrease in demand for the home plant products. This selective participation had caused experiences of inequality among other workers and led to social conflicts in the organisation. The manager evaluated that the case organisation was not ready for this kind of participative development and that this state of affair impeded development of the case organisation.The manager explained that earlier in history level of centralisation in development tasks that related to personnel matters was very high. Only a few persons carried out development and then announced the results to the rest of the organisation.

Adoption of the suggestion system. In the interviews in Case A it came out that younger workers had published development ideas through the suggestion system, but the older workers had not adopted the system. The manager of Case A evaluated that one reason why the older workers had not adopted the suggestion system was that earlier in history they had not been encouraged to think of ideas or to be innovative. According to the manager, the younger workers did not have this burden of the past. In one group interview in Case C, the reasons for the current passiveness of the workers in publishing development ideas through the suggestion system, was discussed. The informants evaluated the passiveness was due to the workers' mindset that they did only what the management ordered and nothing more. This mindset was believed to originate in Case C's former parent company.

In one group interview of workers in Case A a belief was expressed that older workers had not adopted the suggestion system because they did not want to write down ideas. The manager of Case A stated that earlier in history the workers had not been encouraged to write down ideas. In one group interview of workers in Case A it was stated that writing down development ideas was an ex-role task for workers. In one group interview in Case C, it was evaluated that the adoption of the suggestion system had failed because writing down development ideas was a difficult task for workers. It was evaluated that workers had not learned to write down development ideas.

The above incidents from cases D and E demonstrate that the case organisations had operated earlier in an external environment where they had more power over the environment than they did now. The cultural beliefs of the distribution of power resisted adoption of the practises for acquiring information about the external environment because the practises reflected the beliefs of different power distribution. In cases A, B, and C, the cultural beliefs of the division of labour between the management and the workers resisted the adoption of practises that were based on different beliefs about the division of labour.

The evidence from cases A, B, and C demonstrates that the organisations had a role structure where the role of worker did not include development of the organisation, while the role of management included it. That the role of worker did not include development also was demonstrated by that organisations used initiative and suggestion systems to compensate worker's contributions to development. In other words, contributions were not expected in exchange for salary. At the time when the interviews were conducted, it seemed that the role structure carried by Case C had lost its adaptive value. In Case C the home plant customer expected the case organisation to develop continuously and the management of the case organisation expected workers to contribute to development. An organisational feature that has lost its adaptive value but is retained in an organisation can be called a "**relic**". Another example of a relic was found in Case D.

> In one group interview in Case D, it came out that some members of the case organisation had retained an old habit of delivering more than the customer expected. This was acceptable earlier when the case organisation delivered services only to customers in the case corporation, but was not acceptable any more when services were also delivered to external customers under pressure for profitability.

The role structure as a relic in Case C was rationalised by cultural beliefs. That Case C had not succeeded in getting rid of the relic suggests that relics that are anchored in an organisation's cultural beliefs may be difficult to remove. Cultural beliefs that rationalise relics impede change when change expects the adoption of new organisational features that are rationalised by beliefs other than relics.

The observation that an organistion may carry relics in addition to innovations and adaptations demonstrates that organisational features can have three phases of life (Figure 9). A new feature that an organisation has produced is an innovation. Innovation becomes an adaptation after it has proven to possess adaptive value. Adaptation becomes relic when it, after having lost its adaptive value, remains in organisation.

Figure 9: Phases of life of organisational feature

Of course, it is possible that an innovation never becomes an adaptation and that an adaptation never becomes a relic. However, it can be assumed that for the following reasons it is quite probable that organisations carry relics. First, despite its efforts an organisation may not succeed in eliminating relics. This was demonstrated by the above incident where Case C had not succeeded in getting rid of the role structure that was a relic. Second, an organisation may be unable to measure the adaptive value of its features due to difficulties in getting useful feedback from the stakeholder environment (5.5.3). Without feedback it may be difficult to rationalise the elimination of features. It is also possible, in theory, that an organisation has not received information about changes that initially destroyed the adaptive value of a feature. Third, it can be difficult to measure the contributions of specific organisational feature on organisation's performance because of causal ambiguity. In theory, causal ambiguity can protect relics and terminate adaptations. As a condition present in performance monitoring causal ambiguity was suggested by the evidence from cases B and D.

> In one group interview in Case D, it was evaluated that it was impossible to recognise that some specific change in an organisation had lead to some specific change in customer satisfaction measurement results because the results were influenced by several factors. In one group interview in Case B, the point was raised that getting valid data on the utility of some initiative implemented in the home plant customer's production technology would have required measuring performance changes for at least a year.

Fourth, it can be expected that an organisation cannot know for sure the environmental conditions of the next competitive situation and because of that, it is uncertain which organisational features will contribute positively to an organisation's selection value in the competitive situation. It can be speculated that for certainty an organisation may retain features which have proven to possess selection value in the past.

5.5.13 Organisational climate

"Organisational climate" refers to a characteristic ethos or atmosphere within an organisation at a given point in time which is reflected in the way its members perceive, experience, and react to the organisational context (Rollinson and Broadfield, 2002). In Case E, organisational climate resulting from streamlining was found to **impede organisational innovation**.

> In Case E the executive vice-president stated that the current mental state in the case corporation was "profit by streamlining" and that this did not create a supportive climate for innovation in the case company.

<u>Preceding conditions for organisational climate</u>

The incident above from Case E suggests that organisational adaptation itself may have influences on organisational adaptation climate that are detrimental to organisational

adaptability. “Streamlining” involved innovations by which the case company adapted to the new profitability goal from the owner environment (5.2.1.4.1).

5.5.14 Organisational mood

Forgas and George (2001) define “mood” as an individual’s low-intensity, diffuse, and relatively enduring affective state without a salient antecedent cause and therefore little cognitive content (e.g., feeling good or bad). As an organisational level phenomenon, “organisational mood” refers here to organisation’s low-intensity, diffuse, and relatively enduring affective state (e.g., feeling good or bad). The informants talked about a “depressed” or “low mood” when they characterised the organisation’s atmosphere. This evidence is not treated here as an indication of organisational climate because the term “depressed” refers to a dimension of “mood” (Thayer, 2000). Low organisational mood was found to impede active coping (D) and search (B, D).

Influences on coping. In Case D, a low organisational mood was found to be detrimental to motivation to cope actively with institutionalised innovation.

> In one group interview in Case D, it was evaluated that the home plant customer’s “contracted” expectations for continuous development did not motivate triggering development any more because the atmosphere was not favourable to development. The general feeling in the organisation was described as “little waiting and little depressed.”

Influences on search. In cases B and D low organisational mood was found to be detrimental to motivation to carry out idea acquisition through creation, and in Case D to search.

> In interviews in Case B it was evaluated that the current atmosphere in the organisation was detrimental to motivation to generate ideas and initiatives. The current atmosphere was described as “depressed to some extent.” A belief was expressed that making the case organisation create initiatives again requires recovering the atmosphere in the organisation. In one group interview in Case D, it was evaluated that the current general feeling in the organisation was detrimental to motivation to develop. It was evaluated that the current mood in the case organisation was depressed and that this explained in part the recent decrease in the cumulative amount of created initiatives.

<u>Predecing conditions for organisational mood</u>

The current moods in the case organisations were attributed to a large extent to the factors originating in the organisations’ external stakeholder environments. Both Case B and D had been targets of negative stakeholder feedback that, according to the informants, had lowered the mood in the organisations. In Case D also the state of affair that the home plant was not in production was mentioned as a condition that had worsened the mood in the case organisation.

Negative stakeholder feedback. In the interviews and in the documentation it came out that Case B had got bad feedback from the local city which acted as a customer for the home plant products. From Case B's point of view the city was the home plant customer's customer but also the inhabitant environment for the case organisation. The bad feedback was because the home plant customer had not adapted to the city's new demands. The conflict had become public through the local media. In one annual report document from Case B it was evaluated that the bad feedback from the local media had weakened the well-being of the personnel. According to the document, the "attacks" by the city and the low profile chosen by the home plant customer together had led to a situation where the personnel had felt "marked" without a possibility to defend themselves. In one group interview it came out that the employees had felt that blames against the organisation had been blames against themselves. It was evaluated that the bad feedback from the environment had shaped attitudes in the organisation. The feedback had involved evaluations that the case organisation was not capable of carrying out things, and the organisation had started to believe that it was true. This had created an atmosphere where the organisation had lost its energy to cope actively with the feedback. In one group interview the recovery of the atmosphere in the case organisation was raised as the biggest developmental challenge for the organisation.

In interviews in Case D it came out that Case D and other organisations located in the home plant site had got bad feedback from local inhabitants because the plant that was not in production. Informants expressed a belief that the bad feedback from local inhabitants had worsened the organisational atmosphere.

The home plant was not in production. In one group interview in Case D, the state of affair that the home plant was not in production was mentioned as a condition that explained in part the current atmosphere in the case organisation. Also a belief was expressed that the depressed atmosphere in the home plant customer organisation had diffused to Case D. It was believed that the depressed atmosphere in the home plant customer organisation was because the plant was not in production.

The evidence above demonstrates that conditional contexts may occur where the negative stakeholder feedback impairs organisational adaptability. Negative feedback can worsen organisational mood which, in turn, can impair organisational adaptability through its effects on motivation to search. Detrimental effects of negative stakeholder feedback on organisational mood can occur in conditions where the organisation cannot cope actively with the feedback or the organisation feels that the feedback is unjustified. The incident from Case D about influences of mood on coping indicates that the organisational mood may override motivational influences of demands from the stakeholder environment.

5.5.15 Expectations

"Expectations" refers here to the extent to which organisational adaptation behaviour is a target of explicit expectations. In terms of permanence it was possible to distinguish between 1) permanent expectations and 2) temporary expectations.

5.5.15.1 Permanent expectations

Permanent expectations are in force until further notice. They were embedded in 1) permanent roles for organisational adaptation and 2) permanent prohibiting rules for organisational adaptation.

Permanent roles for organisational adaptation

"Permanent roles for adaptation" refers here to the extent to which organisational adaptation behaviour is included in the permanent roles of employees or organisations. A lack of permanent roles for adaptation was found to impede scanning (E) and search (B).

Influences on scanning. In Case E, a lack of permanent roles for scanning was found to impede scanning.

> In case E, the vice-president responsible for quality and EHS matters evaluated that one reason why customer information had not accumulated properly in the case company's data systems was because there were no roles which expected acquisition and recording of customer information.

Influences on search. In Case B, a lack of permanent roles for search between the case organisation, customer organisation, and supplier organisation was found to impede idea acquisition.

> In one group interview in Case B, it was evaluated that there was developmental role ambiguity between the case organisation, the home plant customer, and the maintenance supplier internal to the case company. The ambiguity concerned who was responsible for developing different domains relevant to the production of the home plant. It was evaluated that developmental role ambiguity had impeded the creation of new meaningful ideas in Case B.

Permanent rules prohibiting organisational adaptation

"Permanent rules prohibiting organisational adaptation" refers here to permanent rules that prohibit specific organisational adaptation behaviours. The prohibiting rules identified were found to impede scanning (E), active coping (C), and implementation (B).

Influences on scanning. In Case E was a rule that had impeded scanning through benchmarking.

> In Case E the researcher observed that the case company management had prohibited external benchmarking in the case company.

Influences on coping. In Case C was a rule that had impeded active coping with performance gaps. Case C and the home plant customer had a shared rule that defined the revision cycle for the contents of the long-term delivery contract between the parties.

> In one group interview in Case C, it came out that triggering development activities to improve the long-term delivery contract with the home plant customer had not been possible right after having detected performance gaps in the contract because the parties had agreed revision cycle of five years for the contract.

Influences on implementation. In Case B was a rule that had impeded implementation.

> The documentation in Case B evidenced that implementation phase in one development activity had been delayed because legislation instructed that if the amount of personnel was decreased by the employer, a certain fixed time period had to be negotiated between the employer and employees before the new feature could be implemented.

According to the above evidence, organisational adaptation behaviour was conditioned by external, internal, and shared rules. External rules had been adopted from legislator. Shared rules had been agreed upon by an organisation and its stakeholder environment. The type of influence of a rule depended on whether it expected an organisation to carry out some adaptation behaviour or to restrain itself from carrying out a behaviour.

5.5.15.2 Temporary expectations

Temporary expectations were specific for a carrying out time of a task. The types of carriers identified for temporary expectations were 1) temporary roles for organisational adaptation, 2) time pressure for adaptation behaviour, and 3) social pressure for adaptation behaviour.

<u>Temporary roles for organisational adaptation</u>

"Temporary roles for organisational adaptation" refers here to roles that are specific for a carrying out time of an adaptation task. In Case E, temporary roles for organisational adaptation were found to **enhance search** by enhancing idea acquisition through creation.

> In Case E the vice-president responsible for the HR function said that possessing the role of facilitator in ideation sessions had promoted his own creation in sessions.

Time pressure for adaptation behaviour

"Time pressure for adaptation behaviour" refers here to a form of expectation where contributions to organisational adaptation are expected to occur until a given moment of time. In cases B and E time pressure was found to enhance search by increasing motivation to acquire ideas through creation.

> In one group interview in Case B, it was evaluated that time pressure motivated creation but could decrease the quality of creation outcomes. In Case E the case company CEO and the vice-president responsible for the HR function evaluated that external time pressure of a suitable level enhanced their creation.

Influences of time pressure were found to vary between individuals depending on their individual characteristics and the perceived importance of keeping the schedule.

> **Individual characteristics**. In one group interview in Case B, it was evaluated that there were individual differences in response to time pressure so that under tough time pressure some employees could not create anything.
>
> **Perceived importance of keeping the schedule**. In Case E the vice-president responsible for quality and EHS evaluated that the perceived importance of keeping the schedule was an intermediating condition for the effects of time pressure. He evaluated that ability to keep a development activity's schedule could be weakened by a perception that keeping the schedule was not critical in development activities.

Social pressure for adaptation behaviour

"Social pressure for adaptation behaviour" refers here to that an actor pressures another actor to carry out expected adaptation behaviour. Social pressure was found to enhance search (D) and change (B, C ,E).

Influences on search. In Case D social pressure from a supplier was found to increase motivation to search.

> In one group interview in Case D, the point was raised that the case organisation had gained positive experiences in using external consultants as facilitators in development. Expectations from a supplier that facilitated development were mentioned as a condition that had motivated development in the case organisation.

Influences on change. In cases B, C, and E, social pressure from management was found to increase motivation to change.

> The manager of Case B evaluated that one critical condition for the success in adoption of the quality standard in Case B had been social pressure from the case company management. When Case C implemented a new working hours recording system, four employees refused to use the system at first. The

employees adopted the new way of action only after the manager of Case C had personally given them a written notice about neglecting their duties. In Case E the executive vice-president said that when the case company was restructured so that plant maintenance was separated from plant operation, two plants adopted the new structure only after the case company CEO had coerced them to do so.

5.5.16 Receptivity

"Receptivity" refers here to receptivity of an actor's social environment to 1) ideas or 2) adaptation behaviour suggested by an actor.

Receptivity to ideas

"Receptivity to ideas" refers here to actor's social environment's receptivity to ideas. Low receptivity to ideas was found to impede active coping (C) and search (A, B, C, D, E). A low receptivity to ideas was manifested by inability to get feedback on an idea (C,E), laboriousness of getting an idea accepted (E), negative feedback on an idea (A, B, C, D), unethical response to an idea (C), labouriousness of getting help for development of an accepted idea (C), and inability to get an accepted idea implemented (A). Receptivity to ideas was a character of an organisation and the customer environment.

Influences on coping. In Case C, a customer's low receptivity to ideas had impede active coping with a customer's new demands.

> **Unethical response to an idea**. In one group interview in Case C, the informants stated that the case organisation's motivation to cope actively with the home plant customer's new demands decreased after the case organisation had created and given the requested idea description to the customer and the customer had given the description to a competitor and ordered development work from it.

Influences on search. In all the case organisations low receptivity to ideas had reduced motivation to publish ideas.

> **Inability to get feedback on an idea**. In a group interview of workers in the sub-organisation of Case C the point was raised that the management of the case organisation had not reacted to ideas published through the suggestion system as promised in the system description. One informant said that in a campaign for suggestions he had created a suggestion and given it to the management, but he had not got any feedback on it. According to informants, the experience of not getting feedback on suggestions had heightened the threshold of making suggestions. In one discussion in Case E one employee from the personal ledger department stated that she did not want to create any more initiatives because she had not got any feedback on an initiative she had created.
>
> **Negative feedback on an idea**. In one group interview in Case B, one shift worker evaluated that workers in the case organisation did not produce initiatives

any more because too many initiatives had got negative feedback. The informant had discussed the topic with other workers. It was also evaluated that an employee may not be willing to publish initiatives if they are made public in the case organisation because he or she scares that other employees would laugh at the ideas expressed by the initiatives. In one group interview in Case C it was evaluated that you did not necessarily want to introduce more development ideas to the home plant customer if in the first shared meeting the customer had shouted at you and thrown you out from the office.

The manager of Case D stated that a reduction of motivation to create ideas that had resulted from negative feedback on ideas was a serious impediment for organisational innovation in Case D. The manager evaluated that the intensity of publishing development ideas and taking them forward had faded in the case organisation. According to the manager, fading could have occurred because all the ideas suggested had been flattened. In one group interview in Case D it was evaluated that negative feedback on a suggested idea in ideation sessions reduced the suggestor's motivation to suggest more ideas. It was possible that in an ideation session you knew exactly that you will get negative feedback on your ideas from certain participants and this knowledge reduced your motivation to publish ideas in the session. The manager in Case D said that if he experienced low receptivity to his ideas in an ideation session he stopped creating and publishing ideas.

Labouriousness of getting an idea accepted. In Case E the vice-president responsible for marketing evaluated that an employee loses motivation to publish ideas after having learned that getting acceptance for an idea takes much time and energy.

Labouriousness of getting help for development of an accepted idea. In a group interview of workers in sub-organisation of Case C it was evaluated that it was really difficult to get help for development tasks from the case organisation and, if help was got,you had done so much work to get it that you had got bored with whole thing.

Inability to get an accepted idea implemented. In one group interview of workers in Case A one informant stated that earlier in history he had got bored with making initiatives after the experience that one of his initiatives was not implemented. In contrast, one young worker said that negative experiences of not getting a suggestion implemented had not affected his motivation to create and publish suggestions because suggestions were rewarded immediately after publishing whether they were implemented or not. In one group interview in Case D, the motivation to produce development initiatives for the customer was evaluated to decrease if initiatives were not implemented.

The evidence also shows that 1) low receptivity to ideas can reduce motivation to publish ideas through modelled responses (B), 2) the duration of motivational influences of receptivity to ideas can vary (D, E), and 3) individual differences may occur in how low receptivity affects motivation to publish ideas (D).

Low receptivity to ideas can reduce motivation to publish ideas through modelled responses. In Case B low receptivity to ideas was found to reduce motivation to publish ideas not only through experienced responses but also through modelled responses.

> In one group interview in Case B, it was evaluated that experiencing negative feedback on idea and the resulting negative motivational effects had an ability to diffuse in an organisation through modelling. Employees can learn from experiences of other employees how the case organisation reacts to published ideas and modelled responses can reduce an employee's motivation to publish ideas. The diffusion of negative effects was evaluated to depend on how employees communicated their experiences to other employees.

Duration of motivational influences of receptivity to ideas can vary. The evidence from cases D and E indicates that the duration of motivational influences of receptivity to ideas can vary from temporary to a more permanent loss of motivation. Loss of motivation to publish ideas can be constrained to an interaction situation where negative feedback on an idea was received, or it can transfer to new contexts.

> The manager in Case D said that if he experienced low receptivity to his ideas in an ideation session he stopped creating and publishing ideas, but the disappearance of the motivation to create and publish ideas was only temporary. In a discussion one manager in Case E stated that he had stopped producing initiatives after experiencing low receptivity to initiatives in the former organisation where he had worked.

Individual differences may occur in how low receptivity affects motivation to publish ideas.In Case D, individual differences were suggested to occur in how low receptivity to ideas influenced motivation to publish ideas.

> In one group interview in Case D, it was evaluated that individual differences existed in the effects of negative feedback on motivation to publish ideas. According to the informants, the case organisation had employed one creative person whose motivation to produce ideas seemed to be immune to negative feedback to ideas.

<u>Receptivity to adaptation behaviour</u>

"Receptivity to adaptation behaviour" refers here to an actor's social environment's receptivity to adaptation behaviours. Low receptivity to adaptation behaviour was found to **impede performance monitoring** (D). In Case D, a supplier's low receptivity to participating in attribution had impeded attribution of experience feedback.

> In one group interview in Case D it came out that the case organisation had tried to arrange a meeting to attribute a failed delivery activity. One reason why a meeting did not take place was that the sub-contractor of the activity had had a negative attitude toward carrying out attribution and this had reduced the case organisation's motivation to attribute.

5.5.17 Incentives

"Incentives" refers here the extent to which employees are offered incentives to motivate organisational adaptation behaviour. The types of carriers of incentives identified were 1) incentive systems, 2) shared vision, 3) incentives of adaptation task, 4) leadership, and 5) reciprocity.

Incentive systems

"Incentive systems" refers here to institutionalised standard practises to reward employees' contributions with rewards external to their basic salary. Incentive systems were found to enhance performance monitoring (C) and search (A, B, D).

Influences on performance monitoring. In Case C, an incentive system was found to enhance acquisition of operational feedback and experience feedback through an organisational climate survey.

> In one group interview in Case C, it came out that the case organisation had used rewards to motivate responses to the organisational climate survey. The manager of Case C evaluated that rewards increased the motivation of employees to answer the survey.

Influences on search. In cases A, B, and D incentive systems were found to enhance idea acquisition.

> The data indicated that cases A and C used suggestion systems and cases B, D, and E used initiative systems to reward idea acquisition. In one group interview of workers in Case A two young workers said that for them, rewards were one motive for creating suggestions. In another group interview, one young worker said that negative experiences of not getting suggestions implemented had not affected on his motivation to create and publish suggestions because suggestions were rewarded immediately after publishing whether they were implemented or not. In Case A, the statistics of created suggestions and their creators indicated that it was mostly the young workers who had created suggestions. Information about the ages of the employees was obtained from the personnel data system. In the interviews, comments of young and old workers about their motivation to create suggestions suggested that the rewards of the suggestion system only had influence on motivation of young workers to create and publish suggestions. In one group interview in Case B, it came out that the case organisation had arranged special campaigns with extra rewards to motivate the creation of initiatives. In the campaigns, all the initiatives had been rewarded with small tangible rewards. According to the informants, campaigns had temporarily increased the intensity of creating initiatives. In one group interview in Case D, it was evaluated that some employees had created initiatives in order to get a reward.

The evidence also suggested conditions that can have influence on an incentive system's ability to motivate idea acquisition. The influential conditions identified were 1) the probability of getting a reward (C, B), 2) economic value of the monetary reward (A, B, C), and 3) the inherent motives for rewarded behaviour (A, C, D).

Probability of getting reward. In Case B, the probability of getting a reward was found to have influence on motivation to acquire ideas.

> In one group interview in Case B, it came out that the campaigns where each initiative was rewarded with a small reward had increased the intensity of creating initiatives. It was evaluated that experiences of not getting rewarded for an initiative diffused in the case organisation and reduced the perceived probability of being rewarded.

The incident demonstrates that a high probability of getting even a small reward increased motivation to publish initiatives.

Economic value of monetary reward. In cases A, B, and C, the economic value of monetary reward from an idea acquisition task was found to have influence on motivation to acquire ideas.

> In interviews in cases A, B, and C it was evaluated that in the suggestion and initiative systems, the economic value of monetary rewards was too low to motivate creation. In group interviews of workers in Case A some informants evaluated that the economic value of monetary rewards from suggestions was too low in relation to the economic utility gained by the suggestions and that writing down ideas as suggestions was an ex-role task.

Inherent motives for rewarded behaviour. The evidence from cases A, C, and D shows that employees may have inherent motives for idea acquisition that override artificial motives created by incentive systems. Employees' inherent motives for development were also observable in the chapter 5.2.2.1.2 on "Evaluation".

> In one group interview of workers in Case A one informant who had created suggestions stated that he had not created suggestions to get rewards but to improve working conditions. In interviews in Case C it was evaluated that one reason why workers were not motivated to create suggestions was that they carried out developments to ease working, not to get rewards. In one group interview in Case D, it was evaluated that many times improvements to the production technologies of the case corporation were carried out to speed up working, not to get rewards.

<u>Shared vision</u>

"Shared vision" refers here to a shared explicit description of a visionary future state for a specific domain. Shared vision was found to enhance search (E) and to have a positive influence on "Organisational slack" (E).

Influences on search. In Case E, shared vision was found to enhance idea acquisition. Shared vision motivated the supplier environment to suggest ideas and to allow access to the leading edge technologies.

> **Increase in the volume of suggested ideas**. In 1997 in an activity led by the researcher, a visionary concept was created that described the operation and maintenance activities of a plant in 2005. The concept was based on intensive utilisation of new information technologies that were predicted to be available in the future. The researcher observed that the case corporation technology centre, in the role of the main human resource for the product development of the case company, experienced that the visionary concept created a sense of visibility, continuity, and safe. The emergence of the visionary concept in 1997 was presumably one condition in explaining why the economical volume of product development initiatives suggested by the technology centre was 100 percent bigger in 1998 than in 1997. An increase in the volume was observable in the statistics.
>
> **Access to the leading edge technologies**. In search of supplier partners for the development of the "mobile part" of the visionary concept, the concept was introduced in the research centre of a Finnish mobile phone manufacturer. The head of the centre stated that at a vision level the case company was ahead of his employer company. The case company agreed with the supplier about developmental co-operation where the case company could access mobile technology that was not yet available on the market.

Influences on "Organisational slack". In Case E shared vision had enhanced getting external funding for organisational innovation.

> In 1998, the case company established a large three-year development programme to develop the first elements of the visionary concept. To get external funding for the programme, the visionary concept was introduced to a public source of financing. The programme got an amount of public funding that exceeded all the previous achievements in the case corporation in acquiring public funding for development. One explanation for the positive response was that in the target country development of the concept created an arena for several high-technology suppliers to develop new products as sub-contractors for the programme.

The evidence above indicates that a shared vision can have positive motivational influences on the external stakeholder environment of an organisation. In the supplier environment, a vision can facilitate idea acquisition and open access to leading edge technologies not yet available on the market. In the public financier environment, a shared vision can improve an organisation's possibilities to get funding for the development work required to get from the current state to the visionary state.

Leadership

"Leadership" refers to a process in which a leader and followers interact in a way that enables the leader to influence the actions of the followers in a non-coercive way, towards the achievement of certain aims or objectives (Rollinson and Broadfield, 2002). Leadership was found to **enhance search** in general in case D and E and idea acquisition in Case D.

> In one group interview in Case D, one informant talked about a development activity where it had been his job to gather a group of employees from Case D for a meeting about the activity. According to the informant, gathering a group to a meeting had not been an easy task. The informant evaluated that employees were motivated to participate in the meeting because he had motivated them well. When in one group interview in Case D informants tried to explain the decrease in the amount of published initiatives after year 1999, they mentioned that the former manager of the parent profit centre of Case D had been more enthusiastic about the creation of initiatives than the current manager. In Case E the vice-president responsible for quality and EHS evaluated that one challenge to carrying out development activities successfully in Case E was that employees had to be persuaded to allocate their scarce time capacity to the activities.

Incentives of adaptation task

"Incentives of adaptation task" refers here to the extent to which an adaptation task involves characteristics that are motivating for a task participant. The types of motivating task characteristics identified were 1) the perceived attractiveness of a task and 2) the perceived pleasantness of a task. Task incentives was found to **enhance search** (A, B, D). In Case A, a high perceived attractiveness of search was found to increase motivation to search. In cases B, a high perceived attractiveness, and in Case D a high perceived pleasantness of a creation task, were found to increase motivation for idea acquisition through creation.

> In Case A an interviewed technician said that if he experienced a development task as interesting enough he arranged time for it and carried it out even outside working hours. In one group interview in Case B one informant talked about an initiative he had created concerning a specific domain. According to the informant, creation was motivated by personal interest in the domain and relevance of the domain for the case company. The manager of Case D mentioned a perceived high pleasantness of creation in a group situation as a condition that enhanced his creation.
>
> **Preceding conditions for pleasantness of the creation task**. In one group interview in Case D, a group composition supportive for creating and releasing an atmosphere of a creation session by telling jokes were mentioned as conditions that enhanced the pleasantness of creation in a group.

Reciprocity

"Reciprocity" refers here to getting useful contributions from others in exchange for useful contributions. Reciprocity was found to **enhance "Documentation"** (E). In Case E reciprocity was found to motivate documentation of scanning results.

> On the basis of the researcher's prior knowledge, the case company had used a customer data system to record scanning results about the customer environment. In Case E the vice-president responsible for quality and EHS evaluated that if an employee got useful information from others through the customer data system, he or she was more willing to record customer information into the system.

5.5.18 Defensiveness

"Defensiveness" refers here to the extent to which organisational adaptation behaviour is governed by a tendency to avoid behaviours whose outcomes are perceived as threatening to an individual or an organisation. The types of defensive behaviours identified were 1) face saving, 2) superiority complex, 3) importance reduction, 4) feedback gloss-over, and 5) problem denial.

Face saving

"Face saving" refers here to the avoidance of sharing self-information by which others can evaluate oneself negatively. Face saving was found to impede scanning (B, D) and active coping (A, C, E). Face saving was manifested by 1) unwillingness to use measurements indicating performance gaps (E), 2) unwillingness to share information about performance gaps (A, B, D), and 3) misattribution of performance gaps (C, E).

Influences on scanning. In cases B and D, face saving was found to impede the scanning of performance gaps of other organisations.

> **Unwillingness to share information about performance gaps.** In group interviews in cases B and D, the belief was expressed that organisations of the case company were not willing to share information about their own failures. The belief was supported by that the case company had not succeeded in starting use of a company-level data system through which information about the causes of unavailability of the plants was shared between plants. Unavailability was a type of performance gap in the plants. The project to design the data system was carried out in 1996 under the supervision of the researcher.

Influences on coping. In cases A, C, and E, face saving seemed to impede active coping with performance gaps.

> **Unwillingness to use measurements indicating performance gaps.** The documented results of the organisational climate measurements carried out in the parent business division of cases A and C indicated that between 1998 and 2000, the climate of the division worsened significantly. The results got worse in all the

measured dimensions and in all the measured occupational groups. In Case E the vice-president responsible for the HR function stated that in Case E it has always been known that carrying out traditional climate measurements was useless. One rationale given for this uselessness was that certain performance gaps indicated by the measurement results reflected only the natural disposition of the organisations measured (5.5.3). During this research, a new "better" measurement tool was under development in Case E. As a participant in a meeting where the tool was introduced, the researcher observed that the tool was not targeted to measure the state of personnel at all but to communicate the expectations of the company management to field organisations.

In Case E the researcher had observed that the vice-president responsible for product development had given up measuring the profitability of product development activities. A formerly used measuring tool was created by the former vice-president and the researcher. On the basis of prior measurement results, profitability of the product development process had been low. Now, the process had measures for inputs only but not for outputs. In his interview the current vice-president responsible for product development expressed a belief that performance measures were not able to guide the product development process. As a person previously responsible for measuring the profitability of the product development function, the researcher had prior knowledge that the previously used output measures were useful indicators in guiding development of the product development process as they indicated the business impact of each project.

Unwillingness to share information about performance gaps. The manager of Case A evaluated that organisational adaptation to customer environments was disturbed by the inability of workers to recognise and publish reclamations from customers.

Missattribution of performance gap. The manager of Case C expressed a belief that specific recurrent performance gaps indicated by the organisational climate measurement results could not be eliminated because employees had a natural disposition to experience such gaps (5.5.3). Performance gaps mentioned were that 1) information was not shared enough, 2) boss was "stupid", and 3) salaries were too low. The consequence of the management's belief was that the performance gaps did not trigger organisation adaptation in Case C. Misattribution of the performance gaps was suggested by that the research interviews revealed that all three performance gaps mentioned were real and could be attributed to what had happened in the case organisation. The interview of workers in the sub-organisation of Case C confirmed that the supervisors had not shared information to workers as expected and the salaries of workers had been cut due to pressure for profitability. Both of these conditions together with the extreme work load and the organisation's low ability to adapt to the demands of employees were probably sufficient conditions for negative judgments about bosses.

Another incident of misattribution was related to the causes of personnel turnover in Case E. In a discussion with the researcher, one employee who was leaving the

> case company attributed her departure partly to conditions in Case E. The employee said that when someone had asked her boss why the employee was leaving, the boss had attributed her departure to conditions external to the case organisation. The employee suspected that through this attribution her boss tried to save own face in the eyes of others.

In the evidence above, giving up measurements that indicated performance gaps was a way to avoid sharing information about individuals or organisations by which others can evaluate them negatively. The performance gaps disappeared as the measurement tools indicating the gaps disappeared. It was not possible to turn to the vice-president responsible for the HR function because of gaps in the organisational climate, if the climate was not measured. Correspondingly, it was not possible to blame the vice-president responsible for product development for gaps in the performance of product development if the performance was not measured. In the incidents about unwillingness to share information about performance gaps, the workers in Case A avoided blames from the management by withdrawing from sharing information about possible reclamations, and plant organisations avoided negative evaluations of others by withdrawing from sharing information about performance gaps in the plants. The misattribution of performance gaps in cases C and E made it possible for an actor to avoid negative evaluations of others as the misattribution removed the performance gap from an actor's area of responsibility.

Superiority complex

"Superiority complex" refers here to a self-esteem serving need to hold a belief about the superiority of one's own organisation compared to other organisations. Superiority complex was found to impede scanning (B, E) and search (C).

Influences on scanning. In cases B and E superiority complex was found to impede scanning.

> In interviews in Case B, it came out that the case organisation had participated in so called cross-audits where the peer organisations in the case company compared themselves to detect development potential. In one group interview in Case B it was evaluated that cross-audits had failed. The failure was explained by that the organisations had paid too much attention to defending their own practices and there had been a revenge mentality in recognising performance gaps. Revenge mentality meant that if Organisation A had recognised performance gaps in Organisation B, Organisation B avenged itself by recognising performance gaps in Organisation A. In Case E the manager responsible for sales in Division Z stated that the case company had never been willing to benchmark external companies because of the belief that things were so good in the case company that external companies could benefit from the case company but not vice versa. The researcher observed in Case E that external benchmarking was forbidden in the case company until 2001.

Influences on search. In Case C, superiority complex was found to impede the acquisition of ideas through imitation.

> In Case C it was evaluated that the believed superiority of an employee's own organisation compared to others could reduce motivation to imitate other organisations.

The evidence above suggests that superiority complex can lead to avoidance of comparative information which can question an organisation's own superiority beliefs. It also can lead to an unwillingness to share information about an organisation because sharing can threaten an organisation's own fictional superiority.

Importance reduction

"Importance reduction" refers here to reducing the perceived importance of performance gaps. In cases C and E importance reduction seemed to **impede active coping** with performance gaps.

> In the interviews in Case C it came out that there were several performance gaps in the organisation that had not triggered organisational adaptation. In one group interview the informants explained that living with performance gaps was possible by interpreting gaps so that they did not disturb too much, taking the right attitude to gaps, emphasising the importance of actual work compared to development, putting performance gap in the back of one's mind, and believing that there was not time for development anyway.

> As a participant of self-evaluation measurement (5.2.1.2.2) in Case E, the researcher observed that performance gaps recognised in self-evaluation triggered a set of development activities to which the case company management assigned responsible employees. When the activities were monitored later in the management team led by the CEO, it revealed that the activities had not proceeded as expected. Feedback was not given to the responsible employees, but the CEO stated that maybe the performance gaps recognised were not relevant any more, and after that the development activities were removed from the agenda and forgotten. According to the researcher's prior knowledge of the domains of the performance gaps, the relevance of the performance gaps had not changed. The researcher's immediate impression from the management team meeting was that the CEO reduced the importance of the performance gaps to avoid giving negative feedback to employees responsible for development activities.

The evidence from Case C above demonstrates that importance reduction may develop as a response to a perceived inability to cope actively with an experienced performance gap. If an organisation cannot cope actively with the performance gap it tries to reduce its importance to make it tolerable. The incident from Case E suggests that importance reduction also can be a response to an unwillingness to give negative personal feedback to employee(s) responsible for performance gap.

Feedback gloss-over

"Feedback gloss-over" refers here to the avoidance of giving justified negative social feedback to other individuals or organisations. In cases C, D, and E, feedback gloss-over seemed to **impede active coping** with performance gaps.

> In a group interview of workers in the sub-organisation of Case C it came out that the case organisation had recognised a performance gap in the behaviour of the home plant customer organisation. It was evaluated that the performance gap could not trigger organisational adaptation because the case organisation did not dare to give feedback to the customer. The manager responsible for quality matters in the parent profit centre of Case D evaluated that recognising quality deviations at an individual level did not work because employees did not dare to give feedback to their co-workers about quality deviations in co-workers' action. In one group interview in Case D it came out that the case organisation had tried to arrange a meeting to attribute one failed delivery activity, but did not succeed. One explanation given for why a meeting did not take place was that individuals were afraid of publishing performance gaps related to other individuals. The researcher participated in a development activity in Case E where a practice was developed to attribute selection feedback after an employee decided to leave the organisation. The researcher observed that the first attributed "leaving case" did not trigger organisational adaptation because no one dared to give feedback to the employee's boss whose behaviour, according to the leaver, was one reason for leaving.

In the incidents above, performance gaps did not trigger organisational adaptation because the observer of the performance gap did not dare to give feedback to the actor whose behaviour was the domain of the performance gap. The term "dare" in the evidence suggests that giving justified negative feedback would somehow contribute to an actor who gives feedback. According to the following evidence from Case E, an actor may withdraw from giving justified negative feedback because giving feedback can result in consequences unfavourable to the actor.

> In Case E, the researcher participated in a meeting where the above mentioned first "leaving case" was discussed in a group responsible for developing the practice for attributing selection feedback. One feature of the developed practice was that a person other than the leaver's boss interviewed the leaver to find out why he or she was leaving. In a meeting where the leaving case was discussed, extremely strong beliefs were expressed that giving feedback to the leaver's boss would ruin the personal relationship between the boss and the interviewer who communicated the feedback to the boss.

This incident indicates that the giver of the negative feedback may believe that the receiver of the feedback will evaluate the giver of the feedback negatively and that this evaluation would result in unfavourable change in the relationship between the giver and the receiver of the feedback. Therefore, an individual can defend himself against

negative evaluation of the receiver of the feedback by withdrawing from giving negative feedback.

The evidence presented earlier on importance reduction in Case E suggests that importance reduction may serve empathic gloss-over. By reducing publicly the importance of the performance gaps related to development activities, the case company CEO avoided giving negative feedback to individuals assigned to be responsible for development activities.

Problem denial

"Problem denial" refers here to denying the existence of a performance gap in oneself. In Case D problem denial was found to **impede active coping** with performance gap.

> The manager of Case D said that the management of the case organisation had recognised a performance gap in the actions of the case organisation's employees. A training sessions was arranged to reflect the situation. The training session failed and did not trigger organisational innovation because, according to the manager, the employees who participated in the training did not want to admit that performance gaps existed in their action.

5.5.19 Situational context favourability

"Situational context favourability" refers here to the extent to which an individual's situational condition environment favours contributing to organisational adaptation. Individual contributions to performance monitoring (C), search (A, B, C, D, E), and implementation (B, C) were found to be sensitive to situational condition environments. Situational context favourability was also found to have influence on "Skilfulness" (C).

Influences on performance monitoring. In Case C, a noiselessness of environment was found to enhance attribution. The type of work premises for publishing performance gaps was found to have influence on motivation to publish gaps.

> **Noiselessness of environment.** In a group intervew in Case C, it was evaluated that attributing equipment faults was enhanced when attribution was carried out in a noiseless place.
>
> **Type of work premises**. In one group interview in Case C, it was evaluated that the type of work premises had influence on willingness of workers to publish performance gaps they had detected. It was evaluated that workers were more willing to publish performance gaps in their actual working environment than in a meeting room.

Influences on search. Situational environments that were found to enhance idea acquisition through creation were driving a car (A, D, E), jogging (E), walking (D), being intoxicated (A, B, D), right before going to sleep (D, E), right after waking up (D,

E), and group situations (E). Interruptions of social environment were found to impede creation (A, B) and search in general (C).

Driving a car. Informants in cases A, D, and E mentioned that for them driving a car was a favourable space for creation. In Case E the vice-president responsible for marketing said that he may create many ideas when driving a car. In Case A, a technician interviewed said that he had created ideas when driving alone on a business trip. The manager of Case D said that driving a car was a favourable space for creation for him. The case company CEO said that he had created a vision about the case company structure when driving to work.

Jogging. In one discussion in Case E, the manager responsible for the IT in the case company evaluated that jogging was a favourable space for creation for her.

Walking. The manager of Case D mentioned walking as one favourable place for creation.

Being intoxicated. In group interviews in cases A, B, and D, being intoxicated was mentioned as a state that enhanced creation.

Right before going to sleep. In his interview the manager of Case D and in one discussion in Case E the vice-president responsible for product development mentioned “right before going to sleep” as a favourable space for creation.

Right after waking up. In his interview the manager of Case D and in one discussion in Case E the vice-president responsible for product development mentioned “right after waking up” as a favourable space for creation.

Group situation. In Case E the executive vice-president and the vice-president responsible for marketing evaluated that for them group situations were favourable spaces for creation. The executive vice-president stated that he gets energy for ideation from other participants in group situations. The vice-president responsible for marketing said that his creativity was a small flame to which other members of a group added fuel.

In one group interview in Case D, it was evaluated that positive effects of group situation on creation were achieved when in a meeting there was no person-to-person quarrelling, there were no foreman-sub-ordinate relationships between participants, and participants were familiar with each other. It was evaluated that if the start of an ideation meeting was good, it did not matter if both a foremen and subordinates participated in the same meeting. In Case E the vice-president responsible for the HR function evaluated that positive effects of a group situation on creation were achieved when participants had non-conflicting personal interests and the meeting had a good spirit that was supported by personal contributions of its participants.

Interruptions. In cases A, B and C, interruptions of a social environment were mentioned as a condition that impeded creation. In the interview of the group manager and the supervising engineer in Case A, the group manager said that the

increased interruption frequency resulting from the usage of the mobile phones had impeded his creation. In one group interview in Case B, it came out that in order to avoid interruptions during strategic planning activities the case organisation had carried out planning tasks outside the actual work premises. The informants stated that now the use of mobile phones had ruined this possibility to escape interruptions. That strategic planning activities involved idea acquisition was concluded from the state of affair that the observed strategic plan documents involved seed ideas. In one group interview in Case C, it was evaluated that developing something required uninterrupted periods and that if you were interrupted too many times by phone calls you lost your motivation for the development task at hand.

Influences on implementation. In cases B and C, the operational state of production process of plant was found to have influence on implementation. In Case B, implementation of specific new features in production technology of the home plant was possible only when the plant was not in operation. In Case C implementation of a specific new condition monitoring service required that the machine to be monitored was not in operation.

Operational state of production process. In a group interview in Case B the point was raised that implementation of specific new features in the plant was possible only during the summer when the plant was not in operation. In Case C the point was raised that training for one new condition monitoring service was possible only when the machine to be monitored was overhauled. In overhaul, you had a time window of eight hours for carrying out both the overhaul of the machine and the training for monitoring the condition of the machine. Implementation of the new service was not possible because the time window was too short to carry out both tasks.

Influences on "Skilfulness". In Case C, a high level of interruption in the working environment was found to impede interactiveness in performance monitoring and search. Interruptions had made it difficult to arrange shared time for employees for attribution tasks and the acquisition of ideas through creation.

In the interviews in Case C a working environment's high interruption frequency was mentioned as a condition that impeded arranging shared time for adaptation tasks. That a meeting was interrupted by occurrence of equipments faults that required immediate attention of some participants was recognised as a potential constraint for carrying out meetings for attributing performance gaps indicated by the results of customer satisfaction survey and for creating ideas of how to avoid gaps in the future.

The above evidence indicates that in some situational condition environments an individual can be more capable of contributing to organisational adaptation than in others. This, in turn, suggests that capability is not an exclusive feature of individual but a function of features of an individual and environment.

5.5.20 Individual characteristics

"Individual characteristics" refers here to individual characteristics having influence on an individual's contributions to organisational adaptation. In interviews in all the case organisations evaluations came out that in the case organisations there had existed individual differences in contributions of employees to organisational adaptation. According to the interviews, individual differences had existed in scanning (D), recording performance measurement results (C), participating in situations where performance gaps could be published (B), publishing performance gaps in group situations (B), coping actively (C), creation (C, D, E), conceptualising creation outcomes (D), publishing creation outcomes (A, B, D, E), change (A, B, C, D, E), and contributing to organisational innovation in general (A, C, D). The case organisations also expressed beliefs about individual characteristics that explained individual differences in contributions to organisational adaptation. Explanatory individual characteristics were related to scanning (E), search (A, B, C, D, E), and change (A, B, C, D, E).

Influences on scanning. In Case E came out individual characteristics that were evaluated to impede scanning.

> In Case E the vice-president responsible for marketing evaluated that being of the performer type was an individual characteristic that impeded scanning the future needs of customers. In Case E the vice-president responsible for quality and EHS matters mentioned laziness as an individual characteristic that impeded recording the results of scanning.

Influences on search. In all the case organisations individual characteristics came out that were evaluated to enhance or impede the creation or publishing ideas.

> **Creation**. Individual characteristics that were evaluated to enhance creation were activeness (A), open-mindedness (D), courage (C), enthusiasm (D), optimism (C), imagination (C), technology orientation (D), weak tolerance of existing performance gaps (C), will to do good (E), suitable temper (E), and idealism (E). A cumulative period of activity in the same environment was evaluated to impede creation (D)
>
> In Case E high age was found to impede idea acquisition through creation. The vice-president responsible for the HR function said that to get new ideas for revising the company bonus system the case company CEO wanted to try creation in a group with members less than 50 years old. The management evaluated that the results of development work were good. In one discussion in Case E, the purchase manager of the case company evaluated that the case company must get young employees to participate in creation to get new ideas
>
> **Publishing ideas**. In Case E, the manager responsible for sales in Division Z expressed a belief that introversion impeded publishing ideas. In one development session in Case B it was evaluated that extroverted employees were more willing to publish ideas than introverted employees. In an interview of the group manager and the supervising engineer in Case A, activeness was evaluated

to enhance publishing ideas as suggestions. In one group interview in Case D, activeness was mentioned as a condition that enhanced publishing ideas as initiatives.

Influences on change. Individual characteristics that were evaluated to enhance or impede change were raised in all the case organisations.

In one group interview in Case C courage and mind of developer were mentioned as individual characteristics that enhanced change. In all the case organisations, high age was evaluated to impede change. For example, in one group interview of workers in Case A it came out that old workers had indicated unwillingness to learn and start using IT tools. In one group interview in Case D it was evaluated that old employees were less willing to start using IT tools than younger workers.

5.6 SUMMARY

Chapter 5.5 answered to the research question "Which conditions enhance or impede organisational adaptation through innovations?" by identifying 20 categories of conditions that were found to enhance or impede organisational adaptation through innovations. This chapter summarises findings and draws conclusions of the identified conditions and their contributions to organisational adaptation.

Table 6 and Figure 10 summarise and visualise the findings of the conditions that were found to have influence on organisational adaptation. Table 6 introduces the conditions and their direct influences on the different phases of the organisational adaptation process. The leftmost column indicates the influencing condition and the row below the headline "Organisational adaptation process" indicates the phase of the adaptation process where the condition's influence occurred. The letters in the cells indicate the case organisations where the condition and its influence were detected. For the condition "Individual characteristics", the direction of influences are not presented in Table 6 because the evidence did not enable the creation of sub-categories of conditions to which the direction of influence could be attached. Figure 10 describes how the conditions influenced organisational adaptation indirectly through other conditions. In the figure the conditions are indicated by rectangles and their influences on other conditions and on the phases of the organisational adaptation process are indicated by arrows. The letters in the arrows indicate the case organisations where the influences were detected.

Table 6: Conditions that enhance or impede organisational adaptation (direct influences). The symbol "+" represents a condition found to be positively related to the phase. The symbol "-" indicates a negative relationship.

CONDITION (DIRECT INFLUENCES)	ORGANISATIONAL ADAPTATION PROCESS								
	Organisational adaptation	Organisational innovation	Scanning	Performance monitoring	Coping (active)	Search	Implementation	Change	Retention
Organisational slack									
Economic slack				D(+)			C(+)	D(+)	
Time slack		B,C,E(+)	A,B,E(+)	D,E(+)		A,C,D(+)	A,C,D(+)	C,E(+)	D(+)
Information technologies									
Use of IT tools			B,D,E(+)						
Adequacy of IT tools			E(+)	C(+)					
Knowledgeability									
Domain knowledge				A,B,C(+)		A,C(+)			
Knowledge of sources of resources						E(+)			
Knowledge of a new feature				D(+)				A,D(+)	
Blocking beliefs					C (-)				
Documentation				C(-/+)	E(+)		B(+)		
Remoteness									
Remoteness of organisations						B(-)			
Skilfulness									
Organisational skilfulness in adaptation									
Completeness of scanning	A-D(+)		A,B,C,D(+)						
Formalisation of organisational adaptation behaviour		E(+)	E(-)				E(+)		
Interactiveness in adaptation task				B,D(+)		B,D(+)		D,E(+)	
Specificity of performance monitoring			B(-)	C,D(+)					
Resolution of performance monitoring				C(+)					
Managerial control in development activities		C(+)						C(+)	
Abstraction level of blueprint for new feature								B,C(-), D(+)	
Abstraction level of organisation's self-descriptions			B(-)						
Size of domain of comparison			B(-)						
Structuring and prioritising performance gaps						B(+)			
Rationalising change								A,B,C,D(+)	
Commercialising search product								E(+)	
Communicating search product appropriately								C,D(+)	
Supporting change personally								D(+)	
Individual skilfulness in adaptation									
Skilfulness in leadership		E(+)							
Skilfulness in combining knowledge						A(+)			
Skilfulness in conceptualising search product						D(+)			

Table 6: Conditions that enhance or impede organisational adaptation (direct influences). The symbol "+" represents a condition found to be positively related to the phase. The symbol "-" indicates a negative relationship.

CONDITION (DIRECT INFLUENCES)	ORGANISATIONAL ADAPTATION PROCESS								
	Organisational adaptation	Organisational innovation	Scanning	Performance monitoring	Coping (active)	Search	Implementation	Change	Retention
Diversity									
Environmental diversity								B,C(-)	
Organisational diversity									
Organisational analogy								A,B,E(+)	
Functional disparity								B(-)	
Morphological disparity								B(-)	
Centralisation						C(-)		B,C(-)	
Incongruity of demands								C(-)	
Instability									
Transitional state		D,E(-)	B(-)		D(-)	B,D(-)		A(-)	A(-)
Personnel turnover		B,E(-)	D(-)	D,E(-)		B,D(-)			
Termination of retaining structure			B,D(-)						
Fixation			C(-)			D(-)		A-D(-)	
Efficacy beliefs									
Organisational self-efficacy		C(+)							
Organisational culture									
Valuation of adaptation behaviour						B,D(+)			
Conflicting cultural beliefs								A-E(-)	
Organisational climate		E(+)							
Organisational mood					D(+)	B,D(+)			
Expectations									
Permanent expectations									
Permanent roles for organisational adaptation			E(+)			B(+)			
Permanent rules prohibiting organisational adaptation			E(-)		C(-)		B(-)		
Temporary expectations									
Temporary roles for organisational adaptation						E(+)			
Time pressure for adaptation behaviour						B,E(+)			
Social pressure for adaptation behaviour						D(+)		B,C,E(+)	
Receptivity									
Receptivity to ideas					C(+)	A-E(+)			
Receptivity to adaptation behaviour				D(+)					
Incentives									
Incentive systems				C(+)		A,B,D(+)			
Shared vision						E(+)			
Leadership						D,E(+)			
Incentives of adaptation task						A,B,D(+)			

Table 6: Conditions that enhance or impede organisational adaptation (direct influences). The symbol "+" represents a condition found to be positively related to the phase. The symbol "-" indicates a negative relationship.

CONDITION (DIRECT INFLUENCES)	ORGANISATIONAL ADAPTATION PROCESS								
	Organisational adaptation	Organisational innovation	Scanning	Performance monitoring	Coping (active)	Search	Implementation	Change	Retention
Defensiveness									
Face saving			B,D(-)	A,C,E(-)					
Superiority complex			B,E(-)			C(-)			
Importance reduction					C,E(-)				
Feedback gloss-over					C,D,E(-)				
Problem denial					D(-)				
Situational context favourability				C(+)		A-E(+)	B,C(+)		
Individual characteristics			E			A-E		A-E	

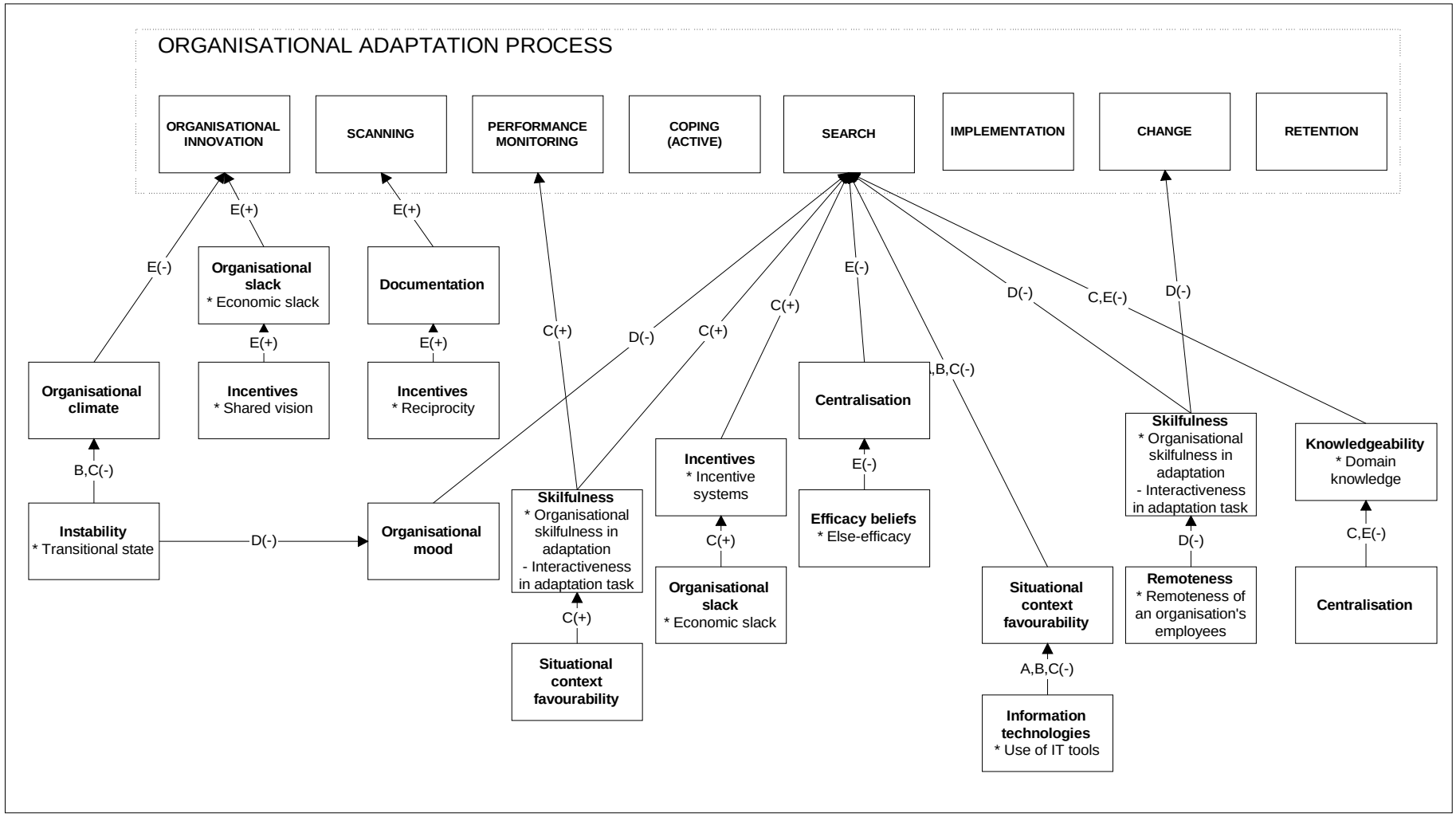

Figure 10: Conditions that enhance or impede organisational adaptation (indirect influences). The symbol "+" represents a condition found to be positively related to the phase. The symbol "-" indicates a negative relationship.

Conditions for organisational adaptation and phases of the organisational adaptation process

The findings suggest that a condition can have influence on several phases of the organisational adaptation process or influence of a condition can occur on in a single phase only (Table 6). Economic slack was found to have influence on the phases of performance monitoring, retention, and implementation while rationalising change was found to have influence on the change phase only.

The condition can have an optimum value or range of values for organisational adaptation. In Chapter 5.5.6 on "Skilfulness", both a too-high and too-low abstraction level of a blueprint for a new feature were found to impede change. Chapter 5.5.7 on "Diversity" showed that an optimum zone of functional disparity may occur for the adoption of features between organisations.

The same condition may have inverse effects in different phases of the organisational adaptation process. High specificity of performance monitoring was found to enhance performance monitoring but impede scanning (5.5.6).

The outcome of one phase may act as a condition for the next phase or its contributions may jump over the phase. The outcome of the former phase acted as a condition for the next phase in an incident where search was enhanced by structuring and prioritising performance gaps in the phase of performance monitoring (5.5.6). The outcome condition jumped over the implementation phase when a high abstraction level of a search product was found to impede change (5.5.6).

Conditions may be specific to the ways organisational adaptation process is carried out. A rule prohibited scanning organisations external to the case corporation through benchmarking (5.5.15), but scanning external organisations had been carried out in other ways (5.2.1.1) not prohibited by the rule.

The strength of a condition's contribution to a phase may vary depending on how the phase is carried out. Carrying out implementation by sending a blueprint of a new feature to the changers was less sensitive to availability of economic slack than implementation through interactive training (5.5.1) because sending a blueprint consumed less economic slack than interactive training.

A condition can occur in amplifying loop with organisational adaptability. Economic slack was found to enhance organisational adaptation and organisational adaptation was found to increase economic slack (5.5.1).

Environmental conditions of organisational adaptability

The conditions for organisational adaptation were located both in an organisation and its external stakeholder environment. The conditions identified that also had environmental dimensions were knowledgeability, instability, expectations, and receptivity. Organisational adaptation was impeded because the external stakeholder environment

gave insufficient or inaccurate information to the organisation for attributing the lack of fit between the organisation and the stakeholder environment (Chapter 5.5.3 on "Knowledgeability"). The acquisition of ideas from the external stakeholder environment was impeded because changes in the stakeholder environment had destroyed communication channels between the organisation and the stakeholder environment. The external stakeholder organisation's fixation to specific employees of the focal organisation impeded search in the organisation because the employees to whom the stakeholder had fixed were especially competent in search (Chapter 5.5.10 on "Instability"). Adaptation role ambiguity between the focal organisation and an external stakeholder organisation impeded search in the focal organisation. The external stakeholder environment produced rules that impeded active coping and implementation in the focal organisation (Chapter 5.5.15 on "Expectations"). The external stakeholder environment's low receptivity to the ideas of an organisation reduced the motivation of the organisation to cope actively with the demands of the stakeholder environment. The external stakeholder environment's unwillingness to participate in attribution may impede attribution in the focal organisation (Chapter 5.5.16 on "Receptivity").

The findings also indicated that organisational slack, organisational mood, and situational context favourability had preceding conditions in an organisation's external stakeholder environment. Organisational adaptation was enhanced because the stakeholder environment provided an organisation with economic resources that increased organisational slack (Chapter 5.5.1 on "Organisational slack"). The motivation to cope actively and search was reduced by the worsened organisational mood caused by the unjustified negative feedback from the stakeholder environment (Chapter 5.5.14 on "Organisational mood"). The stakeholder environment's way of action resulted in an unfavourable situational context for carrying out attribution and creation in an organisation (Chapter 5.5.19 on "Situational context favourability").

6 DISCUSSION

6.1 Theoretical contribution

The literature review in Chapter 2 indicated that there is no general theory for organisational adaptation. Instead, scientific knowledge about it has fragmented into several fields. The present study suggests a theoretical framework for organisational adaptation and adaptability. This chapter compares the the findings of the study with the existing literature and presents theoretical contributions of the study.

6.1.1 Organisational adaptation

Key concepts

The present study recognised two modes of organisational adaptation. In routinised organisational adaptation, an organisation retrieves and expresses features from its existing repertoire, while in regenerative organisational adaptation, an organisation adapts through innovations. March and Simon (1958) have recognised both modes, but have not named them. The concept of organisational adaptation assumes that features through which an organisation adapts can contribute to the fit between an organisation and its environment. The present study applied the concept of adaptation as a substantive from evolutionary biology (Mayr, 2003; Ridley, 2004) to describe organisational features which have adaptive value because they contribute positively to an organisation's fitness in its environment.

The study suggests that some of the adaptations occur in criteria by which stakeholders evaluate and select or reject organisations for resource allocations, while some adaptations operate in the background and contribute to the features included in the selection criteria. The study proposes an organisational feature to have selection value if it explains in part why a stakeholder has selected a specific organisation for resources allocations from a set of alternative organisations. The findings also indicate that in addition to innovation and adaptation, the organisational feature can have a third phase of life called relic. An adaptation becomes a relic when it, after having lost its adaptive value, remains in an organisation. According to the findings, an organisation may carry relics because 1) despite its efforts an organisation may not succeed in eliminating relics, 2) an organisation may be unable to measure the adaptive value of its features due to difficulties in getting useful feedback from the stakeholder environment, and 3) it can be difficult to measure contributions of a specific organisational feature on an organisation's performance due to causal ambiguity.

According to the findings, the definitions of organisational adaptation found in the literature are insufficient. In the definitions of Duncan and Weiss (1979), Fiol and Lyles (1985), Rollinson and Broadfield (2002), and Edmonson and Moingeon (2004), organisational adaptation is an organisation's response to changes external to the organisation. The findings of this study and March and Simon's (1958) definition of organisational adaptation propose that the organisation adapts in its internal environment as well as its external environment. None of the definitions of organisational adaptation found in the literature include the idea that organisational

adaptation may be motivated by institutionalisation of innovation in addition to changes in the internal or external environment. March and Simon (1958) recognised the phenomenon of innovation institutionalisation but they did not connect it explicitly to organisational adaptation. This study found that competitive pressure for differentiation and the stakeholder's expectations for continuous organisational innovation can result in the institutionalisation of innovation which also motivates organisational innovation in the absence of changes in an organisation's stakeholder environment. Fiol and Lyles (1985) and Rollinson and Broadfield's (2002) definitions of organisational adaptation hold that adaptation is carried out through incremental changes. The findings of this study do not indicate any rationale for distinguishing between organisational adaptation and other organisational changes in terms of size or radicalness of change. The organisations studied adapted both through smaller and larger changes and through more and less radical changes. This study suggests that the concept of regenerative organisational adaptation refers to carrying out organisational innovation as a response to detected demand or an opportunity to increase the fit between an organisation and its stakeholder environment. Fit is defined as how well organisation can, in a stakeholder's opinion, satisfy the demands of the stakeholder.

General characteristics of organisational adaptation process

The findings show that the organisational adaptation process includes organisational innovation as a sub-process. That organisational innovation is means for organisational adaptation is consistent with the views of March and Simon (1958), Wilson (1966), Thompson (1965), Evan and Black (1967), Zaltman, Duncan and Holbek (1973), Daft and Becker (1978), Stata (1989), and Eisenhardt and Tabrizi (1995).

The findings support the view that the organisational adaptation process is circular and iterative at the level of a single new feature (Chew, Bresnahan and Clark, 1990; Attewell, 1992; and Szulanski, 1994). In this study, organisational adaptation was found to take place through primary or secondary innovations. A primary innovation is the first version of new feature produced in response to change triggers. Secondary innovations emerge as the new feature is improved iteratively based on experiences of the feature's contributions to an organisation's performance. The finding that an organisation may produce primary and secondary innovations can explain the occurrence of radical and incremental changes. Incremental changes can result from secondary innovations that follow radical change resulting from primary innovation. The findings also support the adaptive learning approach pioneered by March and Simon (1958) and Cyert and March (1992). Cyert and March (1992) argue that business organisation is an adaptive institution because it learns from its own experience. According to them, organisational learning takes place by encoding inferences from history into routines that guide organisational behaviour. Routines adapt to experience incrementally in response to feedback about outcomes (Cyert and March, 1992). In this study, the phenomenon where an organisation learns the adaptive value of its features from experience is called adaptive organisational learning. This mode of organisational learning was found to be a means for adaptation.

The findings are consistent with the literature (Cangelosi and Dill, 1965; Duncan and Weiss, 1979; March, 1981; Freeman, 1984; Scott, 1998) in that organisational adaptation can occur at multiple levels in the organisational hierarchy. This study also indicates that the features whose blueprints are adopted from the upper levels of the organisational hierarchy can be frame structures by nature in that they involve both features specific to the adopting organisation and features shared between the adopting organisation and the organisations at the same hierarchy level in the organisational hierarchy. Frame structures probably occurred because of the environmental diversity between the adopting organisations. Frame structure made it possible for the adopting organisation to modify the structure to fit the local environment.

The literature reviewed does not explain why organisational adaptation is carried out at multiple levels in the organisational hiearchy. It is possible that multi-level adaptation occurs because organisational units of adaptation reflect organisational units of selection. Organisational unit of selection refers here to an organisational entity that a stakeholder considers as a target of resource allocations. In the case corporation, the corporate level delivered outcomes to the owner environment and it was probably this hierarchy level that represented the organisational unit of selection for the investors. In the case company, marketing and sales of long-term delivery contracts for maintenance services in the new customer environments were carried out at the business division and the regional organisation levels. This was probably because the management assumed that business division and/or regional organisation were the organisational units of selection in the customer's mind. And, if the management believed the organisational unit of selection to be the business division, it expected all the organisations in the division to have shared features that could be introduced to the customers as features of the division.

The finding that organisational adaptation is mutual between an organisation and its environment supports the view of Aldrich (1979), Levy and Merry (1986), Veen and Korver (in Drenth, Thierry, and de Woff, 1998), and Pfeffer and Salancik (2003). As a new finding, this study identified modes of inward-directed adaptation and outward-directed adaptation. In inward-directed adaptation, an organisation changes itself to fit the environment; in outward-directed adaptation, an organisation changes the environment to fit the organisation.

This study supports Cyert and March's argument (1992) that a business organisation may be a target of conflicting demands from different stakeholder groups. The study demonstrates that because of conflicting demands, a new feature which increases an organisation's fitness in one environment may decrease its fitness in another environment. Unbalanced adaptations of this kind may result in organisational adaptation chains where adaptation to one environment triggers adaptation to another environment. An organisation also can produce balanced adaptations that increase an organisation's fit in some environment(s) without decreasing its fit in other environments. The existence of balanced adaptations points out a possibility that not all the demands of different stakeholder groups conflict. In addition, the findings indicate that an organisation may try to solve conflicting demands by satisfying the demands of its stakeholder groups according to fixed preference ordering. The applied fixed preference ordering can be such that an owner comes first, then the customer and employees.

Process models for organisational adaptation

This study demonstrates that the organisational adaptation process can be conceptualised as a circular phase model (Figure 8, p. 170). The similar phase model was not found in the literature. The phase models of Aldrich (1979), Nelson and Winter (1982), and Nelson (1995) lack the triggering phase, while the models of Duncan and Weiss (1979) and Schein (1994) lack the retention phase. The phase model found in this study lacks the selection phase involved in the phase models of Aldrich (1979) and Nelson and Winter (1982) because this study focused on adaptation carried out by the adapting organisation but not on selection carried out by the organisation's stakeholder environment. A lack of the triggering phase in Aldrich (1979) and Nelson and Winter's (1982) models may be due that the roots of the models are in evolutionary biology where variation is not a teleological process. However, in an organisation variation is a teleological process; this is why evolutionary models borrowed from biology cannot explain why variations emerge in organisations.

The process of organisational innovation was found to involve search, implementation, and change phases. The phase sequence was not found in the same form in the literature reviewed. The search phase was also found in the phase models of March and Simon (1958), Cyert and March (1992), Thompson (1965), Knight (1967), Zaltman, Duncan, and Holbek (1973), Duncan and Weiss (1979), Kay (1979), Nelson and Winter (1982), and Rogers (1983). The implementation phase was found in the models of Wilson (1966), Thompson (1965), Knight (1967), Schon (1967), Evan and Black (1967), Normann (1971), Utterback (1971), Zaltman, Duncan, and Holbek (1973), Daft (1978), Abbey and Dickson (1983), and Rogers (1983). The models of Thompson (1965), Schon (1967), Knight (1967), Normann (1971), Utterback (1971), Zaltman, Duncan, and Holbek (1973), and Rogers (1983) held either explicitly or implicitly that the innovation process also contains change resulting from taking innovation outcomes into use but in these models change belonged in the implementation phase. According to the findings of this study, change can be treated as a phase separate from implementation because the phases may be carried out by different actors and may have different sets of conditions that contribute to carrying out the phases. The following sub-chapters compare the findings of this study on each phase with the literature.

Scanning

The findings of this study support the views that an organisation acquires information about its environment for adaptation (Knight, 1967; Pfeffer and Salancik, 2003), and that information about an organisation's external environment is acquired through the process of scanning (Daft and Becker, 1978; Weick, 1979; Hedberg, 1981; March, 1981; Rogers, 1983; Daft and Weick, 1984; Pfeffer and Salancik, 2003; Huber, 1991). The findings indicate that an organisation may scan its internal environment in addition to its external environment.

The mechanisms for scanning included institutionalised communication linkages, specific scanning activities, media monitoring, and getting information as a by-product of activities carried out for purposes other than scanning. The findings are consistent with Cyert and March (1992) in that an organisation also may be exposed to information about its stakeholder environment without intentional scanning when stakeholders contact the organisation.

Performance monitoring

The findings of the present study support Hubert's view (1991) that an organisation acquires feedback about its performance in relation to the demands of stakeholders and organisational goals through performance monitoring. The findings are consistent with Bitner and Zeithaml (2003) in that an organisation's control system can employ operational and perceptual performance measures. In this study, getting information about the values of perceptual measures is called stakeholder feedback; information about the values of operational measures is operational feedback.

The present study recognised stakeholder feedback to have modes of selection, experience, and legitimacy feedback. Selection feedback can potentially reveal what organisational features had selection value for a specific stakeholder in the competitive situation where selection occurred. Acquisition of selection feedback was probably rationalised by the assumption that features that had selection value in a specific competitive situation will also have selection value in the future. Experience feedback reflects how a stakeholder experienced the outcomes of a focal organisation. Experience feedback covers either a specific outcome or an aggregate of outcomes during a period of time. Acquisition of experience feedback was probably explained by the belief that a stakeholder's experience and the resulting level of satisfaction can predict a stakeholder's future selections. Legitimacy can be evaluated against legislation or other standards to which an organisation is expected to conform. Legitimacy feedback is cross-sectional by nature in that it indicates the state of the organisation at the moment of measurement.

The findings demonstrate that an organisation acquires operational feedback by measuring features that potentially contribute to an organisation's fitness in stakeholder environments. Operational feedback involved measures for organisational outcomes, organisational behaviours that produce outcomes, and resources that participate in producing behaviours. The outcome measures manifest an organisation's contributions or inducements for the stakeholder environments. Behavioural measures measure the quality or quantity of organisational behaviours through which an organisation produces outcomes for the stakeholder environments. Resource measures indicate an organisation's capability to produce outcomes for stakeholder environments. According to the findings, operational measures can have goals that institutionalise expectations for the future states of the measured domain. Goals may be continuous or prospective by nature. A continuous goal is a feature the measured domain is expected to have until the goal is changed or abandoned. A prospective goal is an expression of a feature the measured domain is expected to have at one moment of time in the future.

In the process of organisational adaptation, the phase of performance monitoring occurred in the primary and secondary triggering phases. A performance gap detected in the primary triggering stage indicated that the performance of an organisation had decreased because the organisation had not reacted to change(s) in its environment. In secondary triggering the performance gap indicated that an organisation had reacted to change but it had not yet achieved sufficient fit in terms of adaptive values of the new features produced through organisational innovation. According to the findings, an organisation may face multiple performance gaps at the same time and carry out a priorisation of gaps according to explicit rules. Facing multiple performance gaps at the same time can result from measuring performance with questionnaire surveys like customer satisfaction and organisational climate surveys. Recognition of the performance gap may be followed by the attribution process where the causes of a gap are explored. Argyris and Schön (1978) and Duncan and Weiss (1979) have placed this kind of process in organisational learning.

Innovation institutionalisation

According to the findings, an organisation may institutionalise innovation as a response to competitive pressure for differentiation and a stakeholder's expectations for continuous innovation. The findings support March and Simon's (1958) view that institutionalisation of innovation can take place by stating organisational criteria of satisfaction in terms of rate of innovation. The findings indicate that instutionalisation of innovation can take place by setting goals for organisational innovation and embedding expectations of organisational innovation into the exchange contract between the stakeholder and the focal organisation.

The explanation for the influence of competitive pressure on the institutionalisation of innovation is as follows. Because competitors are able to produce new differentiating features and imitate differentiating features of the focal organisation, maintaining certain level of differentiation in upcoming competitive situations requires that the focal organisation produces new differentiating features for situations. Through institutionalisation of innovation, an organisation tries to ensure that in upcoming competitive situations it will have differentiating features that attract resources from stakeholder environments. The finding about stakeholder's expectations for continuous innovation indicates that producing innovations continuously may be an adaptation in itself. On the other hand, the findings indicate that producing innovation continuously may not have adaptive value in all environments. The stakeholder may require an organisation to withdraw from producing innovations.

Coping

According to the findings, an organisation may or may not trigger organisational adaptation as a response to a lack of fit between an organisation and its environment. In active coping, a lack of fit triggers organisational adaptation, while in passive coping organisational adaptation is not triggered. Also Pfeffer and Salancik (2003) have

proposed that an organisation may not trigger adaptation as a response to environmental change. However, the authors have not presented a dedicated concept for the phenomenon.

The types of triggers for organisational adaptation recognised in the present study have been suggested by the literature on organisational adaptation and innovation. In their phase models of organisational adaptation, Duncan and Weiss (1979) and Schein (1994) propose that organisational adaptation is triggered by change. The models lack the possibility that triggering organisational adaptation also can be motivated by the institutionalisation of innovation. For organisational innovation the types of triggers detected both by the present study and the literature were 1) change in environment (March and Simon, 1958; Mohr, 1969; Daft and Becker, 1978) or organisation (March and Simon, 1958); 2) institutionalised innovation (March and Simon, 1958; Knight 1967); and 3) a gap in organisational performance (March and Simon, 1958; Knight, 1967; Daft and Becker, 1978; Rogers, 1983). Only March and Simon (1958) have suggested all three trigger types. The types of change triggers recognised in this study were 1) change in stakeholder demand portfolio, 2) change in technology or service offerings, 3) change in an organisation's model knowledge, and 4) change in an organisation's human and technology resource capacity.

The findings support Nelson and Winter (1982) and Brown and Duguid's (1991) proposition that the behaviour of an organisation may change as newcomers replace their predecessors. The findings demonstrate that an organisation may be a target of entrance changes. The entrance change occurs when a newcomer evaluates the adaptive value of the features of the organisational domain differently than his predecessor and the result of the evaluation triggers organisational innovation through which the newcomer believes the domain to achieve a better fit. The reasons why the newcomer evaluates adaptive value of the features differently than his or her predecessor are open to speculation. The differences in the evaluations may be due to differences in the personal knowledge bases used in the evaluations. The newcomer does not have the experience-based, context-specific knowledge his or her predecessor had of the area of responsibility. The present study indicates that the ability to evaluate an idea can be enhanced when the evaluator has knowledge of the idea's domain. If this is true, it can be expected that the newcomer is a worse evaluator of the ideas than his or her predecessor to the extent to which the domain knowledge that enhances evaluation of ideas is context specific. This suggests a possibility that entrance changes may decrease rather than increase the performance of the organisation.

Search

The findings of this study support the views that the process of organisational innovation includes sub-phases of idea acquisition (Wilson, 1966; Thompson, 1965; Knight, 1967; Normann, 1971; Utterback, 1971; Zaltman, Duncan, and Holbek, 1973; Daft, 1978; Abbey and Dickson, 1983; Gobeli and Rudelius, 1987; Roberts, 1987; Kanter, 1988), idea proposal (Wilson, 1966; Becker and Whisler, 1967; Evan and Black, 1967; Daft, 1978; Daft and Becker, 1978; Gobeli and Rudelius, 1987), evaluation (March and Simon, 1958; Wilson, 1966; Cyert and March, 1992; Zaltman,

Duncan, and Holbek, 1973; Downs and Mohr, 1979; Rogers, 1983; Gobeli and Rudelius, 1987), and elaboration (March and Simon, 1958; Knight, 1967; Gobeli and Rudelius, 1987).

The findings also support the views that an organisation may acquire ideas through creation (Daft and Becker, 1978; Amabile, 1997) or invention (March and Simon, 1958; Wilson, 1966; Schon, 1967; Becker and Whisler, 1967; Rogers, 1983), imitation (Kay, 1979; Nelson and Winter, 1982; DiMaggio and Powell, 1983; Herriot, Levinthal, and March, 1985; Levitt and March, 1988; Bolton, 1993; Szulanski, 1994; Miner and Haunschild, 1995; Baum and Berta, 1996), and by receiving them from non-model organisations such as customers (Allen, 1977; von Hippel, 1988), suppliers (Allen, 1977; Duchesneau, Cohn, and Dutton, 1979; von Hippel, 1988; Cyert and March, 1992), legislators (DiMaggio and Powell, 1983), and professional institutions (DiMaggio and Powell, 1983). The present study calls the last idea acquisition tactic assimilation and adds an organisation's internal stakeholder group "employees" to the list of potential sources of assimilation.

According to the findings, assimilated and imitated ideas can originate either in scanning or search. When originated in the scanning phase, the ideas act as triggers for organisational adaptation. When originated in the search phase, other conditions than ideas trigger organisational adaptation.

The findings support March and Simon (1958), DiMaggio and Powell (1983), and Baum and Berta (1996) in that an organisation imitates ideas from an environment through direct modelling or recruiting employees that possess model information. Mechanisms of direct modelling may include visiting model organisations, visiting electronic archives of model organisations, and contacting acquaintances in model organisations. Assimilation can take place through contacting suppliers and reading books.

The argument of DiMaggio and Powell (1983) that organisations tend to imitate other organisations they perceive to be more legitimate or successful than they are was supported by the findings of this study. The findings indicate that to be imitated it is sufficient that the model organisation has a feature which the imitating organisation believes will improve its own performance. In addition, the findings indicate that imitation also may be motivated by a need to avoid the costs of creation.

According to the findings, employees of an organisation may carry out creation of ideas in places such as work premises, coffee tables, conference rooms external to their office building, home, nature, and car. Creation can take place individually or collectively. The findings support Nickerson's statement (1999) that an organisation may use heuristics such as brainstorming in creation. Other possible heuristics for creation are group work methods and organisational transfer. In organisational transfer, creation uses existing organisational features as raw material and applies them in new contexts. This phenomenon is analogous to individual level transfer of learning.

This study shows that creation of ideas may be motivated by competitive pressure for differentiation or when the technology required for a new feature is not available in the environment. Creation can enable differentiation because it uses an organisation's own

knowledge base that differs from that of competitors. In contrast, external knowledge bases that are used as sources of imitation and assimilation also may be open to competitors. The findings demonstrate that an organisation in the elaboration phase may use mixed idea acquisition tactics. The tactics may differ between the acquisition of a seed idea and elementary ideas.

The findings support Evan and Black (1967) and Cyert and March (1992) in that an idea is evaluated against the goals of an organisation and Wilson (1966) in that an idea is evaluated against an inducements-contributions balance between an organisation and its stakeholders. The evaluation of an idea may be carried out by a person who suggests the idea, management of an organisation, management at the upper levels in the organisational hierarchy, or the stakeholder environment. The management evaluates idea's utility in terms of operational measures, compatibility, rationality, and novelty. The upper level of organisational hierarchy may evaluate the idea's compatibility with the strategy of the upper level. A stakeholder's evaluation can take place when 1) an organisation tests a new feature's adaptive value in the stakeholder environment or 2) a feature's host entity is regulated by the stakeholder on the basis of legislation or ownership. In the employee environment, evaluations can reflect an individual's need to ease work, need to avoid increasing his or her own work load, need for cleanliness, and need for equitable compensation.

Implementation

The findings indicate that an organisation may implement new features through training, informing, storing a blueprint of a new feature on an external recording device or in an assigned person's memory from which it can be retrieved by changers, installing new technological features, and updating documents in the institutionalised organisational memory. An organisation may use light or heavy and push or pull modes of implementation. The purpose of heavy implementation is that changers learn the blueprint of the new feature permanently and retain it in their own memory. In light implementation, a blueprint is not trained to changers but instead is stored in external recording devices like file servers to be retrieved when needed. In push mode, the blueprint of a new feature is actively communicated to changers through training and informing, while in pull mode, a changer is expected to acquire information about the new feature.

Change

According to the findings, change occurs in two stages. In cognitive adoption, an actor's knowledge base changes so that actor gets informational potentials to express a new feature. The actor adopts the blueprint of a new feature or becomes aware of the location from which blueprint can be retrieved when needed. The former type of change results from heavy implementation and the latter type results from light implementation. In behavioural adoption, an actor begins to express the new feature through his or her own behaviour.

Retention

According to Aldrich (1979, 1999), retention occurs when selected variations are preserved, duplicated, or otherwise reproduced so that the selected behaviour is repeated on future occasions or the selected structure appears again in future generations. As this Aldrich's definition emphasises the outcome of retention rather than the process of retention, a different definition for retention was developed for the study. Here retention refers to the processes through which an organisation or its stakeholder tries to ensure that the organisation possesses an existing organisational feature until it is purposefully removed or replaced through the process of organisational innovation.

According to the findings, retention can be temporal or permanent by nature. Temporal retention retains organisational features during delays between the organisational innovation process and the phase of performance monitoring. Retention of the feature shifts to the mode of permanent retention after the feedback from performance monitoring has proved the feature to possess sufficient adaptive value.

The findings support views that retention of organisational features can take place through socialisation (Aldrich, 1979; Nelson and Winter, 1982; Levitt and March, 1988), institutionalisation (Hage and Aiken, 1970; Stata, 1989; Crossan, Lane and White, 1999), controlling (Levitt and March, 1988) and recording to organisational memory (Aldrich, 1979; March, 1981; Levitt and March, 1988; Cyert and March, 1992; Walsh and Ungson, 1991). The study also recognised refresher courses as a mechanism for retention. The courses potentially strengthened the engram of the feature in the organisational memory. The findings demonstrate that mechanisms for retention are located in an organisation and its external stakeholder environment. The stakeholder may carry out audits to ensure that the focal organisation has features expected by the stakeholder, or stakeholder's expectations for retention can be embedded in the exchange contracts between the stakeholder and the focal organisation.

6.1.2 Organisational adaptability

The concept of organisational adaptability

Grant (1991) defines capability as the capacity for a team of resources to perform a task or activity. Resources act as inputs of a task or activity. Their capacity to produce is achieved when the use of resources is coordinated and/or resources cooperate. Resources are the the main source of a firm's capabilities. Penrose (1995) argues that inputs of production process do not consist of resources but of services that resources offer to process. In the present study, organisational capability of adaptation is called organisational adaptability. Organisational adaptability was studied through conditions that enhance or impede organisational adaptation. This study demonstrated that several different types of conditions may contribute to functioning of the organisational adaptation process. By applying Grant's view (1991) on the nature of capability, conditions that contribute to the process of organisational adaptation can be treated as resources that act as inputs in the process. By applying Penrose's view (1995) on relation between process and resources, influences of conditions on the organisational

adaptation process can be treated as services that conditions offer to the process. For example, the condition “Receptivity” offers motivation as a service to the process of organisational adaptation.

When considering conditions as resources that contribute to organisational adaptation, Grant’s definition (1991) of capability does not take into account that in addition to coordinating mechanisms, performing a task by an organisation also requires motivators. In addition, the findings of this study demonstrate that the coordination mentioned by Grant is achieved by mechanisms that are resources themselves. Organisational skills in carrying out the organisational adaptation process were found to be a resource that contributed to organisational adaptation by coordinating the use of other resources. In other words, capability may involve both coordinating resources and the resources that are coordinated. Therefore, in contrast to Grant’s definition of capability, the findings of the present study suggest that resources are not the source of a firm’s capability; instead they are the capability. Capability can be seen as the set of resources that participate in producing specific outcome by offering services to production process. Accordingly, organisational adaptability can be defined as a set of resources that contribute to organisational adaptation process.

The findings of this study indicate that definitions of the concept of organisational adaptability detected in the literature do not capture the essence of the phenomenon. In the definitions of Collis (1996) and Eisenhardt and Martin (2000), capability of adaptation refers to the routines or processes of organisational adaptation. The findings of the present study indicate that routines or processes are only one of several constituents of organisational adaptability. The definitions of Teece, Pisano, and Shuen (1997) and Haberberg and Rieple (2001) describe what kinds of behaviours an organisation can perform when it possesses the capability of adaptation, but they do not address the constituents of this capability. The definition of Haberberg and Rieple recognises learning, adaptation, and innovation as types of behaviours covered by the dynamic capabilities. This study demonstrates that learning and innovation are sub-processes within the process of organisational adaptation. The definition of Teece, Pisano, and Shuen (1997) concentrates on the process of organisational innovation, while the present study also demonstrates behaviours of the triggering phase to be a central part of the organisational adaptation process. By the term adaptability, Trott (2002) and Jasphara (2004) refer to an organisation’s ability to adapt to changes in an environment. The findings of the present study show that adaptation may also result from changes in an organisation and from institutionalisation of innovation. An organisation may also carry out outward-directed adaptation where it tries to change the environment to fit the changed organisation.

The present study introduces 20 categories which represent the types of conditions that enhance or impede organisational adaptation. The categories are organisational slack, information technologies, knowledgeability, documentation, remoteness, skilfulness, diversity, centralisation, incongruity of demands, instability, efficacy beliefs, organisational culture, organisational climate, organisational mood, expectations, receptivity, incentives, defensiveness, situational context favourability, and individual characteristics. In the following, the identified conditions and their contributions to organisational adaptation are discussed in relation to existing literature.

Organisational slack

The present study supports the previous findings that organisational slack contributes positively to an organisation's ability to search (Cyert and March, 1992) and hypothesis about its positive contributions to the organisational innovation process (Amabile, 1988, 1997). In addition, the findings indicate that organisational slack also contributes positively to scanning, performance monitoring, implementation, change, and retention, and that it can enhance search indirectly through incentives.

According to March and Simon (1958), organisational slack refers to money and manpower not committed to on-going activities of an organisation. The finding that an individual employee of an organisation may create ideas for one domain at the same time as carrying out routine motoric task in another domain makes operationalising slack problematic. An employee can be physically fully committed to an on-going activity but have "cognitive slack" which enables the creation of ideas.

Information technologies

The present study indicates that the use of IT tools may enhance scanning but impede search through its negative effects on situational context favourability. The use of communication technologies can increase interruptions experienced by employees involved in search. A low adequacy of IT tools used in scanning and performance monitoring can impede carrying out the phases. The contributions of information technologies to organisational adaptation were not reported in the reviewed literature.

Knowledgeability

The finding that creation of ideas in a specific domain requires knowledge about the domain supports the arguments of Amabile (1988), Nickerson (1999), and Weisberg (1999). The finding that domain knowledge is needed for evaluation of ideas is consistent with the hypothesis of Wilson (1966), Duncan and Weiss (1979), Aldrich (1979), Nelson and Winter (1982), Amabile (1988), Cohen and Levinthal (1990), and the research findings of Rothwell (1978), Duchesneau, Cohn, and Dutton (1979), Ounjian and Carne (1987), Chew, Bresnahan, and Clark (1990), Attewell (1992), and Szulanski (1994, 1996). The present study also shows that domain knowledge enhances performance monitoring and attribution of performance gaps in the domain.

In addition, the findings indicate that knowledge of knowledge sources can enhance search, a lack of knowledge of a new feature can impede performance monitoring and change, and that active coping can be impeded by blocking beliefs. Knowledge of the individual characteristics of employees can improve the possibility of finding suitable employees to participate in search tasks. A lack of knowledge of reference states for the domain can impede recognition of performance gaps in the domain. Change can be

impeded when a changer lacks knowledge of the new feature he or she could start to express. Active coping with performance gaps can be impeded by blocking beliefs that rationalise passive coping.

Documentation

The findings of the present study show that delays may occur between the phases of the organisational adaptation process. Recording knowledge outcomes of a phase to external recording devices like shared file servers can enhance carrying out the next phase of the organisational adaptation process because it ensures that knowledge does not disappear from the organisational memory during a delay between the phases. Through this mechanism, documentation was found to enhance performance monitoring, active coping, and implementation. On the other hand, recording experience feedback from the employee environment to external recording devices can impede performance monitoring if employees do not want the feedback to be recorded.

The literature reviewed recognised that external recording devices may act as part of organisational memory that stores organisational knowledge (Levitt and March, 1988; Walsh and Ungson, 1991). However, the literature did not show a relationship between organisational adaptation and the extent to which knowledge outcomes of adaptation are recorded to external recording devices.

Remoteness

The findings of this study support the research findings of Szulanski (1994) and the suggestion of Chew, Bresnahan, and Clark (1990) that high remoteness of organisations may impede imitation between organisations. In addition, the findings show that a high remoteness of employees of organisation may impede search and change because the organisation cannot carry out search and implementation in skilful ways. High travel expenses caused by high remoteness of employees of an organisation may prohibit carrying out search and implementation tasks interactively.

Skilfulness

The findings of the present study support the argument of Teece and Pisano (1994) that an organisation has skills for adaptation. In this study both organisation- and individual-level skills were found to contribute to organisational adaptation.

Completeness of scanning as a condition of organisational adaptation was not reported in the reviewed literature. According to the findings of this study, incompleteness of scanning can impede organisational adaptation. An organisation acquires information about changes in a stakeholder environment through scanning. Without scanning the environment, an organisation cannot detect changes in the environment and adapt to detected changes.

The findings indicate that formalisation of organisational innovation can enhance it, formalisation of implementation can enhance it, and lack of formalisation can enhance scanning. Evan and Black (1967) reported findings about the relationships between formalisation and search, and formalisation and change. Their findings are not unequivocally comparable to the findings of this study, because they treated formalisation as a character of organisational activities in general while the present study treated formalisation as a character of organisational adaptation behaviour only.

The findings of the present study support the hypotheses of Shepard (1965) and Thompson (1965) and research findings of Becker and Stafford (1967) and Aiken, Bacharac, and French (1980) that the creation of ideas in an organisation may be enhanced by social interaction. The findings indicate that creation of ideas may be enhanced by interactiveness because the immediate social environment offers information and stimulation and eases achieving consensus about the new feature under construction. In addition, interactiveness in acquisition of experience feedback may enhance it, interactiveness in attribution may enhance it, and interactiveness in implementation between the implementer and changer can enhance changing. The contribution of interactiveness on attribution may be explained by Walsh and Ungson's hypothesis (1991) that interactiveness in recalling shared experience improves ability to recall because there is greater coverage of experience and individuals can prompt each other to help remember the past. The findings of the present study show that change may be enhanced by interactiveness because the changer gets a better understanding of the new feature through interactive communication than through one-way communication. A lack of shared time for employees was found to impede social interactiveness.

The findings of this study indicate that a high specificity of performance monitoring can impede scanning through benchmarking because the performances of participating organisations are not comparable. This supports the study by Chew, Bresnahan, and Clark (1990) which showed that imitating practices between plants of a multi-plant company can be facilitated by a measurement system which reveals if a plant has good practices compared to other plants. In addition, the present study showed that low specificity of performance monitoring may impede getting stakeholder feedback about the adaptive value of an organisation's features because performance indicators with low specificity cannot reflect the demands of any specific stakeholder.

Resolution of performance monitoring was identified as a condition that can have influence on attribution of operational feedback. When detecting a performance gap at the organisation level, a high resolution performance monitoring system can ease the detection of organisational domains responsible for the gap. The findings on specificity and the resolution of performance monitoring support DiBella, Nevis, and Gould (1996) and DiBella and Nevis's hypotheses (1998) that the existence and quality of measurement systems are conditions that enhance organisational learning. Both conditions contribute to learning from experience and the specificity of performance monitoring also contributes to learning by imitation.

The present study also identified several conditions of organisational skilfulness that were not found in the reviewed literature. The conditions include managerial control in development activities, abstraction level of blueprints for a new feature, abstraction

level of an organisation's self-descriptions, the size of the target of comparison, structuring and prioritising performance gaps, rationalising change, commercialising search products, communicating search products appropriately, and supporting change personally. The conditions of individual skilfulness found include skilfulness in leadership, skilfulness in combining knowledge, and skilfulness in conceptualising search product.

Diversity

The studies of Chew, Bresnahan, and Clark (1990), and Baum and Ingram (1998) indicate the diversity of environments of organisations in a group of organisations can reduce the potential of organisations to imitate each other. The findings of the present study show that environmental diversity also may impede organisation family level adaptation. Features searched for an organisation family may not fit the diverse local environments of individual organisations, making the adoption of features difficult or impossible.

The study of Chew, Bresnahan, and Clark (1990) showed that similarity of plants had a positive influence on imitation between plants in a multi-plant firm. Zander and Kogut (1995) found that imitation rates are influenced by the extent to which important aspects of capability are possessed by many firms. The findings of the present study indicate that influences of similarity of organisations on imitation are twofold. Imitation may require sufficient organisational analogy, between organisations but in analogical domains organisations have to have sufficient but not too high functional disparity to possess the potential for imitation. Without disparity in analogical domains there is nothing to imitate between domains but too high disparity may resist imitation. In addition, imitation may require that morphological disparity between organisations is low enough. Imitation between organisations is more probable if organisations are of the same size and have similar problems.

Centralisation

Comparison of the findings of the present study with the reviewed literature was constrained because in the literature the term centralisation is used commonly to refer to the locus of decision making, while in the present study the term referred to the locus of acquisition of alternatives on which to make decisions. The search phase generated blueprints for new features as alternatives on which to make decisions and the quality of blueprints was influenced by the locus of search.

According to the reviewed literature, de-centralisation of search can enhance change. Thompson (1965) and Ounjian and Carne (1987) argue that an adopter organisation's resistance to innovation may decrease if an organisation also participates in the search phase. Aiken, Bacharac, and French (1980) and Chew, Bresnahan, and Clark (1990) hypothesised that de-centralisation of creation of ideas has positive influence on effectiveness of creation outcomes in development of management practices. Kimberly

(1981) proposes that an innovation is most likely to be used if sub-units can evaluate it independently and make their own decisions about how best to implement it. Chew, Bresnahan, and Clark (1990) argue that applying transferred practices can take place only at the local level because successful application often requires a degree of local adaptation. The findings of the present study support the views that de-centralisation of search enhances change. In addition, the findings show that de-centralisation of search can enhance search.

The explanations found for the positive effects of de-centralisation of search on change were that 1) the changer has knowledge about the environment for which the new feature is produced and using this knowledge in search increases the search product's fit with the environment and 2) during search participating changers may form a positive attitude to the search product. The first explanation is consistent with the proposition of Chew, Bresnahan, and Clark (1990) that a lack of knowledge about the adopting context can explain the negative effects on adoption of centralisation of search. The second explanation found in this study was not reported in the literature reviewed.

According to the findings of the present study, the influence of centralisation of search on organisation family-level adaptation depends on environmental diversity in the organisation family. When the level of centralisation is too high in relation to diversity, change is impeded because search products do not fit the diverse local contexts of the adopting organisations.

Incongruity of demands

The findings of the present study are consistent with the argument (Cyert and March, 1992) that a business organisation may be the target of conflicting demands from different stakeholders. In addition, the findings indicate that in organisational adaptation conflicting demands can result in organisational innovation that increases an organisation's fitness in one environment and decrease its fitness in another. Change resistance can occur in those stakeholder environments which predict a decreasing fit.

The findings support the proposition of Daft and Becker (1978) that innovations are resisted because of a lack of fit between innovation and the demands of an adopting organisation. The findings also support the argument that incongruity of demands may impede change (Thompson, 1965; Wilson, 1966; Sapolsky, 1967; Zaltman, Duncan, and Holbek, 1974; Rothwell, 1978; March, 1981; Ounjian and Carne, 1987; Hannan and Freeman, 1989).

Instability

The findings of the present study show that an organisation can face instability in transitional states, personnel turnover, and termination of retaining structure and that the instability can impede organisational adaptation. In addition, organisational adaptation may be impeded by fixation.

The findings indicate that during a transitional state an actor can shift to a developmental wait state where the actor lacks motivation for organisational adaptation behaviours. An organisation's lack of motivation may be due to experienced uncertainty about the end state that will result from the changes. Uncertainty about end states may cause uncertainty about evaluation criteria against which an organisation should evaluate ideas for new features for the organisation. An organisation cannot evaluate the compatibility of some new feature if the organisation does not know the end state of the domain against which compatibility should be evaluated. According to the findings, transitional states also can have indirect negative influences on organisational adaptation because they may worsen organisational climate and mood.

The phenomenon of wait state was not considered in the literature reviewed. Amabile (1997) found that expected and actual organisational changes can worsen the climate for organisational creativity. Scherer and Tran (2001) proposed that experiences of past organisational changes may have detrimental effects on an organisation's ability to adapt in the future.

The findings show that personnel turnover in an organisation or its external stakeholder organisations can impede specific adaptation behaviours. Personnel turnover in an organisation can impede organisational adaptation by discontinuing scanning activities and delaying development activities. Effects on activity can occur when the person responsible for activity leaves organisation. Personnel turnover in a stakeholder organisation can impede attribution of gaps indicated by experience feedback from a stakeholder because newcomers in the stakeholder organisation may evaluate the focal organisation differently than their predecessors. Search can be impeded because personnel turnover in a stakeholder organisation makes it difficult for the focal organisation to acquire knowledge for search and get a stakeholder's evaluation of ideas. Personnel turnover as a condition of organisational adaptation was not reported in the reviewed literature.

According to the findings, specific adaptation behaviour can be impeded by termination of retaining structures for the behaviour. Scanning may be impeded by termination of retaining structures for communication routines between the organisation and its external stakeholder environment.

The findings also indicate that specific organisational adaptation behaviours can be impeded by fixation. Scanning may be impeded when an organisation has fixed to a specific environment and because of this it is not willing to scan other environments. A stakeholder can be fixed to specific employees of a focal organisation, which may inhibit employees from participating in search. Fixation to ways of action or working environments can prevent the adoption of new ways of action or moving to a new environment. The findings suggest that fixation to a domain may result from a low rate of change in the domain. Fixation as a condition of organisational adaptation was not reported in the literature.

Efficacy beliefs

The findings indicate that low organisational self-efficacy concerning organisational innovation may impede organisational innovation by reducing motivation to carry out development activities. Low self-efficacy concerning organisational innovation was found to result from experienced failures in previous organisational development activities.

The findings are consistent with Bandura (1986) in that self-efficacy may be a collective phenomenon and that experiences of repeated failures lower the sense of self-efficacy. This study supports the argument that low self-efficacy in a task domain may have a negative influence on motivation to carry out a task (Bandura, 1986). A positive relation between an organisation's ability to innovate and related self-efficacy may be indicated by Abbey and Dickinson's findings (1983) that in the studied R&D organisation, perceived innovation was significantly related to the number of innovations and Amabile's proposition (1988) that one of the important elements of motivation to innovate in an organisation is the sense of pride in its members and their capabilities.

In addition to organisational self-efficacy, the present study discovered a phenomenon of organisational else-efficacy. According to the findings, an organisation may hold else-efficacy beliefs concerning organisations at lower levels of the organisational hierarchy and here low else-efficacy can increase centralisation of search. Increase in centralisation of search may result from that a specific organisational hierarchy level holds the belief that organisations at the lower level in the hierarchy cannot develop themselves as expected. Organisational else-efficacy as a condition of organisational adaptation was not reported in the literature.

Organisational culture

The findings show that as constituents of organisational culture valuation of adaptation behaviour and conflicting cultural beliefs can contribute to organisational adaptation. According to the findings, low valuation of a specific form of adaptation behaviour can reduce the motivation to carry out behaviour. Mars (1971) has argued that an individual's motivation to create ideas is influenced negatively by perceptions that efforts to create ideas are not valued by the organisation. The findings of the present study support this argument in that specific adaptation behaviour can be a target of valuation and that valuation of behaviour may have influence on motivation to carry out behaviour.

The findings show that an organisation may hold conflicting cultural beliefs that impede change. In addition, an organisation may carry relics that are rationalised by conflicting cultural beliefs. Corresponding findings were not reported in the literature reviewed. However, Kimberly's statement (1981) that organisations must know when to dispose previously adopted innovations suggests a possibility that an organisation may carry features that cannot be rationalised.

Organisational climate

Amabile (1997), Dutton and Starbuck (1978), and Ounjian and Carne (1987) found organisational climate to have influence on organisational adaptation behaviour. Amabile (1997) found that downsizing in an organisation may worsen the adaptation climate in ways that impair creativity in an organisation. Studies by Dutton and Starbuck (1978) and Ounjian and Carne (1987) show that climate for organisational adaptation in terms of support can enhance the adoption of technology from an environment.

The findings of the present study indicate that organisational climate resulting from streamlining of organisations may impede organisational innovation. As streamlining is a manifestation of organisational adaptation, the findings suggests that organisational adaptation can produce a climate detrimental to organisational adaptation. The findings support Amabile (1997), Dutton and Starbuck (1978), and Ounjian and Carne (1987) as they also found organisational climate to have influence on organisational adaptation behaviour. Also, the finding of Amabile (1997) that downsizing can have influence on climate is supported by the present study. A more detailed comparison of findings is not possible due to differences in concepts between the present study and the prior work.

Organisational mood

The findings suggest that organisations may possess moods and that organisational mood can have influence on organisational adaptation. According to the findings, low organisational mood can impede organisational adaptation by reducing motivation for active coping and search. Forgas and George (2001) propose that mood does not have salient cause as an individual level affective state. This study shows that organisational mood can have salient causes. Low organisational mood may result from unfavourable social feedback from the stakeholder environment when an organisation cannot cope actively with the feedback or the feedback is experienced as unjustified. Organisational mood as a character of an organisation or a condition of organisational adaptation was not reported in the literature reviewed.

Expectations

The findings indicate that organisational adaptation behaviour can be a target of explicit expectations. Expectations can be permanent or temporal by nature. Permanent expectations are in force until further notice while temporal expectations are specific for the occasion when some adaptation behaviour is carried out. The types of carriers of permanent expectations may include permanent roles for organisational adaptation and permanent prohibiting rules for organisational adaptation. Temporal expectations may be carried by temporal roles for organisational adaptation, time pressure for adaptation behaviour, and social pressure for adaptation behaviour.

Roles have been found (Cangelosi and Dill, 1965; Daft and Becker, 1978; Ettlie and Bridges, 1982) and proposed (Guetzkow, 1965; Callahan and Salipante, 1979) to have influence on organisational innovation. The types of adaptation behaviours found to be facilitated by roles involve innovation (Cangelosi and Dill, 1965; Guetzkow, 1965) and innovation adoption (Daft and Becker, 1978; Callahan and Salipante, 1979; Ettlie and Bridges, 1982).

The findings of this study support the idea that organisational adaptation may be facilitated by roles in adaptation behaviour. According to the findings, roles for organisational adaptation may be permanent or temporal. A lack of permanent roles in scanning and search may impede these behaviours. Temporal roles in search may facilitate carrying out behaviours expected by roles.

According to the findings, an organisation may possess prohibiting rules for specific adaptation behaviours. Rules may prohibit a specific mode of scanning, active coping with performance gaps in a specific domain, or implementing new features of a specific type. Prohibiting rules may be internal, external, or shared. External rules were adopted from the stakeholder environment and shared rules were agreed upon the organisation and stakeholder environment. A rule as a condition of organisational adaptation was not reported in the literature reviewed.

The findings also show that social pressure and time pressure can enhance organisational adaptation. Management can motivate change by pressurising adoption personally. The motivation to search may increase when an organisation uses an external facilitator that expects the organisation to carry out the search. Time pressure of suitable level can enhance search by increasing motivation to carry out idea acquisition through creation. Influences of time pressure can vary between individuals depending on their characteristics and the perceived importance of keeping the schedule. The literature reviewed has not recognised social pressure and time pressure as conditions of organisational adaptation.

Receptivity

The study recognised receptivity to ideas and receptivity to adaptation behaviour as two modes of receptivity. According to the findings, low receptivity to ideas can impede active coping and search. Low receptivity to ideas can decrease motivation to publish ideas. A decrease in motivation may result from experienced and modelled responses. The findings also indicate that the duration of motivational influences of low receptivity to ideas can vary and that individual differences may occur in how low receptivity effects motivation to publish ideas.

Receptivity as a concept was not found in the reviewed literature. However, phenomenon that the concept stands for, have been recognised by Rogers (1959), Bower (1965), Wilson (1966) and Daft and Becker (1978). The findings of the present study support Wilson (1966) and Daft and Becker's (1978) views that motivation to propose ideas may be influenced negatively by the belief that the idea will be evaluated negatively. Also, the findings support the conceptions that receptivity emerges through

learning from individual's own experience (Bower, 1965; Daft and Becker, 1978; Amabile, 1983) or experience of others (Bower, 1965) and that the motivational consequences of receptivity can vary between individuals (Hennesy and Amabile, 1988). An individual's motivation to create ideas has been proposed to be negatively influenced by the beliefs that 1) the idea will be evaluated (Rogers, 1959); 2) the creator will be evaluated negatively (Bower, 1965); 3) the idea will not be noticed by the organisation (Bower, 1965); and 4) the idea will not lead to action (Bower, 1965). The findings of this study are not directly comparable with these propositions because the creation of ideas and publishing ideas are two different acts and in the present study, publishing of ideas was the observed act that was influenced by receptivity.

The findings show that an external stakeholder's low receptivity to specific adaptation behaviour suggested by the focal organisation can reduce the organisation's motivation to carry out the behaviour. In the reviewed literature, receptivity to adaptation behaviour was not reported as a condition of organisational adaptation.

Incentives

The findings indicate that employees of an organisation may be offered incentives that motivate organisational adaptation behaviour. In this study the types of incentive carriers were found to include incentive systems, shared vision, incentives of adaptation task, leadership, and reciprocity.

The findings of the present study are consistent with Aldrich's (1999) argument that organisational incentives to produce innovation can include rewarding workers whose ideas are selected for further evaluation and the suggestion of Thompson (1965) and Guetzkow (1965) that an organisation may reward innovative ideas through a suggestion system. The findings support the argument of Daft and Becker (1978) that idea conception and proposal can be enhanced by rewarding innovation proposals. In addition, the findings show that rewarding employees for giving feedback can enhance performance monitoring.

The findings of the present study support the findings of Abbey and Dickinson (1983) and Normann (1971) that a rewarding system's ability to motivate specific adaptation behaviours depends on the appropriateness of rewards. The findings show that an incentive system's ability to motivate idea acquisition may depend on the probability of getting a reward and the economic value of the monetary reward. In addition, employees can have inherent motives for idea acquisition that override artificial motives created by incentive systems. The finding that a high probability of getting reward from an idea proposal may increase the intensity of proposing conflicts with Wilson's argument (1966) that innovation proposals are more frequent in organisations where a high degree of uncertainty governs the member's expectation of rewards.

The findings of the present study indicate that shared vision can have favourable motivational influences in an organisation's external stakeholder environments. The shared vision can motivate the supplier environment to suggest ideas and to allow access to the leading edge technologies. In the public financier environment, a shared

vision was found to improve an organisation's possibility of getting funding for the development work required to get from the current state to the visionary state. The external funding increases the organisational slack available for adaptation.

The findings indicate that search can be enhanced by leadership. Management can motivate employees to contribute to search through personal encouragement. Leadership as a condition of organisational adaptation was not reported in the literature.

Thompson (1965) argued that organisational innovation may be facilitated by intrinsic rewards such as satisfaction from the search process. According to Cummings (1965), the creation of ideas can be intrinsically motivating if it is perceived as interesting, challenging, flexible, and self-directed. The findings of the present study support the idea that search may involve intrinsic motivators. According to the findings, creation can be intrinsically motivated by the perceived attractiveness and pleasantness of the creation task.

According to the findings, reciprocity can enhance scanning through documentation. When an employee can use scanning results documented by others, he or she may be motivated to document his or her own scanning results to be used by others. Reciprocity as a condition of organisational adaptation was not reported in the literature reviewed.

Defensiveness

Argyris (1990, 1993) has found that behaviour in an organisation can be governed by actions or policies which defend individuals from experiencing feelings of embarrassment or threat. The need to avoid experiencing these feelings may cause individuals to misattribute failures in defensive ways. Guetzkow (1965) proposed that if an organisation's vertical communication system filtered out unpleasant feedback from lower hierarchy levels to upper levels, management cannot trigger creation to improve the organisation. The findings of the present study support the findings of Argyris and Guetzkow's proposition.

The findings show that organisational adaptation can be impeded by defensive behaviour in an organisation. According to the findings, an organisation may manifest defensiveness through face saving, superiority complex, importance reduction, feedback gloss-over, and problem denial. Defensiveness can impede scanning and active coping. Also it can impede acquisition of ideas through imitation.

According to the findings, defensiveness is based on the need to avoid information that is threatening to self-esteem. The findings indicate that threatening information can come from 1) self-evaluation, 2) evaluation of others, or 3) comparison between self and others. The need to avoid threatening information can be manifested by an unwillingness to 1) self-evaluation that can produce threatening results, 2) engage in behaviour that can lead to negative evaluation of self by others and 3) acquire information that can impugn beliefs about the superiority of self compared to others.

Situational context favourability

The findings indicate that individual's contributions to organisational adaptation may be sensitive to situational conditions in individual's environment. Performance monitoring can be enhanced when attribution is carried out in a noiseless place and employees can publish negative experience feedback in their actual working environment instead of in a meeting room. Creation of ideas can be enhanced when it is carried out when driving a car, jogging, walking, being intoxicated, going to sleep, or waking up. It may be enhanced by the social environment present in a group situation or impeded by interruptions from the social environment. Interruptions also can make it difficult to find shared time to carry out adaptation tasks interactively. Implementation may be impeded because the change domain is in a state that does not allow implementation. Situational context favourability as a condition of organisational adaptation was not reported in the literature reviewed.

Individual characteristics

The findings indicate that individual differences may occur in the contributions of individuals to organisational adaptation. Individual differences may occur in contributions to scanning, performance monitoring, coping, search, and change.

In the reviewed literature individual differences have been proposed to occur in creativity (Mars, 1971; Amabile, 1988) and innovativeness (Knight, 1967; Shepard, 1967). The findings of the present study support the proposition of Mars (1971) and Amabile (1988) that in the behavioural domain of creation, individual differences may occur. However, at a more specific level the findings are not comparable with their propositions because in the context of the present study differences were detected in the intensity of publishing created ideas, not in the quality of the ideas. The findings also support the argument of Knight (1967) and Shepard (1967) that individual differences may occur in innovativeness as measured by an organisation's ability to adopt innovation.

Baldridge and Burnham's study (1975) on adoption of innovation by an organisation indicated that individual characteristics such as sex, age, and personal attitudes were not strong determinants of innovative behaviour among people in organisations. The findings of the present study indicate that high age may impede change. The old employees may not be willing to adopt new ways of action. In addition to age, several individual characteristics may explain differences in contributions of individuals to organisational adaptation. According to the findings, being of "performer type" and laziness may contribute negatively to scanning. Creation may be enhanced by activeness, open-mindedness, courage, enthusiasm, optimism, imagination, technology orientation, weak tolerance of the existing performance gap, the will to do good, suitable temper, and idealism. High age and a long period of time in the same environment can impede creation. Publishing ideas may be enhanced by extroversy and activeness. Change can be enhanced by courage and the mind of the developer.

Other findings on conditions of organisational adaptation

The findings of the present study support the propositions that in the process of organisational innovation, different phases may be influenced by different sets of conditions (Wilson, 1966; Shepard, 1967; Sapolsky, 1967; Mohr, 1969; Norman 1971; Pierce and Delbeck, 1977; Daft, 1978; Amabile, 1988; Szulanski, 1994), different phases may have the same enabler conditions or different enabler conditions (Amabile, 1988), a specific condition may have inverse effects in different phases (Zaltman, Duncan and Holbek, 1974; Rogers, 1983), and that different tactics in carrying out a specific phase may have different enabling conditions (Daft and Becker, 1978). In addition, the findings of this study indicate that 1) the outcome of a phase may act as condition for the next phase or its effects may jump over the phase, 2) the strength of contribution of a condition to a phase may vary depending on how the phase is carried out, and 3) the condition can have an optimum value or range of values for organisational adaptation. The findings also indicate that the conditions of organisational adaptation can be located both in a focal organisation and in an organisation's external stakeholder environment. Compared to the existing research in organisational adaptation and organisational innovation, the present study recognises not only relationships between conditions and behaviour but also relationships between different conditions. It also recognises the significance of motivators as conditions of organisational adaptatation.

The findings show that some of the conditions can occur in amplifying or diminishing feedback loop with organisational adaptability. Organisational adaptability can have a loop–type of connection with economic slack and organisational self-efficacy. Chapter 5.5.1 on "Organisational slack" showed that a lack of economic slack may impede organisational adaptation. On the other hand, organisational innovation was mentioned as a way to increase economic slack. Therefore, economic slack can enhance organisational adaptation and organisational adaptation can increase economic slack. The decrease in economic slack can weaken the possibility of increasing slack through organisational adaptation. It can also weaken the ability to motivate organisational adaptation through monetary incentives. Chapter 5.5.11 on "Efficacy beliefs" demonstrated that an inability to carry out organisational innovation can result in low organisational self-efficacy in innovation and this, in turn, can reduce motivation for organisational innovation. Therefore, low organisational adaptability in terms of inability to carry out organisational innovation can result in low self-efficacy which, in turn, weakens organisational adaptability by reducing motivation for organisational innovation. It can be speculated that amplifying loops can increase organisational adaptability and improve an organisation's prospects of survival and success, while diminishing loops can result in the death of an organisation.

6.2 Evaluation of the research

This chapter evaluates the quality of the research process and its outcomes and describes how quality criteria were taken into account when carrying out the research. Evaluation uses general criteria for qualitative research and case studies and criteria specific for studies using grounded theory methodology. The general criteria of evaluation include reliability, internal validity, and generalisability. The evaluation specific for grounded theory uses criteria from Strauss and Corbin (1998) on both the

research process and empirical groundings of a study. Their criteria reflect both reliability and internal validity of the study.

6.2.1 Reliability

According to Yin (1994) the goal of reliability is to minimise the errors and biases in a study. The reliability of a case study can be improved by using multiple sources of evidence, creating a case study data base, maintaining a chain of evidence, and describing the research procedure carefully (Yin, 1994). The sources of evidence used in the present study included interviews, participant observations, direct observations, discussions, recalling the researcher's prior knowledge of the studied organisations, and documentation (3.2.1).To avoid loss of data and misinterpretations, all the interviews were recorded and transcribed word-by-word. To manage a large amount of research material, paper documents were filed and a case study data base was constructed for the data in electronic form. A chain of evidence was maintained by retaining the sequential versions of documents used in generating theoretical framework from the data. After coding, coded data segments were moved from transcribed interviews to the case description document templates. The statements of informants were expressed as much as possible like they were in the interview documents. Further categorisation was carried out by refining the case description templates. A chain of evidence was maintained by creating a new version and saving the previous version of case description after the data in it was re-structured. The detailed description of the research procedure was presented in Chapter 3.

6.2.2 Internal validity

Internal validity refers to the truth value of the findings (Miles and Huberman, 1994). In the present study, methods used to improve the internal validity of findings included eliminating researcher's effects (Miles and Huberman, 1994), triangulation by method and by data (Denzin 1989), and using the literature (Eisenhardt, 1989).

According to Miles and Huberman (1994), one threat to the validity of data is that responses of informants are shaped by how they perceive the researcher in relation to their self-interest. Another threat is that the organisation studied has influence on how the researcher interprets data about an organisation (Miles and Huberman, 1994). This study applied practises suggested by Miles and Huberman (1994) to avoid the threats.

Miles and Huberman (1994) suggest that researcher's effect on informants can be diminished by making the intentions of the researcher unequivocal for informants. Informants must be told why the study is carried out, what is the focus of the study, and how the data will be collected and used. In Case A-D intentions of the researcher were made unequivocal to informants by introducing LWOD project to them as a motive for the study before the interviews were carried out. In Case E informants were familiar with the LWOD project before the interviews started. Informants had participated in meetings where the LWOD project had been introduced and discussed.

Miles and Huberman (1994) suggest that organisation's effect on researcher's interpretations can be diminished by 1) collecting data not only from "elite" but also

from “lower-status” informants and 2) spending time away from the sites to avoid going “native”. In the present study informants included both the management and the employees at the lowest hierarchy level in the organisational hierarchy. Time was spent away from cases A-D as the researcher visited organisations only to carry out interview sessions or development sessions.

In methodological triangulation different methods are used in collecting the data (Denzin, 1989). Methodological triangulation was carried out in all the cases. In Case E, direct observations were made about conceptual outcomes of adaptation behaviour in situations where outcomes were produced. The researcher participated in meetings where ideas were created, conceptualised, and evaluated. In all the cases, the documented outcomes of organisational adaptation behaviour were used as evidence of existence and characteristics of the behaviour. Outcomes could not exist without processes that had produced them. Scanning, feedback acquisition, idea acquisition, and organisational innovation produced documented outcomes. The documented outcomes of scanning included goals and results of benchmarking. Documented performance measurement results were outcomes of feedback acquisition. Initiatives, suggestions, product development initiatives, annual plans, and strategic plans were documented outcomes of the idea acquisition phase. Additional evidence of changes and development activities in the case organisations was obtained from 1) internal news sheets of the organisations, 2) internal annual reports of the organisations, 3) direct observations in Case E, and 4) memos from the management team meetings in Case E. Statistics were used as supporting evidence for claims about quantitative changes in the outcomes of the adaptation behaviours. Cases B and D had statistics of the annual amounts of initiatives produced by the organisations. Group interviews served as triangulation by data source as the data was acquired about the same phenomenon from several employees in the case organisations. In Case E observations about specific phenomena were made at different moments of time.

According to Eisenheardt (1989), the validity of emergent theory can be enhanced by using literature and discovering the underlying theoretical reasons for a relationship between constructs. In this study, literature was used to validate the findings. Relationships between conditions and organisational adaptation behaviour and mechanisms for the influence of conditions were explored in the literature. The outcomes of this validation process were presented in Chapter 6.1 on theoretical contribution of the study.

Despite the use of the above methods, especially the validity of the findings about conditions of organisational adaptation is suspect. Many of the findings were grounded only on interviewees’ evaluations of relationships between different conditions and organisational adaptation behaviour.

6.2.3 Evaluation criteria for grounded theory

This study applied grounded theory (Glaser and Strauss, 1967; Strauss and Corbin, 1998) as the research strategy. Strauss and Corbin (1998) presented specific criteria for evaluation of research process and empirical grounding of theory generating study. Their criteria reflect both reliability and internal validity of the study and have been

given in the form of questions a study should answer. In the following, each evaluative question is answered either by referring to the section which contains the answer or by giving a short description of how the study answered the question.

Evaluation of the research process

Criterion 1: How was the original sample selected? On what grounds? Answer: The underlying criteria for selecting organisations were that 1) organisations covered the diversity of the case company organisations in Finland in terms of services produced (cases A, B, and C) and 2) selection maximised strategic utility (cases D and E). Cases A, B, and C were "representatives" from three diverse organisation groups in the case company. Cases D and E had central strategic position in the case company.

Criterion 2: What major categories emerged? Answer: The phases of the organisational adaptation process were the main categories that emerged in the study. Twenty categories emerged for the conditions that enhance or impede organisational adaptation.

Criterion 3: What were some of the events, incidents, or actions (indicators) that pointed to some of these major categories? Answer: Some of the incidents that pointed to categories were identified in the pilot study and were expressed in the resulting theme list (Appendix 1) which guided data gathering in the study phase. Incidents that emerged in the study phase and pointed to the categories are described in the empirical part of the present study in chapters specific to the categories.

Criterion 4: On the basis of what categories did theoretical sampling proceed? After the theoretical sampling was done, how representative of the data did the categories prove to be? Answer: In the present study, the use of grounded theory approach differed from Glaser and Strauss (1965). Theoretical sampling did not guide data gathering through the study but it was used only in the beginning of the study. The pilot study produced initial theoretical framework that guided data gathering in the study phase. Due to time constraints, data gathering through interviews in the study phase was not continued till theoretical saturation, but was stopped after all the interview themes had been covered in the interviews. However, after the data from the interviews were analysed, the findings guided further data use from the research data base to get clarification and verification of the findings. Further data was used from the research data base until theoretical saturation. Therefore, theoretical saturation was achieved within the data gathered. Glaser and Strauss (1965) state that when generating theory it is not possible say how much time a project will take because you cannot define in advance how many groups will be studied and to what degree they will be studied. In the present study, the working conditions of the researcher as an employee of the case company forced the researcher to schedule data gathering beforehand and limit its duration.

Criterion 5: What were some of the hypotheses pertaining to conceptual relations (i.e., among categories), and on what grounds were they formulated and validated? Answer: Four types of relationships were identified between the categories. First, organisational adaptation behaviour was conceptualised as the model where phases had a certain chronological order. Second, the qualities of phases were found to influence the

qualities of other phases. Sub-phase contents of the search phase varied depending on whether the seed idea was acquired in the scanning or search phase. Third, conditions were found to have influence on organisational adaptation. Fourth, conditions were found to have influence on each other. The first two types of relationships were formulated on grounds of the data acquired through group and individual interviews, participant observations, direct observations, discussions, documentation, and recalling the researcher's prior knowledge of the case company. These relationships were validated by triangulation (Denzin 1989) and by using the literature (Eisenhardt, 1989). The third and the fourth type of relationship were formulated on grounds of the data acquired through group and individual interviews. These relationships were validated by using the literature (Eisenhardt, 1989).

In light of the fifth evaluation criterion, one of the weaknesses of this study is that the chronological order of the phases in the model was not validated following any single development activity from the triggering phase to the retention phase. Data from which the phase model for the organisational innovation process was developed expressed partial phase sequences of the organisational innovation process from different development activities. It was possible, for example, that data from some development activity only covered search phase and data from another development activity only covered implementation phase. The order of the phases was derived from this data and from logical assumptions that certain phases must occur before others. It was assumed that there has to be something to be implemented before implementation; for producing this "something" there is a phase which the present study calls search. Accordingly, it was assumed that an organisation has to become aware of an innovation before it can change through that innovation, and therefore the implementation phase happens before the change phase. Retention was located after change and performance monitoring because it was assumed that the organisational feature to be retained must exist and be evaluated as worthy of retention before retention takes place. The validation of the loop shape of the organisational adaptation process and relationships between qualities of the phases in the process came from the data.

Criterion 6: Were there instances in which hypotheses did not explain what was happening in the data? How were these discrepancies accounted for? Were hypotheses modified? Answer: In general, the hypotheses about the organisational adaptation process and conditions of organisational adaptation emerged iteratively during the data analysis and were modified several times before all the data fit to them. This was the case especially concerning the categories for conditions that were developed in the study.

Criterion 7: How and why was the core category selected? Was this collection sudden or gradual, and was it difficult or easy? On what grounds was the final analytic decision made? Answer: The phenomenon studied and the core category of this study was organisational adaptation behaviour. The phenomenon expressed by the category was present in the pilot study phase. The category was named only after the literature review. "Organisational adaptation behaviour" was selected as the name for the core category because it was the only concept that covered the behavioural domain studied.

Evaluation of empirical groundings of the study

Strauss and Corbin (1998) have suggested eight criteria for evaluating the empirical grounding of theory-generating study. In fact, the criteria given do not only evaluate empirical grounding of the study but also qualities of the theory generated compared to qualities the grounded theory methodology expects from generated theory.

Criterion 1: Are concepts generated? Answer: The present study generated several concepts for the domain of organisational adaptation behaviour and adaptability. It also created concepts for the phenomena recognised both in the literature and the present study but which the literature has not named. Both the literature and this study have recognised, for example, a phenomenon that an organisation may evaluate created ideas negatively and this may impede creation of ideas. This study created the concept of "receptivity to ideas" to refer to actor's social environment's receptivity to ideas.

Criterion 2: Are the concepts systematically related? Answer: All the concepts developed in the study are structured and connected systematically through the phase model of organisational adaptation behaviour. The relations between the concepts are described and explained in Chapter 5.

Criterion 3: Are there many conceptual linkages and are the categories well developed? Do categories have conceptual density? Answer: Tables 3–6 summarise the categories developed in the present study. The categories are linked through the phase model of organisational adaptation behaviour.

Criterion 4: Is variation built into the theory? Answer: Building variation into the theory was constrained because theoretical sampling was not used in the present study as a method to guide data gathering through the study. However, the findings involve variation in terms of how the organisations carried out specific phases of organisational adaptation, which conditions triggered organisational adaptation, and which conditions enhanced or impeded organisational adaptation.

Criterion 5: Are the conditions under which variation can be found built into the study and explained? Answer: The study does not describe conditions which explain the identified variation in organisational adaptation behaviour because explaining the variation was not in the scope of this study.

Criterion 6: Has the process been taken into account? Answer: The process has been taken into account as the study focused on process of organisational adaptation.

Criterion 7: Do the theoretical findings seem significant, and to what extent? Answer: Discussion of theoretical contributions of the study indicates that the findings have theoretical significance. The study reports several new findings and verifications for the existing research findings. The theoretical framework developed that structures the findings can be used to study the phenomena of organisational adaptation and adaptability.

Criterion 8: Does the theory stand the test of time and become part of the discussion and ideas exchanged among relevant social and professional groups? Answer: If the study is

reported only as a doctoral thesis, it is difficult to predict to what extent the findings will be noticed, adopted, or retained by different interest groups. To facilitate adoption, the findings also should be reported to a larger audience than academics.

6.2.4 Generalisability

According to Yin (1994), it is possible to generalise the findings of the case study analytically but not statistically. In analytic generalisation, findings are generalised to theories that may reflect findings from other studies (Yin, 1994).

In the present study, the requirement for external validity was taken into account by carrying out conceptual conversion for the findings of the study after the literature review was completed. As the study was inductive by nature, a thorough literature review was carried out only after data analysis. The conceptual system that was used in the codifying process and ended up in the preliminary analytical text emerged from the data and represented a preliminary vocabulary. After the literature review, the researcher evaluated whether the concepts found in the literature could represent phenomena identified in the data analysis; when correspondences were recognised, concepts of analytic text were replaced by concepts from the literature. Conceptual conversion improved the comparability of the findings with the literature. It created grounding for analytic generalisation and evaluation of the study's theoretical contributions.

Three possible areas of analytic generalisation can be identified in the findings of the present study. First, the cross-case analysis produced a theoretical framework to which the findings from individual case organisations can be generalised. Second, there are research results from previous studies to which the findings of the present study can be generalised. Third, there are broader theories such as resource dependency theory to which the findings of the present study can be generalised.

In the first area of generalisation the cross-case analysis showed good generalisability for organisational adaptation behaviour through the phase model. Only partial conclusions can be drawn about the generalisability of the findings on conditions that enhance or impede organisational adaptation. Since this study was basically inductive by nature the researcher did not explore whether conditions found in one case organisation occurred in other cases. If a condition occurred in more than one case organisation, it was because it just happened to emerge from the acquired data.

The literature review indicated that scientific knowledge in organisational adaptation and adaptability is fragmented into several different theories and studies. According to the chapter 6.1 on theoretical contribution of this study, the phase model for organisational adaptation process found in this study possesses much potential for analytic generalisation. The findings about conditions which enhance or impede organisational adaptation can be generalised to research results from other individual studies. The research to which findings of the present study can be generalised were carried out in different industries, public sector organisations, and non-service organisations. This suggests that the generalisable findings are not industry specific. Many of the the findings also can be generalised to the resource dependency theory

from Pfeffer and Salancik (2003) as described in chapter 6.1 on theoretical contribution of this study.

6.3 Suggestions for future research

The present study explored organisational adaptation behaviour and adaptability in industrial service organisations. One possible avenue for future research could be testing the results of the present study in organisations in other industries and the public sector. The phase model for organisational adaptation behaviour developed in this study and the 20 categories for conditions of organisational adaptation identified offer a possible framework through which the phenomenon can be studied in different organisational settings and industries. In addition, each phase in the model and each conditional category can be studied separately to accumulate further understanding of the organisational adaptation and adaptability.

Two tasks for future research could be finding possible dimensions of variation for organisational adaptability and how different adaptability profiles in terms of these dimensions may contribute to the success of an organisation. Can organisational adaptability vary, for example, between the types of idea acquisition tactics used in search? Is it possible that some organisations are better at adaptation when using creation as a main idea acquisition tactic than when using imitation or assimilation? Or, can an organisation be better at adaptation triggered by the institutionalisation of innovation than adaptation triggered by change triggers? Does organisational adaptability vary across different stakeholder environments? Is it possible that an organisation constantly fails in its efforts to adapt in the employee environment while adaptation efforts in customer environments succeed? Can an organisation adapt better in one customer environment than in another? Does adaptability vary according to the type of innovation through which an organisation tries to adapt? Can an organisation be better at adaptation through new products than through new data systems?

The findings of this study indicate that organisational innovation can be an adaptation in itself and that the adaptive value of organisational innovation can depend on the characteristics of the stakeholder environment. These findings encourage speculation that may offer avenues for future research. It is possible that when the rate of environmental change is low, organisational adaptability may be determined more by an organisation's ability to learn from experience than by its ability to produce innovations. Accordingly, when the rate of environmental change is high, organisational adaptability may be more determined by an organisation's ability to produce innovations than by its ability to learn from experience. To some extent, the environmental rate of change may correlate positively with innovativeness of an organisation in terms of new features produced per time unit. This is because each change in the environment may expect an organisation to adjust its fit to the environment through innovations. An organisation should align its rate of innovation production with the rate of environmental change to maintain its fit with the environment. When the rate of environmental change is high, environmental uncertainty may be high. In a rapidly changing environment, an organisation does not necessarily have time to create cause-effect knowledge about the adaptive value of its features. It is possible that before an organisation has got enough stakeholder feedback to establish cause and effect, the environment has changed again

and made the accumulated knowledge obsolete. In contrast, a stable environment may provide an organisation with sufficient time to create cause-effect knowledge about its features through stakeholder feedback. However, the rate of environmental change cannot be treated as given because the organisation itself can produce changes in environment and contribute to rate of change.

From an organisational adaptation point of view, one gap in existing literature on innovation is that innovation studies have, to a large extent, focused on innovations for customer environments. Also studies on innovations for owner, employee, inhabitant, labour union and labour market environments could be conducted.

One topic for further research on the search phase in organisational adaptation could be mapping of favourable personal spaces for creation and finding out why some spaces favour creation more than others. To what extent are favourable spaces for creation functions of states of individual and environment? Is it possible to detect environmental conditions that favour creation independently of individual states?

One useful topic for future research could be the implementation phase of organisational adaptation. What kinds of implementation mechanisms can produce change in an organisation more probably than others? What are the conditions for high performance implementation? Do conditions vary depending on the type of innovation to be implemented and how?

The present study indicates that many conditions that contribute to organisational adaptation can be informal and out of range for institutionalisation. Assuming that organisational adaptation is the fundamental process needed for the survival and success of an organisation, institutionalisation of conditions that enhance adaptation can be rationalised easily, but to what extent is institutionalisation possible and under what conditions?

The study demonstrated that an organisation may exhibit defensive behaviours that can impede organisational adaptation. Organisational defensiveness is worth a dedicated study as it may be the most difficult phenomenon to manage when an organisation wishes to improve organisational adaptability.

The study speculated that an organisation may drift to death loops. It may be worth studying if death loops really exist, what kinds of loops there are, and to what extent loops can explain the deaths of organisations.

The study recognised regenerative and routinised organisational adaptation as two modes of organisational adaptation. Studies on the latter mode of adaptation were not found in the literature reviewed, which suggests a possibility for further research.

In the present study organisational adaptability was studied through conditions that enhance or impede functioning of organisational adaptation process. This “process approach” brings some methodological considerations to the surface. Both the findings of the present study and previous research suggest that when studying organisational innovation process it may be difficult to find out which conditions enhance or impede organisational innovation because 1) a given condition can have inverse effects in

different phases of the process (Zaltman, Duncan and Holbek, 1974; Rogers, 1983) and 2) an organisation may use several different tactics to produce innovations and different tactics can have different enabling conditions (Daft & Becker, 1978). To identify conditions of organisational innovation, the phases of organisational innovation process must be studied at such a low process hierarchy level that it is possible to see if some condition influences in opposite directions in different phases. In addition, the tactics of innovation to be studied must be defined.

According to the findings of the present study, conditions that enhance or impede organisational adaptation may be located in organisation or its external stakeholder environment. Studies on organisational adaptability must take into account both the characteristics of organisations and their external stakeholder environments.

6.4 Managerial implications

This study aimed at generating knowledge that can be used to improve the adaptability of an organisation. The study suggests that organisational adaptability can be developed by developing resources that contribute to organisational adaptation process. In the light of the findings of this study, what is the adaptable organisation like?

The present study focuses on how an organisation adapts through innovations. The study suggests that also organisational adaptation behaviour itself must be adapted to the stakeholder environment. In other words, it is not possible to find one universally good form of organisational adaptation behaviour but the behaviour must be contingent with the organisation's environment. Therefore, it is not possible to define one set of conditions to characterise an adaptable organisation. The present study can contribute to changing organisational adaptation behaviour to meet environmental contingencies because it has identified forms and properties of adaptation behaviour that can be adjusted and the set of resources through which behaviour can be adjusted. To carry out the adjustments an organisation also should have knowledge of environmental contingencies in the domain of organisational adaptation behaviour.

One of the environmental contingencies against which an organisation should adjust its adaptation behaviour is unit of selection. Unit of selection is an organisational entity that a stakeholder evaluates and chooses or rejects when making decisions for resource allocations. Logically, an organisational unit of adaptation should equal a unit of selection. An organisation should have knowledge about the units of selection in its stakeholder environments in order to structure its adaptation behaviour. If in capital and labour markets the organisational unit of selection is corporation, that unit should be adapted to these environments. If in a customer environment the unit of selection is an organisation that has made deliveries to customer, this is the unit of adaptation in this environment. Equalising the unit of adaptation with the unit of selection may be one basic principle to follow when structuring a firm's adaptation behaviour.

The findings suggest that the firm should find the optimal level of centralisation of adaptation tasks in relation to environmental diversity and cost-effectiveness. A level of centralisation that is too high can produce maladaptive features for organisations, while a level of centralisation that is too low can increase the costs of organisational

adaptation and decrease the fit of larger organisational units in their environments. Adjusting the level of centralisation to reflect environmental units of selection can mean there is a dedicated adaptation process for each organisational hierarchy level representing an organisational unit that adapts to the dedicated environment.

The findings show that organisational adaptability also can be tied to the organisation's external stakeholder environment by other ways than through contingencies introduced by the environment in the domain of adaptation behaviour. Resources involved in organisational adaptability can be located in an organisation's external stakeholder environment. An organisation may be able to increase the organisational slack available for innovation by asking stakeholders to finance development activities. The stakeholder environment's level of knowledge about an organisation can have influence on a stakeholder's ability to give feedback to an organisation which can facilitate or impede organisational adaptation in this environment. Communication structures between the organisation and the stakeholder environment through which an organisation scans the environment can be sensitive to changes in the stakeholder environment. Feedback from the external environment can have influence on organisational mood which, in turn, can have influence on motivation for organisational innovation. Legislation can have influence on the speed of development activities. The stakeholder environment's receptivity to ideas of an organisation can have influence on an organisation's motivation to produce ideas for the stakeholder environment.

Since the resources of organisational adaptability can be located in an organisation's external stakeholder environment, improving adaptability may require changing the stakeholder environment or moving from one stakeholder environment to another. An organisation can try to make stakeholders understand how they contribute to the adaptability of a focal organisation and how this adaptability influences a focal organisation's ability to satisfy the demands of stakeholders. For organisational adaptation, double-loop learning should be extended to an organisation's stakeholder environment. This means that values and assumptions held by stakeholders should be challenged when needed. A possibility for this kind of co-evolutionary double-loop learning can occur when the different demands a single stakeholder puts on an organisation conflict with each other because a demand of the stakeholder decreases the focal organisation's ability to satisfy other demands of the same stakeholder. For example, a customer may want to lower the price of the organisation's services, but at the same time it may also want the organisation to innovate continuously to improve the performance of the customer's production process. The first demand decreases the organisation's ability to satisfy the latter demand. In the owner environment, double loop learning can mean, for example, that owners see how demand for higher profitability can decrease a focal organisation's adaptability and ability to generate future profits for owners. The employee environment should understand how its demands for higher financial compensation can decrease an organisation's fit in customer and owner environments and how this can decrease an organisation's ability to satisfy the demand of the employees that an organisation must keep them employed.

Also, the findings offer cues about how to carry out organisational adaptation behaviour. To trigger organisational adaptation an organisation has to become aware of potential trigger conditions for organisational adaptation. This may take place accidentally when an organisational agent is exposed to information at work or it can

take place through well-planned intentional scanning and performance monitoring tasks. Logically, scanning and performance monitoring infrastructure should cover all the environments from which an organisation wishes to gain resources and legitimacy. Resolution of scanning and performance monitoring must be high enough to capture contingencies in the stakeholder environments. The reference states against which an organisation's performance is evaluated should reflect the real demands of the stakeholder environments. When feedback from performance monitoring indicates a performance gap, attribution should be carried out to detect domains to be changed through organisational innovation to get rid of the gap. This may also require double-loop learning.

The study showed that employees at all levels of the organisational hierarchy may be exposed to information about an organisation's stakeholder environments. Therefore, it may be possible to intentionally use the whole organisation in scanning and performance monitoring activities. Within an organisation, information acquired about a stakeholder environment should be diffused to those who are responsible for adjusting the fitness of the organisation in these environments. Scanning and performance monitoring are acts of information acquisition and they can be supported by the use of information technology. An organisation's sensitivity to triggering conditions can be improved by documentating knowledge about conditions that rationalise the existing features of an organisation. Documentation can be done, for example, at the moment when an organisation has decided to produce a new feature based on a specific rationale. When that rationale is explicit and widely shared, the whole organisation can be used to detect changes that challenge the rationale and anticipate new organisational adjustments. Documentation of the rationale for existing features also supports the inheritance of features during personnel turnover. If a rationale is not inherited there is a danger that organisational features with adaptive value are destroyed by entrance changes by newcomers.

The findings indicate that favourable personal spaces for creation can be outside of an employee's work place. As spaces of creation can vary among individual employees, an organisation should release employees from time, place, and social environment and provide them with the freedom to choose their own environments to carry out creation tasks. In these environments individuals should be able to create without external interruptions. For collective idea sessions, the atmosphere can be adjusted to favour creation through selection of the right type of participants. This is possible if the session organiser has sufficient knowledge of the characteristics of participant candidates and informal structures that govern relationships between the candidates. The knowledge base for idea creation can be enriched through openness to the external environment. Irrespective of employed idea acquisition tactics, ideas of new features should be evaluated multi-dimensionally in relation to those stakeholder environments to which the features will contribute. Evaluation should be carried out by stakeholders or managers with sufficient knowledge about the evaluation criteria applied by the stakeholders. To use organisational slack efficiently, the adaptive value of new feature should be ensured in the search phase as early as possible. To avoid a decrease in fit and resulting change resistance an organisation should look for balanced adaptations. Change resistance also can be decreased by recognising and removing cultural relics. In the implementation phase, the need for adoption of a new feature should be rationalised

to changers and the feature should be described and communicated at an optimal abstraction level. Communicating should be intensive, continuous, and concurrent from different sources for a sufficiently long time. Changers should get sufficient personal guidance, support, and feedback for new ways of action.

Cummings (1965) states that in order to generate creative responses the typical organisational reward system may have to be re-directed toward the intrinsic satisfactions rewarding to the individual with creative abilities. According to Amabile (1993), intrinsic motivation may be most important at the problem presentation and idea generation stages, the stages that are proposed to most strongly influence the novelty of the final idea. Amabile (1997) argues that it may be optimal to reduce all types of extrinsic motivators at those stages. In the light of findings of the present study, to what extent can organisational adaptation behaviour be intrinsically motivated? The triggering condition types found in the study are all extrinsic motivators. Change in the stakeholder environment, performance gap, and institutionalisation of innovation are extrinsic motivators for organisational adaptation. This is understandable as an organisation's action is fundamentally based on mutual exchanges between the organisation and stakeholder environment and an organisation's adaptation efforts are to serve this arrangement. The arrangement where individuals participate in an organisation as stakeholders who get a salary in exchange for their contributions is based on the idea of motivating participation and work extrinsically. The study showed how organisations had influenced on motivation to carry out adaptation behaviours by formal incentive systems, roles, norms, standards, leadership, and shared vision. These structures are all extrinsic motivators for adaptation behaviour. Receptivity, defensiveness, situational context favourability, and instability are all extrinsic conditions which have influence on motivation to carry out adaptation behaviour. The only traces of possible intrinsic motivators were detected when some informants mentioned that perceived relevance and pleasantness of the creation task had influenced on their motivation to carry out the task. Locating task relevance along the intrinsic-extrinsic scale is difficult, however, as the source of perceived relevance can be external to the individual who carries out the task. For example, an individual can experience high task relevance when carrying out the creation of new feature that is strategic for the company. Since organisational adaptation behaviour is encompassed by extrinsic motivators it seems quite a challenging task to create spaces where behaviour and especially creation are fuelled by intrinsic motivation. And, if intrinsic motivation is necessary for high creativity, how creative can organisations be expected to be?

The findings of the present study indicate that motivation for organisational adaptation behaviour is influenced both by formal and informal structures. For informal structures, improving organisational adaptability requires leadership. For example, conditions such as low receptivity and low self-efficacy are motivational states anchored in belief structures learned through experience or modelling. Maybe individuals possessing these beliefs can be encouraged through personal persuasion to try once again. Revitalising motivation for organisational adaptation behaviour after a transitional state has destroyed it, or encouraging an individual to get rid of fixation and blocking beliefs requires leadership. The same holds with attenuating defensiveness, although this may be more difficult, assuming that defensive behaviour is, according to Argyris (1993), based on fundamental need of human to protect himself from feeling embarrassment,

threat, vulnerability, or incompetence. The findings also demonstrate that personal communication of managerial expectations can be used to motivate change.

The present study shows that a formal incentive system can have positive influence on an individual employee's motivation to contribute to organisational adaptation. However, the quality of influence depends on the fit between the incentives and needs of the employee. Using formal incentive systems to motivate workers to contribute to organisational adaptation is based on the fundamental ideas that employees are categorised as management and workers and that management's role includes organisational adaptation tasks, while the role of workers does not. Therefore, workers' contributions have to be motivated through separate incentive systems. In other words, management's contribution to organisational adaptation is motivated by roles, while the contribution of workers is motivated by incentives. A worker's participation in organisational adaptation can be improved through the development of a role structure or incentive system. The two approaches are alternatives to each other because the development of a role structure decreases the need to develop incentive systems. Role structure can be developed so that the traditional division of labour between management and workers in organisational adaptation is blurred by 1) giving temporal roles for workers in adaptation tasks or 2) delegating "managerial" responsibilities to workers as permanent job roles. Using these options means de-centralising adaptation behaviour at the organisation level. However, if there is a need to stick to a more "Tayloristic" role structure, incentive systems can be developed to better meet the needs of workers.

How can we know that workers' participation in organisational adaptation leads to better adaptability than only management's participation? Isn't it better for the profitability of an organisation to load workers with customer work to earn money for the company and leave the adaptation concerns to management? Do workers really want to participate in adaptation tasks or are they happier without participating? According to the findings, all organisational hierarchy levels have the capacity to contribute to organisational adaptation. The findings show that knowledge about change domains contributes positively to search in the domain. Assuming an individual employee is the most knowledgeable about the immediate environment he or she faces at work, this employee is the most capable person to develop this domain. In other change domains, this employee is the most capable person to evaluate how changes suggested will influence an employee's ability to get his or her demands satisfied. However, "employees" is only one of the stakeholder environments in which an organisation tries to adapt; the amount of its participation in organisational adaptation should be balanced with the needs of an organisation to satisfy the demands of other stakeholder environments.

The findings indicate that an organisation can use organisational vision to guide and motivate adaptation. Using vision's full potential includes sharing it not only with employees but also with an organisation's external stakeholders. Shared vision can 1) improve a customer's commitment to an organisation, 2) attract the best technology suppliers to co-operate with the organisation, 3) motivate and guide suppliers to generate ideas to achieve the vision, and 4) convince financiers that it is profitable to finance the organisation's development.

An organisation can increase formalisation and standardisation of adaptation behaviour to ensure that behaviour has some regularity and is explicit enough to be improved and retained easily. By standardising adaptation behaviour, an organisation can ensure that the emergence of certain conditions is always followed by certain adaptation behaviours. Behavioural standards must fit environmental contingencies or they must be loose enough to allow variations for contingencies.

The organisations studied did not adapt as one collective entity but instead were adapted through actions of individual members of the organisations. Idea acquisition, evaluation and implementation tasks were carried out by individual employees or by a small group of employees but not by the whole organisation. Individual employees were representatives of the adapting organisational unit. The finding that some of the differences in individual contributions to organisational adaptation may be due to differences in individual characteristics, suggests that an organisation can develop adaptability by recruiting employees possessing characteristics favourable for organisational adaptation. To do this, an organisation needs knowledge about which personality or other characteristics can have influence on an individual's contribution to adaptation, and these characteristics must be included in recruitment criteria. The same character set also can be applied when selecting participants for adaptation tasks.

Organisational adaptation consumes organisational slack, but adaptability does not necessarily correlate directly with the amount of available slack. As organisational adaptation behaviour should fit with environmental contingencies, it may require more slack in some environments than others. Within an organisation, available time slack for adaptation tasks should be distributed optimally among agents expected to carry out tasks. If an organisation does not have "full-day" human resources for adaptation tasks it has to balance the work load between adaptation and other tasks. An organisation can try to increase its economic slack by acquiring financing for adaptation tasks from external sources.

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Appendix 1. Themes of interviews in cases A-D

THEMES OF INTERVIEWS IN CASES A-D

Development in general		Strategic planning Annual planning
Triggering		
	Scanning	Scanning customers, competitors, authorities and suppliers Scanning new technologies and new knowledge Cross-audits between peer-organisations Benchmarking
	Performance monitoring	Measurement plan Self-evaluation Satisfaction of customer, personnel and inhabitants Development discussion Vertical feedback to company management Investment proposing Equipment fault Plant production deviations EHS-deviations (environment, health, safety) Occupational accidents Attributing lost competitive bidding Measuring and attributing performance of deliveries Delivery feedback from customer, personnel or society Measuring quality of supplier's delivery
Search		Suggestion and initiative systems Product development Upgrading maintenance Purchasing new tool technologies
Implementation		Training
Change		Change history of organisation
Retention		Quality audits

Appendix 2. Themes of interviews in case E

THEMES OF INTERVIEWS IN CASE E

The case company CEO
- Developmental history of the case company
- Developmental history of the business division Z
- Adoption of the "management by profit" paradigm
- Adoption of the quality paradigm
- Role of the case organisations A-D in the case company
- Favourable spaces for ideation

The executive vice president
- Developmental history of the business division Z
- Creation versus adoption from the environment
- Challenges for development in the case company
- Favourable spaces for ideation

The vice president responsible for quality and EHS
- EFQM self-evaluation process
- Strategic planning process
- Development of the case company vision
- Valuation of development

The vice president responsible for the HR function
- Origin of the personnel training program
- Origin of the internal university
- Origin of the "Mill" practise
- Origin of the bonus system
- Origin of the development discussion practise
- Creation versus adoption from the environment
- Favourable spaces for ideation

The vice president responsible for produt development
- Strategic planning in the product development
- Organisation of product development
- Sources of product development ideas
- Scanning of new technologies
- Structure of the product development process
- Development of new services versus service improvements
- Measurement of performance of product development
- Incentives for product development
- Development of the product development process
- Valuation of product development
- Challenges for product development in the case company
- Favourable spaces for ideation

The vice president responsible for marketing
- Personal work history
- Interface between product development and sales and marketing
- Case E as an environment for ideation
- Challenges in scanning
- Favourable spaces for ideation

The sales manager of the business division Z
- Competition situation in the case organisations A-D
- Organisation of the sales process
- Demands for new versus existing offerings in competitive biddings
- Development of the sales process
- Creation versus adoption from the environment